

Analysis of Website User Insights through Google Analytics

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Nithyadharshini V

*Department of Information Technology
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore, Tamil Nadu, India*

Dr. N. Krishnaveni

*Department of Information Technology
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore, Tamil Nadu, India*

Dr. T. Jayamalar

*Department of Information Technology
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore, Tamil Nadu, India*

Nazreen Firdouse B

*Department of Information Technology
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore, Tamil Nadu, India*

Abstract

The analysis of website user insights through Google Analytics is based on how visitors engage with a website based on real-time statistics. The website is connected to Google Analytics to monitor important metrics like page views, session starts, scrolling, time on page, clicks, and first-time visits. Google Analytics categorises groups of users by activity, location, and device type to note content that receives greater engagement or drop-offs. Google Tag Manager assists in defining custom events such as button clicks and scroll tracking without necessarily modifying the website code. This provides further insight into user behaviour. These events display on basic charts and reports on the Google Analytics dashboard. All important metrics including bounce rate, session duration per page, new vs. return visitors provide assessment of site performance and engagement of the users. Analysing the segments can be used to improve website layout, design, and content. This project demonstrates how one can use free tools like Google Analytics and Tag Manager to make data-driven decisions to enhance website user experience and usability.

Keywords: Google Analytics, Website Visitors, User Behaviour, Segments, Google Tag Manager, Event Tracking, Real Time Analytics, Website Performance, Traffic Analysis

Introduction

Visitor analysis is important to identify where visitors are coming from, the demographics of the users, their behaviours, and engagement. Information about audience interactions with a site is provided by metrics such as bounce rate, duration of session, and conversions. New tools for web analytics allow for easy tracking of site visitors and segmentation of users. Google Analytics, Adobe Analytics, and Microsoft Clarity are popular options for visitor analysis. Many website owners are familiar

with Google Analytics, first released in 2005. Google Analytics has now transitioned to Google Analytics 4 (GA4), released in October 2020. Google Analytics 4 has an event-driven model, allowing for tracking in real-time, tracking across platforms, predictive insights, and measurement with a privacy-first approach.

Google Analytics 4 allows for advanced segmentation, grouping of users based on demographics, traffic source, and behaviour; this segmentation is important for personalisation of content and optimising users' experience. The aim of this project is visitor analysis using Google Analytics 4 (GA4) with Google Tag Manager (GTM) to track scrolling or click events in addition to several user engagement events during a visit, such as session, engagement, and engagement duration. The project makes use of segments to categorise visitors, compare experience and goal metrics, and identify insights for applying changes to improve content strategy, user experience, and conversion outcomes.

Related Work

Lyudmila S. (2020) used Web Analytics and Google Analytics to improve user experience and service suggestions in a library website context, though the work was limited by event monitoring scope and privacy issues [1]. Griva et al. (2018) applied market basket data to segment visits, enhancing targeting and personalisation, but faced challenges with data quality and the need for expert input [2]. Omidvar, Mirabi, and Shokri (2011) examined visitor types and connection speeds but were limited by difficulty in interpreting search visitor behaviour and excessive data [3]. Khairuzzaman et al. (2020) reflected user behaviour trends on a university website and supported content decisions, though restricted by single-point focus and available data [4]. Mission R. (2023) analysed traffic sources and device preferences using Google Analytics, suggesting engagement improvements, but was limited by tool dependency and short-term focus [5]. Kumar and Shivakumara (2016) studied browser use, queries, and traffic sources to improve usability insights but were constrained by narrow focus and single-tool analysis [6]. Fang W. (2007) showed GA's role in data-driven design and user experience, though with limitations and security risks [7]. Chen et al. (2020) improved student engagement and marketing metrics using Google Analytics but were constrained by incomplete data and duplicate records [8]. Awichanirost and Phumchusri (2020) applied regression analysis on a tourism site to find session impacts on engagement, but results were sector-specific [9]. Shaheen (2023) showed GA's role in performance, lead generation, and content optimisation, but noted cookie blocking, ad blockers, and limited report customisation [10]. Dinis, Costa, and Pacheco (2012) used one year's data to improve visitor acquisition and content strategy but issues included high bounce rate and lack of e-commerce [11]. Romanowski and Konak (2016) showed quizzes enhanced student use and course design, though restrictions included institutional WordPress policies and limited effect of some interactive elements [12].

