

# Portfolio A/B Testing Report

April 2025

Bryan Cheong

Carlos Lembono

Leo Koay

Louis Perdrix

MSc Business Analytics

Imperial College London

## Question 1: VWO Starter A/B Experiment

### Task A

**A description of your test, and the rationale and business interest in it, that is, what information you want to extract from the test.**

With the current dominance of online and social media advertising, marketers have adopted increasingly aggressive strategies, including the use of clickbait. Platforms such as YouTube, news websites, and pop-up ads frequently employ emotionally charged or curiosity-driven headlines to capture user attention. While studies suggest that clickbait can successfully trigger arousal and curiosity, they also indicate that perceived knowledge quality remains a key factor influencing user engagement and content sharing [1].

This tension between attention-grabbing techniques and perceived credibility extends to professional communication, where even reputable brands incorporate buzzwords, rankings, and certifications to enhance visibility. On platforms such as LinkedIn, users often attempt to stand out through original or unconventional self-promotion. However, it remains unclear whether such strategies effectively translate into measurable engagement.

To investigate this question, we designed an A/B test on a professional personal website promoting the CV and experience of Bryan Cheong, seeking a career in the data science field. The original website features a clean and conventional design, with a central call-to-action (CTA) button inviting users to download Bryan's CV. Our experiment aims to test whether introducing a clickbait-style element by suggesting whether the inclusion of a "secret project" in the CV can increase engagement, as measured by the number of CV downloads. This approach aligns with the concept of "teasing" as a form of attention marketing, which has been identified as an emerging tactic in digital communication [2]. The test is intended to evaluate whether such a modification can enhance the portfolio without compromising the professional tone of the site.

### Task B

**How you designed the test and why, along with the implementation choices and details, and also efforts to obtain a sufficient sample**

#### Test Overview

The test was designed by modifying the central CTA button on Bryan Cheong's professional website. The original version of the button, which simply stated "Download CV," reflects a clean and conventional approach consistent with the overall layout and professional tone of the site. For the variation, we altered the button text to read "CV with Bonus Project (Not Listed Here)," introducing an element of curiosity and exclusivity from the clickbait.

This button was selected for the test because clicking to download the CV represents a clear expression of user interest and engagement. By modifying this specific element, we were able to isolate the effect of a clickbait-inspired prompt on user behaviour, without altering the structure or visual hierarchy of the site.

The experimental design contrasts a neutral, professional presentation with a more attractive alternative, borrowing from established digital marketing techniques such as teaser-based advertising. The modified button text was inspired by common phrasing found in clickbait content, particularly in article headlines and video titles, where the goal is to trigger curiosity and drive action. This allowed us to simulate a typical clickbait environment while testing its relevance and effectiveness in a professional context. The objective was to determine whether such attention-grabbing tactics, often associated with entertainment and low-credibility media, could enhance user engagement when applied subtly in a high-credibility, professional setting.

## Why A/B Test Over Multivariate Test?

Given that the test involved a single change: the text of the CTA button. An A/B test was more appropriate than a multivariate test. Multivariate testing is better suited to experiments involving multiple elements (e.g. headlines, buttons and images), but it requires substantially more traffic to yield reliable results as the traffic is split into even more variations. With a limited number of expected visitors, we prioritised statistical power and clarity by using an A/B setup.

## Initialising the A/B Test on VWO Starter

We used **VWO Starter** to deploy the A/B test on Bryan's website with URL: <https://bryancheong.dev>

The experiment was configured to trigger for **all traffic** and **all visitors**, with the variation applied immediately upon page view. This ensured consistent exposure across all user sessions. Figure 1 shows the targeting settings used.

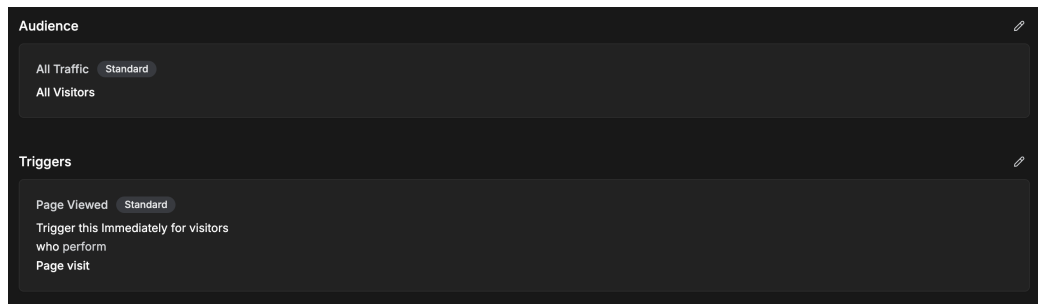


Figure 1: Audience and Trigger Settings on VWO

The campaign consisted of two versions:

- **Control:** Original CTA button text - *“Download CV”*
- **Variation 1:** Modified CTA button text - *“CV with Bonus Project (Not Listed Here)”*

These versions were split evenly across users, with a 50% traffic allocation to each, as shown in Figure 2.

