We analyzed 4,000 user sessions to understand how time spent on a page relates to revenue.

Through exploratory data analysis (EDA) and statistical modeling, the results reveal a complex relationship that defies simple patterns.

Q1: What's the relationship between Time on Page and Revenue?

Pearson correlation: -0.555 → suggests a negative linear relationship.

Spearman correlation: -0.608 → implies a positive ranked (monotonic) trend.

Linear model R²: 0.31 → only 31% of revenue variance is explained by time on page.

The relationship is complex and non-linear.

Key Insights:

• Quick conversions dominate — people aren't lingering when they buy.

• But there's a second story: some long sessions (very few) show completely different behavior.

• Outliers — especially the top 1% in session length or spend — are skewing things big time.

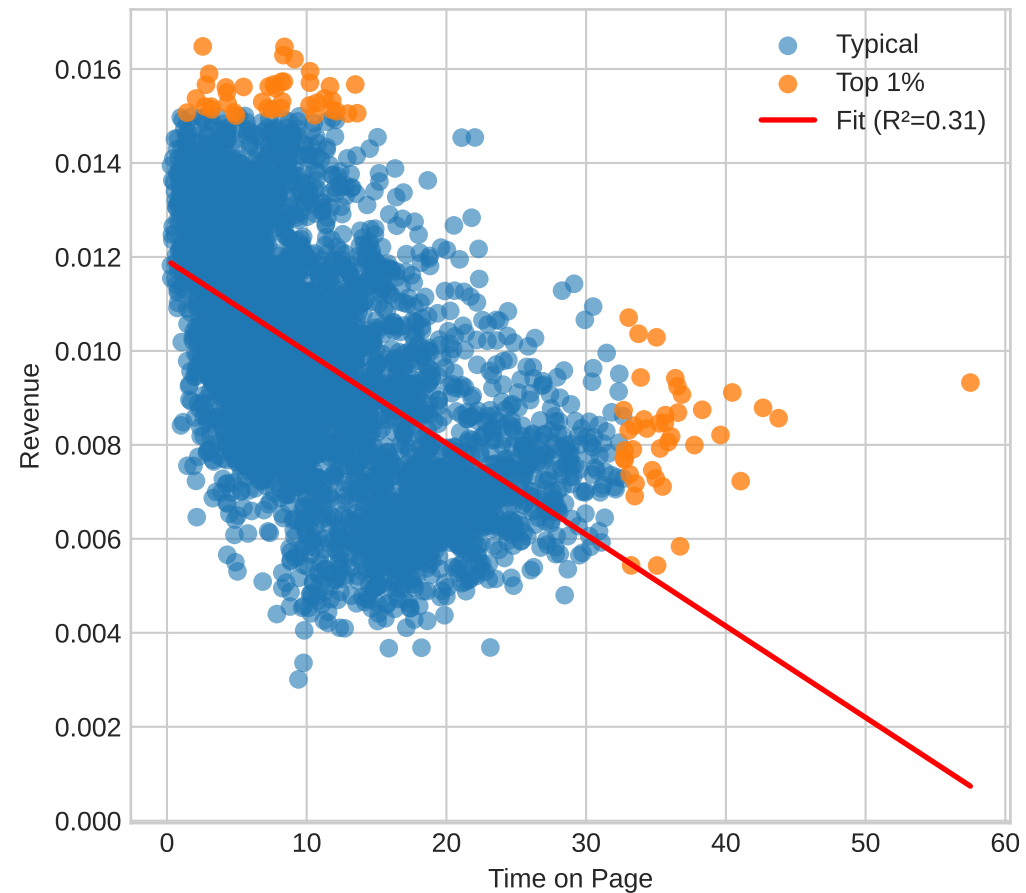## Q2: Does this hold when controlling for other variables?

