Social. Infra Cost Estimate

19/11/2025

Overview

This report contains:

- The usage costs of **Google Maps** vs **Mapbox** (as presented in these tables).
- Infrastructure costs on **AWS** (from the provided AWS estimate).

Maps

This section compares the operational costs of Google Maps and Mapbox based on realistic usage assumptions, including map loads, autocomplete searches, and nearby location updates.

Assumptions

To estimate the number of requests for each mapping feature in both Google Maps and Mapbox, several usage assumptions were defined. For **Map Load**, we assumed that each user triggers this event twice per day. For **Search Autocomplete**, the models differ between providers: in **Google Maps**, it was considered that each user performs 10 autocomplete searches per month, whereas in **Mapbox**, which charges per session rather than per request, we assumed two sessions per month. For **Nearby Search**, the same logic was applied to both platforms: we estimated that a user is moving or away from home for an average of four hours per day, during which location-based updates are triggered every five minutes. Although cost optimizations could be applied, such as issuing a Nearby Search request only when the user's position changes by at least 30 feet, this approach may not be reliable due to the potential inaccuracy or jitter of location data, which could result in missed updates or inconsistent behavior.

Google Maps vs Mapbox

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All mapping cost estimates were calculated using the official pricing tools from each provider: the **Google Maps Cost Calculator** and the **Mapbox Pricing Calculator**.

At 1,000 users

- Google Maps: **$1,726.00**
- Mapbox: **$62.50**
- **Google is 27.6× more expensive**

At 10,000 users

- Google Maps: **$16,313.00**
- Mapbox: **$2,517.50**
- **Google is 6.48× more expensive**

At 100,000 users

- Google Maps: **$75,273.00**
- Mapbox: **$5,335.00** (need to contact sales)

AWS

(from the AWS estimate)

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This section outlines the estimated monthly costs of running the application on AWS, based on a production-ready architecture designed for reliability and long-term growth. The setup leverages managed services such as RDS, Fargate, ALB, and CloudWatch, which allow the system to scale seamlessly as usage increases, without requiring manual server management or significant operational overhead. This architecture is recommended because it provides strong security, automatic scaling, high availability, and predictable costs, making it well-suited for applications expected to grow steadily over time.

Total AWS Monthly Cost: $151.43

Breakdown:

- RDS PostgreSQL: **$55.59**
- NAT Gateway: **$32.85**
- Load Balancer (ALB): **$17.60**
- CloudWatch: **$11.09**
- WAF: **$12.00**
- Fargate: **$8.89**
- EC2 + S3 + SES + Route53 + ECR + KMS + data transfer: minor amounts

Conclusions

The analysis shows that Mapbox is significantly more cost-efficient than Google Maps across all user volumes, with especially large savings at scale. While Google offers richer POI data, its request-based billing quickly becomes expensive.

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The projected AWS infrastructure expenses total **$151.43 per month**, demonstrating that the application can operate reliably at a very low baseline cost. With modest spending across core services, such as RDS, NAT Gateway, ALB, CloudWatch, and WAF, the platform achieves a strong balance of performance, security, and scalability without requiring significant monthly investment.