Variations			
Variation name	Modifications	Traffic split: Equal Distribution	Edit Variation(s)
<span>C</span> Control <span>Baseline</span>	-	50.00%	
<span>V1</span> Variation 1	1	50.00%	<span>Edit</span> <span>Live Preview</span>

Figure 2: Equal Traffic Split Between Control and Variation

Visual previews of the control and variation versions can be seen in Figures 3 and 4, respectively.

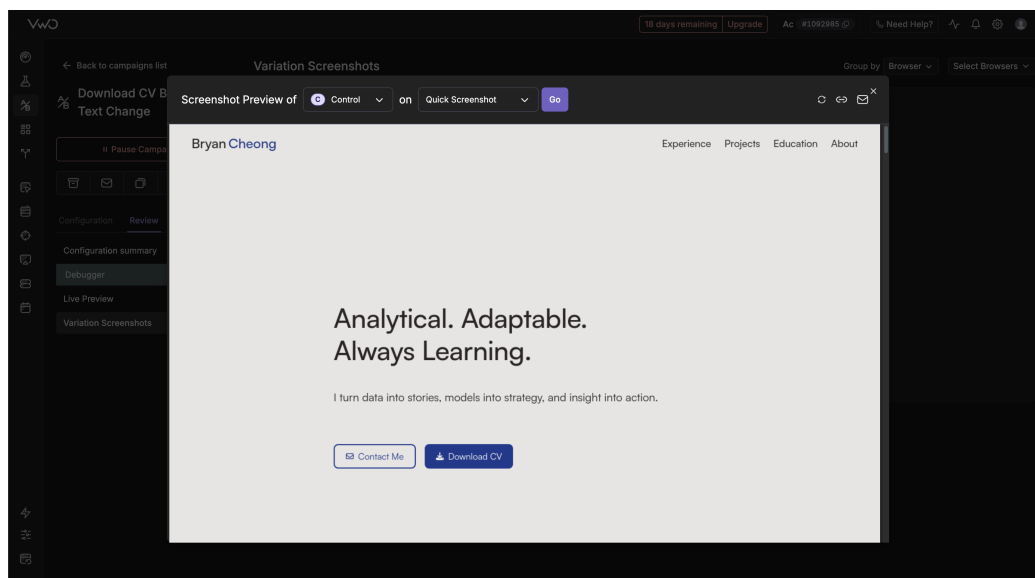


Figure 3: Screenshot of the Control Version (“Download CV”)

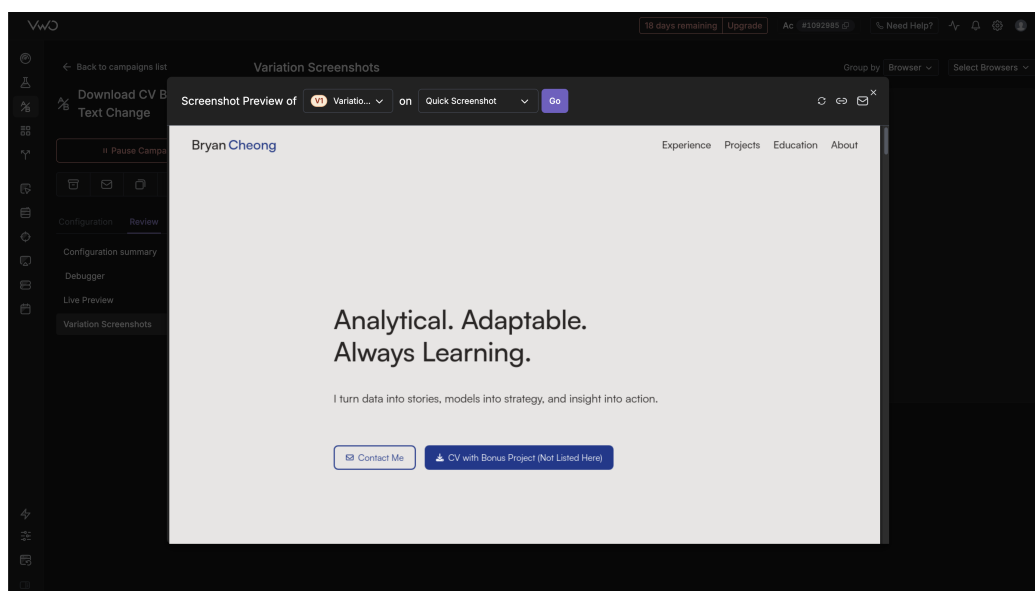


Figure 4: Screenshot of Variation 1 (“CV with Bonus Project”)

To track performance across multiple metrics, we defined the following goals:

1. **CTA Clicks (Primary Metric):** Measures how many users clicked the blue download button (Figure 5).
2. **Engagement with Portfolio (Secondary Metric):** Tracks whether a visitor interacted meaningfully with the website beyond just loading the page. In VWO, this is typically triggered by a `mousedown` event, such as clicking a link, button, or interactive element, within the same session (Figure 6).
3. **Bounce Rate (Secondary Metric):** Indicates whether a visitor left the website without interacting further after landing on the page. VWO records a bounce when a unique visitor does not trigger any event or pageview other than the initial page load during their session. This includes cases where the user scrolls but takes no measurable action like clicking or navigating (Figure 7).