Methodology

This study's goal is to analyse website visitor interactions using Google Analytics (GA) Segments to derive actionable information. The methodology encompasses website creation, GA account setup, property configuration, tracking code installation, creating segments, user behaviour analysis using segments, and report generation.



Figure 1 Methodology overview diagram

Website Creation

The first step was to design a webpage with a bootstrap template. The site was purposely intended to be clean and served as a platform to monitor, analyse, and track historical user activity. The website was built with clean HTML, CSS, and minimal JavaScript to keep it fast and fluid. The website went live after local development and was hosted on the internet through a web hosting service. Live data collection was supported through hosting with Google Analytics. The primary goal was to keep an interactive page that could easily monitor visitor involvement.

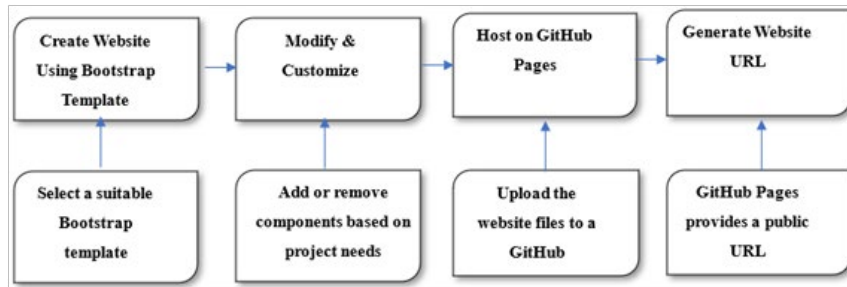


Figure 2 Website Creation steps

GA Account Setup

To get started with Google Analytics, one goes to the official site and logs in using a Google account. Once logged in, the “Start Measuring” button is clicked and a meaningful account name is entered. Data sharing preferences are then selected, and Google Analytics then shows the terms and conditions. When these steps are completed, a new Google Analytics 4 (GA4) account is created. GA4 enables real-time data collection and provides advanced tracking capabilities, allowing website activity to be analysed more effectively and turned into useful insights.

Figure 3 Account Setup

Property Configuration

In Google Analytics, a property is a container that stores and organises all the visitor tracking information for a particular website. The process kicks off by naming the property to be tracked clearly so that it can be differentiated from other websites in the same Google Analytics account. After the terms of service are accepted, the website URL is typed in correctly as it is the source through which data will be gathered. Google Analytics then creates an open data stream that is always tracking page views, events, and user actions. In addition, a unique Measurement ID is generated, which is the key value that associates and binds the website with the Google Analytics service.

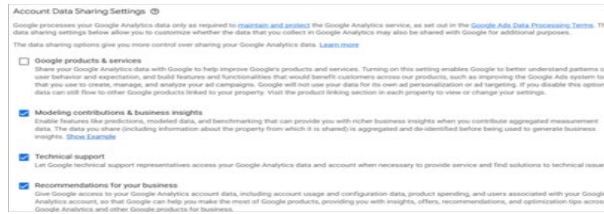


Figure 4 Create a Property

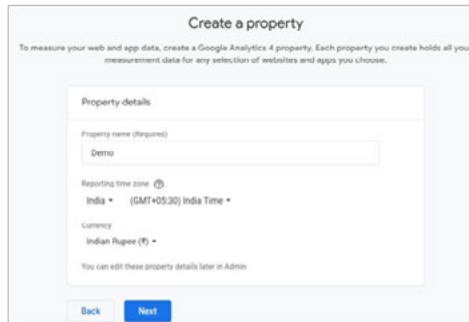
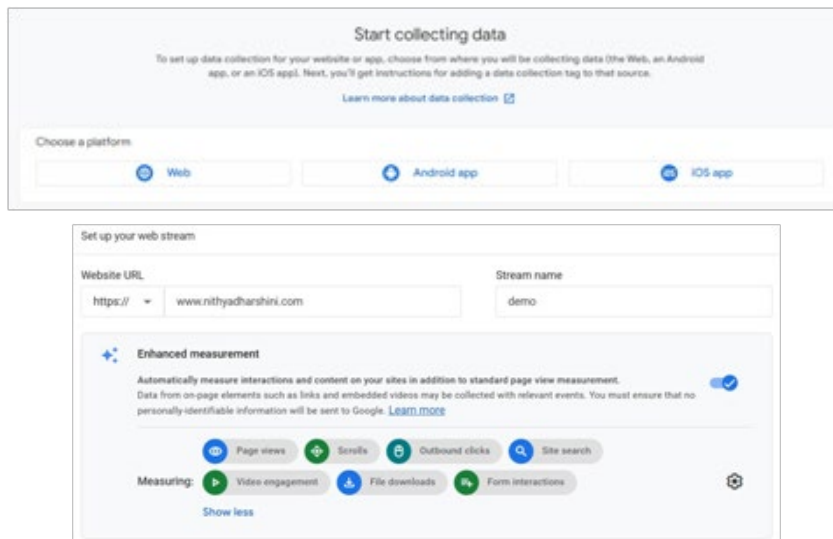


