



PAID MEDIA SPEND ANALYSIS

Regression Analysis to predict revenue
and understand channel contribution

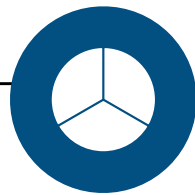
By Jaime Garvey

MOTIVATION

How can we
understand how **paid marketing channels**
are **driving revenue** to better **allocate budget**,
identify **optimal spend** levels, and
forecast key metrics?

ASSUMPTIONS

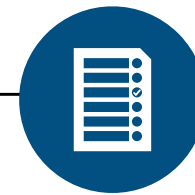
Data Context Assumption



Target: Revenue

Features:
Combinations of
Paid Media &
Funnel Stages

Business Priority



Business
prioritizing model
interpretability
over predictive
power

FEATURES & TRANSFORMATIONS

What features & transformations were considered?

1. Business

- **Aggregating features by platform or funnel**

2. Control

- **Date features (Month, Quarter, End of Quarter, etc.)**
- **Lag Features (dependent variables)**

1. Weekly Observations (vs. Daily)

2. Achieving Stationarity

1. Log transformation

2. Differencing

3. Standardization

MVP MODEL METHODOLOGY

Model Steps

1. Preprocess Data
 - Log Transformation
 - First Order Differencing
 - Mean Normalization
2. Linear Regression (log-log model)
3. Time Series Split
4. Backwards Feature Elimination
5. Convert Data to Original Scale

Output

Decomposition
Chart

Composition
Chart

RESULTS

Model	Technique	Score
Linear Regression	Regression	0.0154
Ridge	Regression	0.0152
Random Forest	Regression	0.0159

MVP Model
due to
interpretability
and
performance

FUTURE WORK

1. Establish **base model** to identify base revenue levels before paid media contributions
2. Implement **ridge regression** to prevent overfitting
3. Incorporate **Saturation Effect** (i.e., Adstock transformations)

Thank You

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