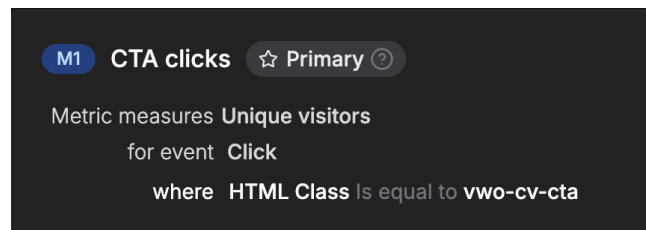


Figure 5: CTA Click Conversion Settings

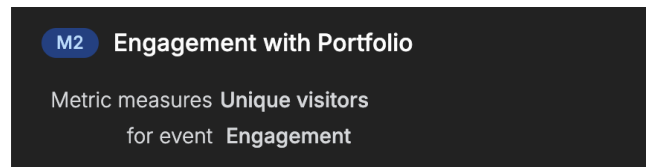


Figure 6: Engagement with Portfolio Settings

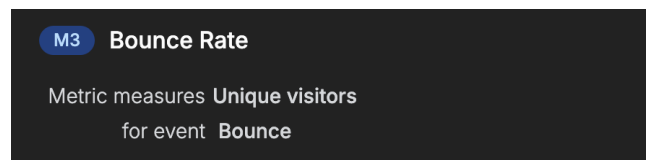


Figure 7: Bounce Rate Settings

## Code Changes for Test

### HTML Class Addition

A unique class name, `vwo-cv-cta`, was added to the `<Button>` Svelte component to precisely identify the CTA being tested:

```
<Button
  href="/assets/CV.pdf"
  target="_blank"
  variant="primary"
  icon="fa-solid fa-download text-sm"
  class="vwo-cv-cta"
>
  Download CV
</Button>
```

This ensured the JavaScript and CSS would only target this specific element without interfering with other buttons or links.

### CSS Visibility: Hidden Addition

Then, the button is initially hidden from view using the `visibility: hidden;` property:

```
a.vwo-cv-cta {
  visibility: hidden;
}
```

This ensures users do not briefly see the original button text before the variation is applied.

### JavaScript Addition in VWO

Lastly, due to limitations in SvelteKit's entry animations and VWO's HTML editor (which caused the variation page to start blanking), the text change was implemented in VWO's JavaScript editor using a `MutationObserver`. This allowed the change to occur only after the DOM is fully loaded:

```
const observer = new MutationObserver(() => {
  const buttons = document.querySelectorAll('a[rel="noopener noreferrer"]');
  const downloadBtn = buttons[0]; // CTA is the first button
  if (downloadBtn) {
    const label = downloadBtn.querySelector("span");
    if (label && label.textContent.trim() === "Download CV") {
      label.textContent = "CV with Bonus Project (Not Listed Here)";
      downloadBtn.style.visibility = "visible"; // reveal after update to prevent flicker
      observer.disconnect();
    }
  }
});

// Start observing once DOM is loaded
observer.observe(document.body, {
  childList: true,
  subtree: true
});
```

Overall, this setup ensures:

1. The page doesn't flicker or blank out
2. The variation text is only shown after the button is rendered
3. Users never see the control version briefly
4. Only the CV CTA is changed

## Promoting Website for Traffic

To ensure sufficient traffic, we promoted the site via LinkedIn and Instagram posts and invited friends and family to visit the page. This led to a total of 375 visitors, which isn't ideal for A/B testing because more traffic is needed, but it is adequate for this coursework.

## Task C

### Final statistical analysis and conclusion

To determine whether the observed differences in click-through rate (CTR), engagement, and bounce rate between the control and variation groups were statistically significant, we conducted a series of two-sided z-tests. This method is appropriate for comparing binary outcomes (e.g., clicked vs. not clicked, engaged vs. not engaged, bounced vs. not bounced) between the two independent groups.

## Methodology

The calculation is as follows:

1. Compute the pooled proportion:

$$p = \frac{x_1 + x_2}{n_1 + n_2}$$

2. Compute the standard error:

$$SE = \sqrt{p(1-p) \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}$$

3. Compute the z-score:

$$z = \frac{p_1 - p_2}{SE}$$

4. Determine the p-value using the standard normal distribution.

This calculation will be done in Excel for each metric.

### Results for Primary Metric: CTA Clicks

As shown in Figure 8, the control version achieved a CTR of 17.20% (32 clicks out of 186 visitors), while the variation achieved a lower CTR of 10.05% (19 clicks out of 189 visitors), resulting in an observed difference of 7.15 percentage points.

To assess statistical significance, we conducted a two-sided z-test, as summarised in Figure 9. The pooled conversion rate was calculated as 13.6%, and the standard error of the difference was 0.0354. The resulting z-score was 2.02, yielding a two-tailed p-value of approximately 0.0434.

**Interpretation:** Since the p-value falls below the 5% significance level, we reject the null hypothesis and conclude that the difference in CTA performance between the control and variation is statistically significant. The variation showed a relative decline of 41.6% in CTA effectiveness compared to the control, supporting the conclusion that the original professional phrasing (“Download CV”) is more effective than the clickbait-style alternative.