Figure 5 Data Stream Collection and URL Setup

Tracking Code Installation

To collect visitor data in GA4, a tracking code must be added to the website. When creating a web data stream in GA4, a unique Measurement ID is created that allows Google Analytics to link to the website and collect data. The tracking code (Global Site Tag) is copied from the GA4 dashboard and pasted inside the <head> of the website HTML file. The code will apply to all pages, ensuring that all visitor data is collected. If set up correctly, GA4 will automatically track page views, session starts, engagement, and first-time visits.



**Figure 6 Global Site Tag**

Creating Segments

Segments in Google Analytics serve as a tool for segmenting and evaluating subsets of data, permitting the examination of specific categories of users, sessions, or events. Segmenting data helps to understand the behaviour of defined sets by segregating audiences by one or more conditions such as traffic sources and behaviour or demographics. Segments may be created on the basis of user behaviour (e.g., by page views), session properties (e.g., by time in session), or event parameters (e.g., by button click). Segments also provide the option for side-by-side comparison of two sets, enabling identification of patterns and refinement of data.

Table 1 Segment Categories

Traffic Source Segments	Technology Segments	User Demographics Segments	User Behaviour Segments
Direct Traffic	Browser	Country	Page Views
Organic Search	Device Category	Region	Session Starts
Referral Traffic	Device Model	City	First Visit
	Device Brand	Age	User Engagement
	Screen Resolution	Gender	Scroll Events
	Operating System	Interest	
	OS Version		

Traffic Source Segments identify where website visitors are coming from—Direct Traffic, Organic Search, and Referral Traffic. User Behaviour Segments (Page Views, Session Start, First Visit, User Engagement, Scroll Events) measure how visitors use the website. Technology Segments help understand the technical environment from which visitors are accessing the site. User Demographics Segments indicate the characteristics of the visitors including Country, Region, City, Age, Gender, and Interest.

Results and Discussion

Website Creation

A website was created using a Bootstrap template and published on the web using GitHub, allowing viable data collection and analysis. Google Analytics was implemented in the website to track and collect data about visitor actions including page views, session starts, user engagement, first-time visitors, and scrolling. The website URL is: <https://nithyadharshini30.github.io/iLanding/>

User Behaviour Segment

The tracked activities showed there were 593 users who saw pages, which turned into 1,063 page views. Session Start was recorded with 589, meaning every user opened at least one session. First Visit was recorded

with 589 users, therefore they visited the site for the first time. User Engagement recorded 204 users who engaged with the site content beyond the initial view. Scroll Events were counted for 398 users who scrolled on the page. Understanding these user behaviours gives useful information that can be applied to improve website delivery, content effectiveness, and overall user experience.

Event name	Event count	Total users	Event count per active user
Total	3,243 100% of total	609 100% of total	5.52 Avg 0%
1 page_view	1,063 (32.78%)	593 (97.37%)	1.88
2 session_start	752 (23.19%)	589 (96.72%)	1.34
3 first_visit	589 (18.16%)	589 (96.72%)	1.05
4 scroll	473 (14.59%)	398 (65.35%)	1.19
5 user_engagement	366 (11.29%)	204 (33.5%)	1.79

Figure 7 User Events

Traffic Source Segment

There were a total of 772 sessions captured, of which 414 were engaged sessions, providing an average engagement rate of 53.63%. Users spent an average of 15 seconds per session, and created 4.20 events per session on average.