The relationship likely varies based on several factors:

• Traffic source

• Device

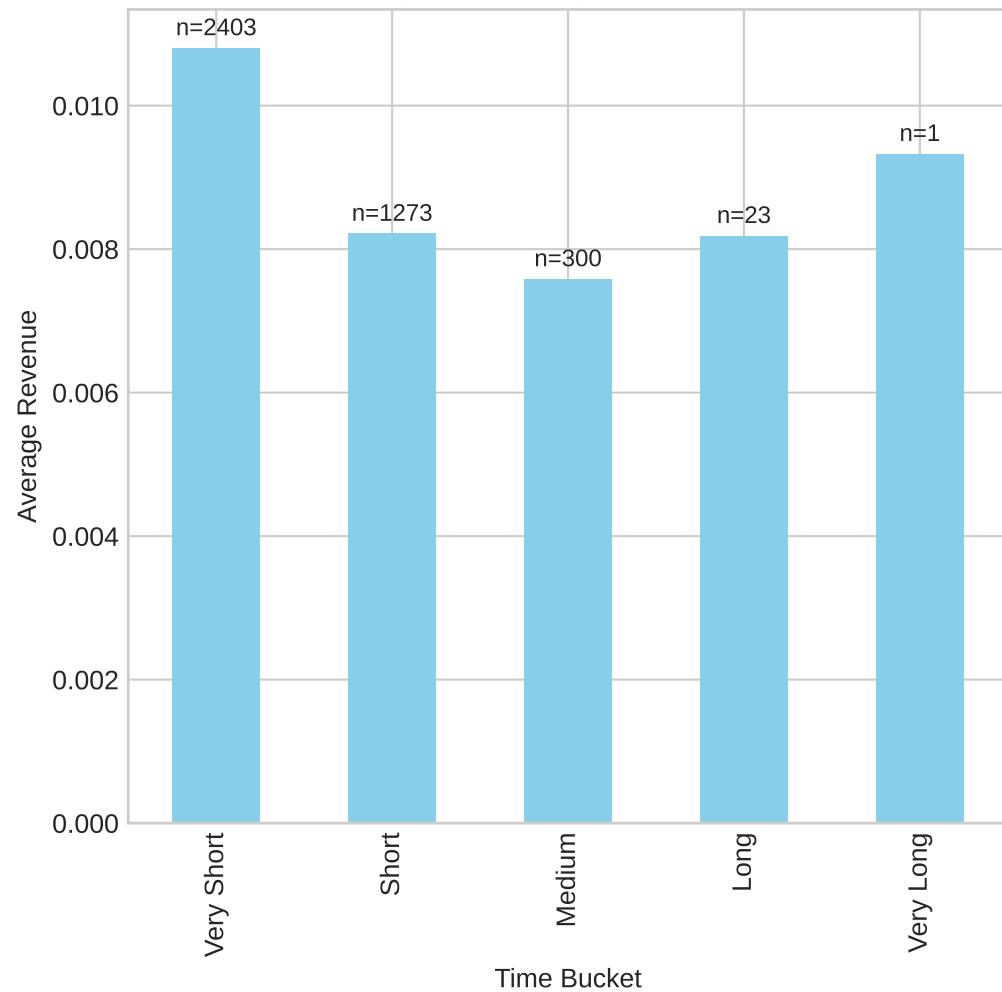• Product complexity

• User intent

• Time of day or season

Key Findings:

• Mixed correlations: Pearson (-0.555) suggests revenue drops with time, Spearman (-0.608) shows higher time often means higher rank in revenue.

• Short sessions dominate: Most users convert quickly, skewing overall trends.

• Outliers skew results: The top 1% of sessions heavily influence correlation patterns.

• Low explanatory power: Time on page accounts for only 31% of revenue variation.

Revenue vs Time on Page

- Typical
- Top 1%
- Fit (R²=0.31)

Avg Revenue by Time Bucket

n=2403, n=1273, n=300, n=23, n=1

Time buckets: Very Short, Short, Medium, Long, Very Long

Revenue Distribution by Time Bucket