From a practical standpoint, this difference is meaningful: the professionally styled control version led to nearly eight additional downloads per 100 visits compared to the clickbait alternative. This suggests that a clean, credible presentation is more effective in encouraging engagement in a professional context. However, the small sample size limits the confidence in this result, and a larger test population would help enhance the robustness of the observed effect.

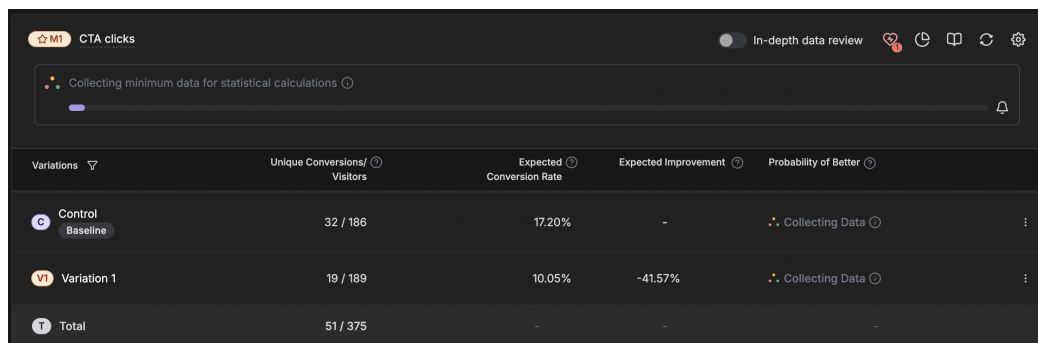


Figure 8: CTA Click Conversion Report

	A	B	C	D
1	CTA Clicks			
2				
3	Group	Visitors (n)	Clicks (x)	Conversion Rate (x/n)
4	Control	186	32	0.1720
5	Variation	189	19	0.1005
6				
7	Metric	Formula		
8	Pooled Proportion (p)	0.136		
9	Standard Error (SE)	0.0354		
10	Z-score (z)	2.0199		
11	P-value (two-tailed)	0.0434		

Figure 9: CTA Click Conversion Two-Sided Z-Test Excel

## Results for Secondary Metric: Engagement

As shown in Figure 10, engagement rates were nearly identical across both groups. The control version saw an engagement rate of 43.55% (81 out of 186 visitors), while the variation slightly exceeded this at 43.92% (83 out of 189 visitors).

To assess whether this small difference was statistically meaningful, a two-sided z-test was conducted (Figure 11). The pooled proportion was calculated as 43.73%, with a standard error of 0.0512. The resulting z-score was -0.0716, yielding a two-tailed p-value of 0.943.

**Interpretation:** With a p-value far above conventional thresholds (e.g. 0.05 or 0.10), we conclude that the difference in engagement between the control and variation groups is not statistically significant. This suggests that while the CTA wording influenced click-through behaviour, it had no observable effect on deeper portfolio engagement.

Variations	Unique Conversions/ Visitors	Expected Conversion Rate	Expected Improvement	Probability of Better
Control Baseline	81 / 186	43.55%	-	Collecting Data
V1 Variation 1	83 / 189	43.92%	0.84%	Collecting Data
T Total	164 / 375	-	-	-

Figure 10: Engagement with Portfolio Report

	A	B	C	D
1	Engagement			
2				
3	Group	Visitors (n)	Engages (x)	Conversion Rate (x/n)
4	Control	186	81	0.4355
5	Variation	189	83	0.4392
6				
7	Metric	Formula		
8	Pooled Proportion (p)	0.4373		
9	Standard Error (SE)	0.0512		
10	Z-score (z)	-0.0716		
11	P-value (two-tailed)	0.9429		
12				

Figure 11: Engagement with Portfolio Two-Sided Z-Test Excel

## Results for Secondary Metric: Bounce Rate

Figure 12 shows the bounce rates for each group. The control group had a bounce rate of 66.67% (124 out of 186 visitors), while the variation recorded a slightly higher rate of 68.25% (129 out of 189 visitors).

As illustrated in the z-test output (Figure 13), the pooled bounce proportion was 67.5%, and the standard error was approximately 0.0484. The resulting z-score was -0.328, corresponding to a two-tailed p-value of 0.743.

**Interpretation:** This result confirms that there is no statistically significant difference in bounce rate between the two versions. The CTA variation did not meaningfully impact whether users left immediately after landing on the page.



Variations	Unique Conversions/ Visitors	Expected Conversion Rate	Expected Improvement	Probability of Better
Control Baseline	124 / 186	66.67%	-	Collecting Data
V1 Variation 1	129 / 189	68.25%	-2.38%	Collecting Data
Total	253 / 375	-	-	-

Figure 12: Bounce Rate Report

	A	B	C	D
1	Bounce Rate			
2				
3	Group	Visitors (n)	Bounce (x)	Conversion Rate (x/n)
4	Control	186	124	0.6667
5	Variation	189	129	0.6825
6				
7	Metric	Formula		
8	Pooled Proportion (p)	0.6747		
9	Standard Error (SE)	0.0484		
10	Z-score (z)	-0.3280		
11	P-value (two-tailed)	0.7429		
12				

Figure 13: Bounce Rate Two-Sided Z-Test Excel

## Results Conclusion

A two-sided z-test confirmed that the difference between the control and variation of our primary metric of CTA clicks was statistically significant at the 5% level ( $p = 0.043$ ), indicating that the variation's underperformance was unlikely due to random chance. In contrast, secondary metrics, portfolio engagement and bounce rate, showed no significant differences between the two groups ( $p = 0.94$  and  $p = 0.74$ , respectively), suggesting that while the CTA influenced direct action (clicks), it did not affect wider website engagement or exit behaviour.