Direct Traffic: 709 sessions (91.84%), with 393 engaged sessions and a 55.43% engagement rate, indicating users who visited by bookmark or by typing the URL directly.

Organic Traffic: 39 sessions (5.05%) with 18 engaged sessions, a 46.15% engagement rate, and an average engagement time of 16 seconds, indicating good SEO practices.

Referral Traffic: Only 3 sessions (0.39%) but a higher engagement rate of 66.67% and average time engaged of 2 minutes and 2 seconds, indicating that referred traffic found the content very relevant.

Unassigned Traffic: 27 sessions (3.5%) with only 1 engaged session and a very low engagement rate of 3.7%, suggesting limited or poor interaction through this channel.

Session primary_Channel Group	Sessions	Engaged sessions	Engagement rate	Average engagement time per session	Events per session
Total	772 100% of total	414 100% of total	53.63% Avg 0%	15s Avg 0%	4.20 Avg 0%
1 Unassigned	27 (3.5%)	1 (0.24%)	3.7%	4s	1.67
2 Referral	3 (0.39%)	2 (0.48%)	66.67%	2m 02s	3.67
3 Organic Search	39 (5.05%)	18 (4.35%)	46.15%	16s	4.31
4 Direct	709 (91.84%)	393 (94.93%)	55.43%	15s	4.26

Figure 8 Traffic Source Details

Technology Segment

Browser: Chrome is the dominant browser with 543 active users (92.5%) and an engagement rate of 53.63%. Safari came second with 17 users and a slightly better engagement rate of 54.17%. Samsung Internet had 13 users (2.21%) with 53.33% engagement. Microsoft Edge had only 3 users but ranked the highest engagement rate at 70%.

Device Category: Of 587 active users, 335 (57.07%) accessed the site using mobile devices, while 253 (43.1%) accessed using desktop devices. This clearly indicates the prominence that must be placed on mobile responsiveness and fast loading.

Device Brand: Among active users with identified brands, Vivo and Xiaomi both report 9 users each. Realme follows with 5 users and Samsung with 4, showing the popularity of mid-range Android devices.

Screen Resolution: The most common is 1600×900 with 222 users (37.82%) and a 50.2% engagement rate. The resolution 393×851 had only 13 users but the highest engagement rate of 76.47%.

Operating System: Android dominates with 313 users (53.32%) and 238 engaged sessions (57.49%); Windows holds second place with 248 users (42.25%) and 154 engaged sessions (37.2%). Android 14.0.0 had 88 users (14.99%) and Windows 11, with only 23 users, had the highest engagement rate (72.97%).

Browser		Active users	New users	Engaged sessions	Engagement rate
<input checked="" type="checkbox"/>	Total	587 100% of total	589 100% of total	414 100% of total	53.63% Avg 0%
<input checked="" type="checkbox"/>	1 Chrome	543 (92.5%)	545 (92.53%)	377 (91.06%)	53.63%
<input checked="" type="checkbox"/>	2 Safari	17 (2.9%)	17 (2.89%)	13 (3.14%)	54.17%
<input checked="" type="checkbox"/>	3 Samsung Internet	13 (2.21%)	13 (2.21%)	8 (1.93%)	53.33%
<input checked="" type="checkbox"/>	4 Android Webview	6 (1.02%)	6 (1.02%)	3 (0.72%)	42.86%
<input type="checkbox"/>	5 Opera	4 (0.68%)	4 (0.68%)	6 (1.45%)	46.15%
<input checked="" type="checkbox"/>	6 Edge	3 (0.51%)	3 (0.51%)	7 (1.69%)	70%
<input type="checkbox"/>	7 Firefox	1 (0.17%)	1 (0.17%)	0 (0%)	0%

Figure 9 Browser Details of the User

Device category		Active users	New users
<input checked="" type="checkbox"/>	Total	587 100% of total	589 100% of total
<input checked="" type="checkbox"/>	1 mobile	335 (57.07%)	335 (56.88%)
<input checked="" type="checkbox"/>	2 desktop	253 (43.1%)	254 (43.12%)

Figure 10 Device Category of the User

Device model		Active users	New users	Engaged sessions	Engagement rate
<input checked="" type="checkbox"/>	Total	587 100% of total	589 100% of total	414 100% of total	53.63% Avg 0%
<input type="checkbox"/>	1	220 (37.48%)	222 (37.69%)	122 (29.47%)	50.21%
<input type="checkbox"/>	2 (not set)	47 (8.01%)	46 (7.81%)	48 (11.59%)	58.54%
<input type="checkbox"/>	3 iPhone	22 (3.75%)	22 (3.74%)	17 (4.11%)	54.84%
<input type="checkbox"/>	4 M2010J19CI	6 (1.02%)	6 (1.02%)	6 (1.45%)	85.71%
<input type="checkbox"/>	5 V2111	6 (1.02%)	6 (1.02%)	4 (0.97%)	50%
<input type="checkbox"/>	6 CPH2239	5 (0.85%)	5 (0.85%)	4 (0.97%)	50%
<input type="checkbox"/>	7 V2307	5 (0.85%)	5 (0.85%)	1 (0.24%)	20%
<input type="checkbox"/>	8 CPH2467	4 (0.68%)	4 (0.68%)	2 (0.48%)	50%
<input type="checkbox"/>	9 Nexus 5X	4 (0.68%)	4 (0.68%)	0 (0%)	0%
<input type="checkbox"/>	10 SM-E146B	4 (0.68%)	4 (0.68%)	2 (0.48%)	50%

Figure 11 Device Model of the User

Device brand	Active users
Totals	34
1 Vivo	9
2 Xiaomi	9
3 Realme	5
4 Samsung	4
5 OPPO	3
6 OnePlus	2
7 Huawei	1
8 Motorola	1

Figure 12 Device Brand of the User

Screen resolution	Active users	New users	Engaged sessions	Engagement rate
Total	587 100% of total	589 100% of total	414 100% of total	53.63% Avg 0%
1 1600x900	222 (37.82%)	223 (37.86%)	124 (29.95%)	50.2%
2 360x800	60 (10.22%)	60 (10.19%)	44 (10.63%)	59.46%
3 393x873	32 (5.45%)	32 (5.43%)	31 (7.49%)	56.36%
4 1366x768	17 (2.9%)	18 (3.06%)	12 (2.9%)	50%
5 393x876	16 (2.73%)	16 (2.72%)	12 (2.9%)	52.17%
6 360x760	15 (2.56%)	15 (2.55%)	11 (2.66%)	61.11%
7 385x854	15 (2.56%)	15 (2.55%)	13 (3.14%)	56.52%
8 393x851	13 (2.21%)	13 (2.21%)	13 (3.14%)	76.47%
9 424x942	12 (2.04%)	12 (2.04%)	12 (2.9%)	54.55%
10 412x915	9 (1.53%)	9 (1.53%)	5 (1.21%)	31.25%

Figure 13 Screen Resolution

Operating system	Active users	New users	Engaged sessions
Total	587 100% of total	589 100% of total	414 100% of total
1 Android	313 (53.32%)	313 (53.14%)	238 (57.49%)
2 Windows	248 (42.25%)	250 (42.44%)	154 (37.2%)
3 iOS	22 (3.75%)	22 (3.74%)	17 (4.11%)
4 Linux	5 (0.85%)	4 (0.68%)	5 (1.21%)

Figure 14 OS of the User's Device

OS with version	Active users	New users	Engaged sessions	Engagement rate
Total	587 100% of total	589 100% of total	414 100% of total	53.63% Avg 0%
1 Windows 10	224 (38.16%)	226 (38.37%)	127 (30.68%)	49.8%
2 Android 14.0.0	88 (14.99%)	88 (14.94%)	59 (14.25%)	49.17%
3 Android 13.0.0	47 (8.01%)	47 (7.98%)	34 (8.21%)	58.62%
4 Android 15.0.0	32 (5.45%)	32 (5.43%)	35 (8.45%)	67.31%
5 Android 12.0.0	30 (5.11%)	30 (5.09%)	30 (7.25%)	53.57%
6 Android 11.0.0	27 (4.6%)	27 (4.58%)	18 (4.35%)	48.65%
7 Windows 11	23 (3.92%)	22 (3.74%)	27 (6.52%)	72.97%
8 Android 10	21 (3.58%)	21 (3.57%)	15 (3.62%)	42.86%
9 Android 10.0.0	20 (3.41%)	20 (3.4%)	17 (4.11%)	62.96%
10 Android 11	8 (1.36%)	8 (1.36%)	4 (0.97%)	36.36%

Figure 15 OS Version of the User

User Demographics Segment

Country: 99.49% of visitors (777 of 781) came from India. All 501 engaged sessions were from India, with an engagement rate of 53.24%.