While the statistical result for the primary metric is robust, the relatively small sample size limits the broader generalisability of these findings. A larger-scale experiment would increase confidence in the observed effects and test their consistency across different audiences.

In conclusion, the test does not support the effectiveness of the clickbait strategy. On the contrary, it suggests a potential negative impact on user engagement when such tactics are applied in a professional context. This finding reinforces prior research indicating that perceived content quality is a key determinant of engagement and information sharing, particularly in contexts where trust and professionalism are essential [1]. It showcases the importance of using clear, credible language and aligning communication style with audience expectations, even as digital trends continue to evolve.

## Question 2: Keyword Marketing Campaign

### Task A

**A description of your Ad and the rationale and business interest in it, that is, what gain you want to extract from the campaign**

As the job market becomes increasingly competitive especially for data professionals, enhancing personal visibility is essential to stand out among recruiters and companies. One of the most effective ways for data analysts to showcase their experience and capabilities is through a strong portfolio. A personal

website serves as an ideal platform to display this portfolio, including projects, skills, and professional achievements. To maximize the reach of such a website, strategies like Search Engine Optimization (SEO) and Search Engine Marketing (SEM) can be employed. SEO focuses on long-term visibility through organic search, while SEM offers a way to drive initial traffic through paid search advertising.

The primary goal of this Google Ads campaign is to increase visibility and traffic to Carlos Lembono's online CV and portfolio with URL: carloslembono.weebly.com, which highlights his work and skills in data analytics. The campaign specifically targets potential employers, recruiters, and clients who may be looking for freelance or full-time analysts with skills in Python, R, SQL, and visual storytelling. An addition objective is to boost users' engagement on the website, for example, encouraging visitors to explore projects or CVs.

## Task B

### How you designed the Ad and why, the tools you used, bidding strategy, the competitor analysis you did and the rationale

To initialise the ad campaign, we did some keywords research to determine some of the potential words to be included in the website. This is done by doing competitor benchmarking to evaluate several keywords usually used in a data analyst's personal portfolio website. By utilising Google Ads keyword planner, we analyse some possible keywords. Table 1 shows some of the websites we observed.

Table 1: Competitor Websites and Their Keywords

Name	Website	Jobs	Keywords
Naledi Hollbruegge	<a href="https://naledi.co.uk/">https://naledi.co.uk/</a>	Consulting Analyst	sheets
Tim Hopper	<a href="https://tdhopper.com/archives/">https://tdhopper.com/archives/</a>	Machine Learning Engineer	sheets
Ger Inberg	<a href="https://gerinberg.com/">https://gerinberg.com/</a>	Data Scientist	sheets
Yan Holtz	<a href="https://www.yan-holtz.com/">https://www.yan-holtz.com/</a>	Senior software engineer	sheets
Maggie Wolff	<a href="https://maggiewolff.github.io/">https://maggiewolff.github.io/</a>	Data Scientist	sheets
James Lee	<a href="https://jameskle.com/data-portfolio">https://jameskle.com/data-portfolio</a>	Data Scientist	sheets

Based on this observation, we chose some of the keywords according to their relevancy, average monthly search, competition, and CPC range. We picked words that are relevant such as data analyst, data visualisation; with low competition so it has a higher change to be displayed and within range of our budget. We divided the keywords based on the webpage and Short-Tail (for broader search) or Long-Tail keywords (for narrowed search). Table 2 describes the chosen keywords and Table 3 (see Appendix) shows the detail metrics of the keywords.

Table 2: Keywords Chosen

Page	Short-Tail Keywords	Long-Tail Keywords
Homepage	data analyst, Power BI, data visualisation	data analysis portfolio
Project Page	data insights, data collection	data analyst consulting, data analysis projects

We set up our ads using Google Ads for Google Search Network and Display Network. This ad will show in the search page as shown in Figure 14, with marketing objective for a website traffic. We adjust the headlines to contain some of the keywords we choose for example "Hire a Data Analyst", "Freelance Data Analyst", etc. Additionally, we also set up the description to drive interest for the users to click. Finally, we added a site-link directly to the Project Page so that visitors can immediately see Carlos' project. We planned to run the ads for 5 days from the 27th of May to the 1st of June 2025 with a maximum budget spend of £4/day. We chose to use **Maximize Clicks** Bidding strategy because we have a limited budget hence Google Ads will automatically set our bid to get as many clicks as possible within the possible budget set. We set the maximum CPC bid limit to £1 so we would not exceed our £20 budget.