Region: Tamil Nadu accounts for 95.65% of users (747 of 781 total users) and 97.6% of sessions. Maharashtra (1.28%), Karnataka (0.9%), and Telangana (0.77%) followed at much lower levels.

City: Coimbatore had the largest number of users at 605 (77.46%), though with the lowest engagement rate at 52.27%. Chennai had 100 users (12.8%) and a significantly greater engagement rate of 62.88%. Madurai had 35 users (4.48%) with a 62.5% engagement rate. Mumbai had only 5 users but the highest engagement rate at 80%.

Age: Of 773 users, 669 (86.55%) had unknown ages. The group aged 25–34 had the largest engagement rate at 62.96%, while the age range 18–24 made up 9.96% of users with a 60.95% engagement rate. Overall, younger groups (18–34) continue to show the most interaction with the content.

Gender: The data shows a higher proportion of female users at 54.1%, and male users at 45.9%.

User Interests: The largest group is Technology/Technophiles (54.39%) with mid-level engagement (52.17%). Lifestyle & Hobbies/Shutterbugs and Social Media Enthusiasts have lower numbers but much better engagement, both above 60%. Business Professionals and Mobile Enthusiasts also have above 60% engagement, suggesting these users are ready to consume content deeply.

	Country	Active users	New users	Engaged sessions	Engagement rate
<input checked="" type="checkbox"/>	Total	781 100% of total	781 100% of total	501 100% of total	53.02% Avg 0%
<input type="checkbox"/>	1 India	777 (99.49%)	776 (99.36%)	501 (100%)	53.24%
<input type="checkbox"/>	2 (not set)	4 (0.51%)	4 (0.51%)	0 (0%)	0%
<input type="checkbox"/>	3 Norway	1 (0.13%)	1 (0.13%)	1 (0.2%)	100%

Figure 16 User Country Segment

	Region	Active users	New users	Engaged sessions	Engagement rate
<input checked="" type="checkbox"/>	Total	781 100% of total	781 100% of total	501 100% of total	53.02% Avg 0%
<input checked="" type="checkbox"/>	1 Tamil Nadu	747 (95.65%)	745 (95.39%)	489 (97.6%)	54.09%
<input type="checkbox"/>	2 Maharashtra	10 (1.28%)	10 (1.28%)	6 (1.2%)	54.55%
<input type="checkbox"/>	3 Karnataka	7 (0.9%)	5 (0.64%)	2 (0.4%)	25%
<input type="checkbox"/>	4 Telangana	6 (0.77%)	6 (0.77%)	0 (0%)	0%
<input type="checkbox"/>	5 (not set)	5 (0.64%)	5 (0.64%)	1 (0.2%)	20%
<input type="checkbox"/>	6 Haryana	3 (0.38%)	3 (0.38%)	1 (0.2%)	33.33%
<input type="checkbox"/>	7 Kerala	3 (0.38%)	3 (0.38%)	1 (0.2%)	33.33%
<input type="checkbox"/>	8 Gujarat	2 (0.26%)	2 (0.26%)	0 (0%)	0%
<input type="checkbox"/>	9 Uttar Pradesh	2 (0.26%)	2 (0.26%)	2 (0.4%)	100%
<input type="checkbox"/>	10 Madhya Pradesh	1 (0.13%)	0 (0%)	0 (0%)	0%