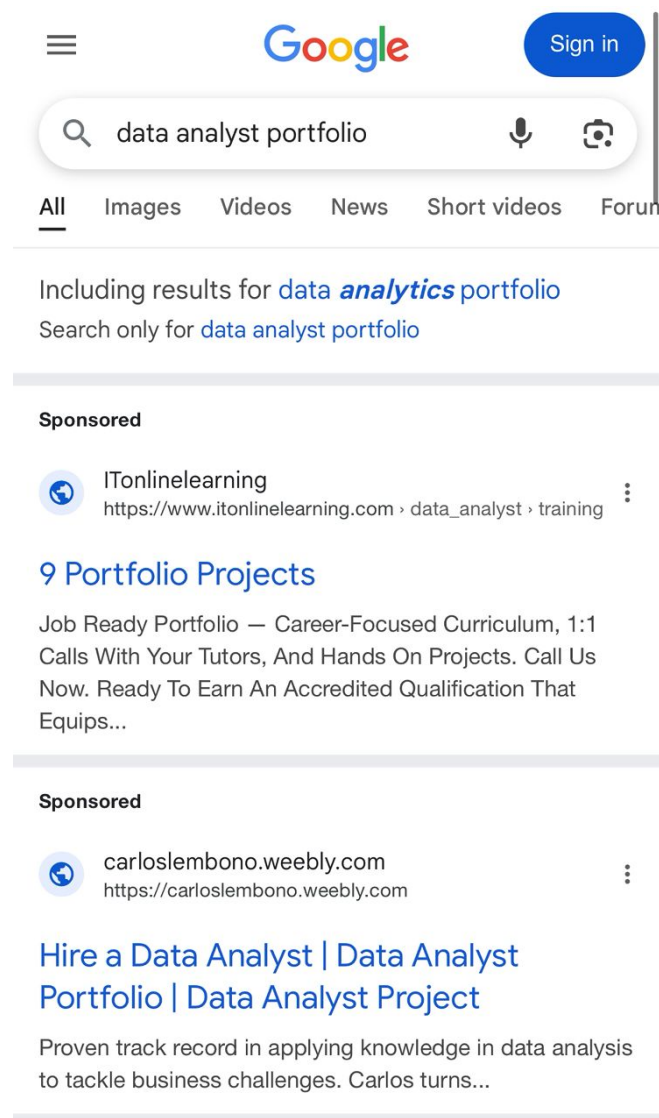


Figure 14: Google ads display

We evaluate the metrics from Google Ads and Google Analytics as follows:

1. Impression – How many times are the ads shown? - Google Ads
2. CTR (Click-Through Rate) – Are the ads attracting interest? - Google Ads
3. Time on Site – Are people reading or just bouncing? - Google Analytics
4. Bounce Rate – Indicates quality of traffic - Google Analytics
5. New vs. Returning Visitors – Are people coming back? - Google Analytics

The results are presented in the next section.

## Task C

The final summary of your campaign, the effectiveness (3 pages max. on this part), how you tracked and adjusted it, and a reflection on the lessons you learned and what you could have done better.

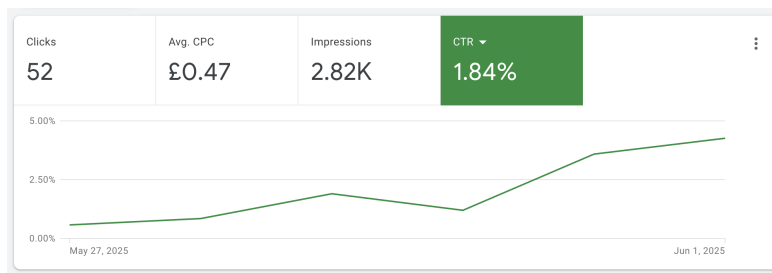


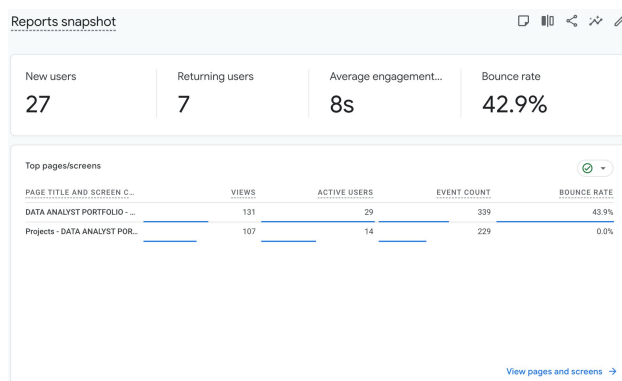
Figure 15: Overall results (Google Ads)

### Keyword Performance and Cost Analysis

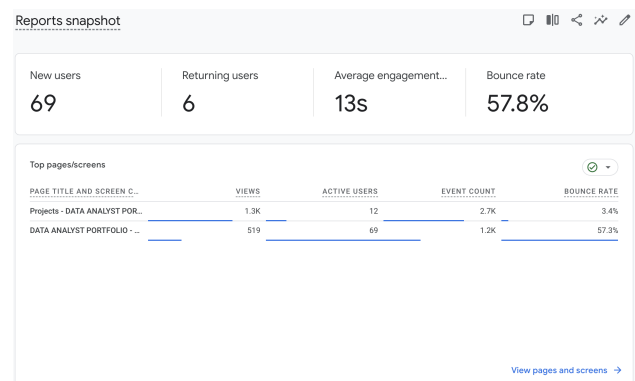
Overall, the ad campaign generated 2,819 impressions and achieved an average CTR of 1.84%, resulting in 52 clicks and attracting 69 new users to the site. Around 70% of these impressions came from short-tail keywords like “data analyst tools,” “data analyst,” “Power BI,” “data insights,” and “data visualisation.” However, these broader terms had relatively low CTRs, typically between 1% and 3%, which suggests that while they bring in traffic, much of it may not be highly relevant to the site’s content or intent. In contrast, long-tail keywords such as “data analysis portfolio” and “data analytics freelance” performed significantly better, with CTRs ranging from 6% to 8%.

When benchmarked against the *Career & Employment* industry average CTR of 6.79% [3], the campaign is underperforming in terms of engagement. This indicates that there is room for optimisation, particularly in refining the keyword strategy, ad messaging, and targeting approach, as we will explore further in the next sections.

From a cost perspective, the campaign performed well. The average cost-per-click (CPC) was £0.47, which is significantly below the industry benchmark of \$4.53 (approximately £3.56). This low CPC was intentional: our strategy focused on selecting relevant but less competitive keywords to stay within a modest £20 budget, with a maximum bid of £1 per keyword to help control spending.



(a) Results before implementing Google Ads



(b) Overall results (Google Analytics)

Figure 16: Comparison of website analytics before and after ad implementation

### Bounce Rate, Time on Site, and Returning Visitors

After running the ad campaign, user engagement shows mixed results. While the number of new users increased from 27 to 69, a closer look at bounce rate, time spent on the site, and the ratio of returning visitors reveals areas for improvement.

The bounce rate increased for both the homepage and the Projects page. On the homepage, the number of users who did not bounce improved from 16 before the campaign to 29 after, which suggests more users chose to interact rather than leave immediately. However, because the total number of visitors also rose sharply, the proportion of users who bounced grew overall, pushing the homepage bounce rate from 42.9% to 57.3%. On the Projects page, active users decreased slightly from 14 to 12, and its

bounce rate increased from 0% to 3.4%. While still low, this uptick shows that even a page previously performing strongly experienced a slight decline in retention.

Time on site also changed, with average engagement increasing from 8 seconds to 13 seconds after the ads were introduced. This modest improvement suggests that while users are exploring slightly more, they are still not deeply engaged with the site content. Notably, on the Projects page, time on page averaged just 17 seconds despite a high number of views, indicating that many users may be clicking a link, such as the Google Drive button, and then they stop interacting with the page further.

In terms of the ratio of new to returning users, the site saw 69 new users and 6 returning users after the campaign, compared to 27 new users and 7 returning users before. While the increase in new users is substantial, the number of returning users remained relatively flat. This suggests that while the ads were effective at bringing in new visitors, they did not significantly improve repeat engagement or long-term interest.

Overall, the Google Ads campaign succeeded in driving more traffic to the site and increasing visibility, especially among new users. However, the data shows that higher traffic did not translate into significantly better engagement or retention. Bounce rates increased, time on site remained short, and returning visitor numbers stayed mostly unchanged.

### How you tracked and adjusted it?

We mainly tracked the ad performance through Google Ads, allowing the ad to run for two days initially for the ads to accumulate its traffic. We monitor how the budget is spent during this period. It was observed that “data analyst” keywords led most of the clicks, 11 clicks from 680 impressions with an average cost-per-click (CPC) of £0.80. However, the engagement of visitors was low at 8s and the bounce rate 66.7%. This suggested that the keyword was too broad, likely attracting users who were not the intended audience for the site. In response, we refined the keywords by replacing the “data analyst” word with “data analyst freelance” and set the keyword match to phrase match so it narrowed down the audience and improve relevancy. Additionally, “data analyst portfolio” keyword had lower quality score (as shown in Figure 17) meaning the keywords are rarely shown in the ads hence we remove this word from the list of keywords.

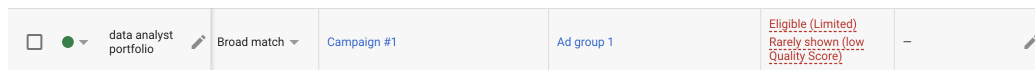


Figure 17: Low Quality Scored Keyword

Finally, we tried to add additional keywords to strengthen the ads’ quality through more job-specific words as follows: 1) freelance data analyst remote; 2) freelance data analyst projects; 3) data analyst contractor; 4) data analyst contract jobs; 5) contract data analyst jobs remote

These refinements aimed to attract users who are likely to be interested in the website’s content.

### A reflection on the lessons you learned

Based on our experiment in keyword advertising, we learned that defining conversions as early as possible is crucial. We noticed that metrics like impressions and CTR are useful, but to go deeper, conversion-focused goals (e.g., clicks on CV, time on Project page) can offer insight into real engagement. Second, balancing the search volume and relevance between keywords will improve the ads’ quality and performance. Long-tail keywords drive better engagement but get fewer impressions. A dual-track approach works best: pair broad terms to bring traffic and niche terms to convert. Next, matching type between broad, phrase, and exact match will determine the quality of the search, starting with Phrase Match helps avoid budget waste and attract higher-intent users. Broad match should only be used after scaling. Landing page is the make-or-break engagement within the website. Traffic is wasted if users land on unoptimised pages. Strong call-to-action (CTA), visual project highlights, and seamless navigation are essential. Finally, ads, keywords, and ad monitoring are essential during the initial campaign to help advertisers catch underperforming keywords and test alternatives quickly.