Figure 17 User Region Segment

City	Active users	New users	Engaged sessions
Total	781 (100% of total)	781 (100% of total)	501 (100% of total)
1 Coimbatore	605 (77.46%)	600 (76.82%)	368 (73.45%)
2 Chennai	100 (12.6%)	94 (12.04%)	83 (16.57%)
3 Madurai	35 (4.48%)	33 (4.23%)	25 (4.99%)
4 (not set)	13 (1.66%)	10 (1.28%)	5 (1%)
5 Hyderabad	6 (0.77%)	6 (0.77%)	0 (0%)
6 Salem	6 (0.77%)	6 (0.77%)	3 (0.6%)
7 Bengaluru	5 (0.64%)	5 (0.64%)	1 (0.2%)
8 Mumbai	5 (0.64%)	5 (0.64%)	4 (0.8%)
9 Karaikudi	4 (0.51%)	4 (0.51%)	3 (0.6%)
10 Khopoli	3 (0.38%)	2 (0.26%)	1 (0.2%)
11 Kochi	3 (0.38%)	3 (0.38%)	1 (0.2%)

Figure 18 User City Segment

Age	Active users	New users	Engaged sessions	Engagement rate
Total	773 (100% of total)	773 (100% of total)	494 (100% of total)	53.35% (Avg 0%)
1 unknown	669 (86.55%)	667 (86.29%)	407 (82.39%)	52.31%
2 18-24	77 (9.96%)	75 (9.7%)	64 (12.96%)	60.95%
3 25-34	20 (2.59%)	20 (2.59%)	17 (3.44%)	62.96%
4 45-54	12 (1.55%)	11 (1.42%)	6 (1.21%)	37.5%

Figure 19 User Age Segment

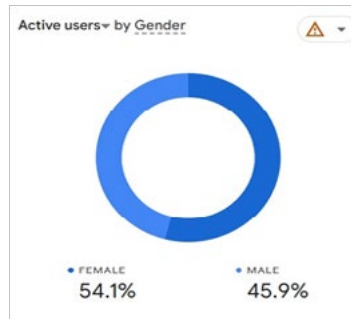


Figure 20 User Gender Segment

Demographic details: Interests	Count	Percentage	Avg. %	Avg. %	Avg. %	Count	Percentage
Total	57	100% of total	54.4%	0.43	100%	57	100% of total
1 Technology/Tech updates	21 (36.8%)	28 (54.3%)	24 (31.0%)	52.1%	0.77	214	196 (23.7%)
2 Lifestyle & wellness interests	19 (33.3%)	18 (31.6%)	20 (35.3%)	66.4%	1.05	199 (29.6%)	191 (28.2%)
3 Entertainment and Leisure/Time of South Asian	18 (31.6%)	18 (31.6%)	12 (21.6%)	55.1%	0.86	174	91 (11.0%)
4 Lifestyle & Wellness/Business & Professionals	14 (24.6%)	13 (21.1%)	14 (25.0%)	65.8%	1.05	326	158 (13.0%)
5 Media	12 (21.1%)	11 (19.3%)	16 (28.1%)	69.5%	1.33	146 (26.0%)	119 (13.8%)
6 Banking & Finance/Real estate	11 (19.3%)	11 (19.3%)	9 (16.3%)	20%	0.27	96	52 (6.2%)
7 News & Political/Local news	11 (19.3%)	11 (19.3%)	8 (17.0%)	90%	0.73	196	42 (7.0%)
8 Technology/Health & Wellness	8 (14.0%)	8 (14.0%)	8 (17.0%)	81.54%	0.68	146	59 (6.9%)

Figure 21 User Interest Segment

Conclusion and Future Scope

This report analysed user activity on the website via Google Analytics from January 2 – April 30, 2025. From this period, there were a total of 781 users and 780 new users, with a total of approximately 3,900 events recorded including page views, click-throughs, and interactions. Total users were up 78,000% while new users were up 77,900%, indicating strong growth. This data indicates strong interest and increasing activity, offering insight that will enhance current and future site performance.

This study can be expanded upon with advanced analytic and data visualisation tools, including heatmaps to track clicks and scroll behaviour, as well as session recordings to see where users have issues with usability. Machine learning can help predict user behaviour and suggest relevant content to enhance engagement. An SEO-based approach in terms of optimising content, increasing site speed, and looking for keywords based on user behaviour will allow increased visibility. Real-time alerts to notify about traffic or engagement decline will help maintain performance, all leading to improved user experience, SEO, and data-informed decisions.

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