## What you could have done better?

### 1. Improve keyword targeting strategy to boost CTR.

Since cost-per-click (CPC) is influenced by the second-highest bidder's CTR multiplied by their bid, achieving a high CTR is crucial for winning ad placements at a lower cost. Our analysis showed that short-tail keywords (one to two words) were less effective, with CTRs ranging from 1% to 3%, whereas long-tail keywords (three or more words) performed significantly better, with CTRs between 6% and 8%. This suggests that for future campaigns with tight budgets, focusing on long-tail keywords can help drive more targeted traffic while keeping costs low. Additionally, incorporating negative keywords such as 'course' or 'certification' can help filter out irrelevant searches and further improve ad relevance.

### 2. Improve landing page engagement and track meaningful conversions

Our analysis shows that the website struggles to engage visitors effectively. Adding clear CTAs such as "View My Projects" or "Contact Me", linked to project pages or email prompts, could help reduce bounce rates by encouraging immediate interaction. More importantly, these buttons can serve as measurable conversion points. Tracking user interactions allows us to evaluate campaign effectiveness through tangible actions rather than just traffic or time on site. Setting up micro-conversions, like CV downloads or section clicks, and implementing event tracking via tools such as Google Tag Manager, would provide a clearer picture of performance and user intent.

### 3. Ad extensions could have been used more strategically

We acknowledge the little utilisation of ad extensions like sitelinks, callouts, etc., which can potentially improve ad visibility and CTR without increasing cost. While we already used the sitelink for the project page, we could have used ad extensions to highlight parts of the website such as the CV, which might improve CTR and guide users to high-value sections directly.

### 4. Time of day and device targeting

As shown in Figure 18, a significant portion of our ads were displayed during late-night hours and primarily on mobile devices. This was a major oversight, considering that our target audience consists of recruiters, employers, and freelance clients, groups who are more likely to browse on desktop devices during standard working hours. In future campaigns, we should adjust our bid strategy to prioritise desktop users and schedule ads to appear during peak office hours. While this shift may result in a lower overall CTR, it would better align with our actual campaign goal of reaching decision-makers who are more likely to engage meaningfully with the content.

### 5. Reconsidering focus: display ads vs keyword ads

We started this campaign with the intention that keyword ads would be the main driver of traffic. However, through the Google Display Network, we observed unexpected strength from display placements. Display ads generated 22 clicks with an average CTR of 8.0%, at a cost of only £4.06. In contrast, keyword ads generated 15 clicks with a lower CTR of 0.86%, while costing £7.35. Although display ads appear more cost-effective, the sample size remains small. More importantly, user quality still needs to be validated through conversion tracking, as discussed earlier. That said, these results suggest that display ads could complement or even rival keyword campaigns in future strategies, especially for reaching wider audiences at lower costs.

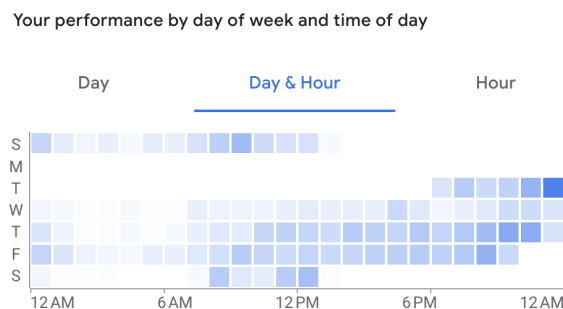


Figure 18: Ads impression by time of day

## References

- [1] Pengnate, S.F., Chen, J. and Young, A. (2021). Effects of clickbait headlines on user responses: An empirical investigation. *Journal of International Technology and Information Management*, 30(3), Article 1. Available at: <https://scholarworks.lib.csusb.edu/jitim/vol30/iss3/1> [Accessed 3 Jun. 2025].
- [2] Küçükvardar, M. (2023). Analyzing economic news within the framework of click-oriented journalism. *Türkiye İletişim Araştırmaları Dergisi*, (42), pp.145–168. Available at: <https://doi.org/10.17829/turcom.1194831> [Accessed 3 Jun. 2025].
- [3] WordStream (2024). 2024 Google Ads Benchmarks by Industry. *WordStream Blog*. Available at: <https://www.wordstream.com/blog/2024-google-ads-benchmarks> [Accessed 9 Jun. 2025].

## Appendix

Table 3: Keywords chosen (detailed)

<b>Keywords</b>	<b>Avg Monthly Search</b>	<b>Competition</b>	<b>Lower range</b>	<b>Higher Range</b>
data visualisation	5000	Low	1.94	6.07
data collection	5000	Low	1.30	3.86
data analyst	50000	Medium	0.91	2.06
data insights	500	Low	1.88	6.38
data consulting	500	Low	1.82	6.60
turning data into insights	50	Low	4.37	10.10
power bi	500000	Low	0.77	3.06
data analyst consulting	500	Low	2.01	9.41
data analysis projects	500	Medium	0.96	2.63
data analysis portfolio	500	Low	0.53	2.49