



# Quality Alloys, Inc

## Evaluating Effectiveness of Promotional Activities

### TEAM 6

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# Company Information

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Small to mid-sized industrial distributor

Niche market

Good industry position

- Significant bargaining power
- Low threat of substitutes and entrants
- Moderate competitor rivalry

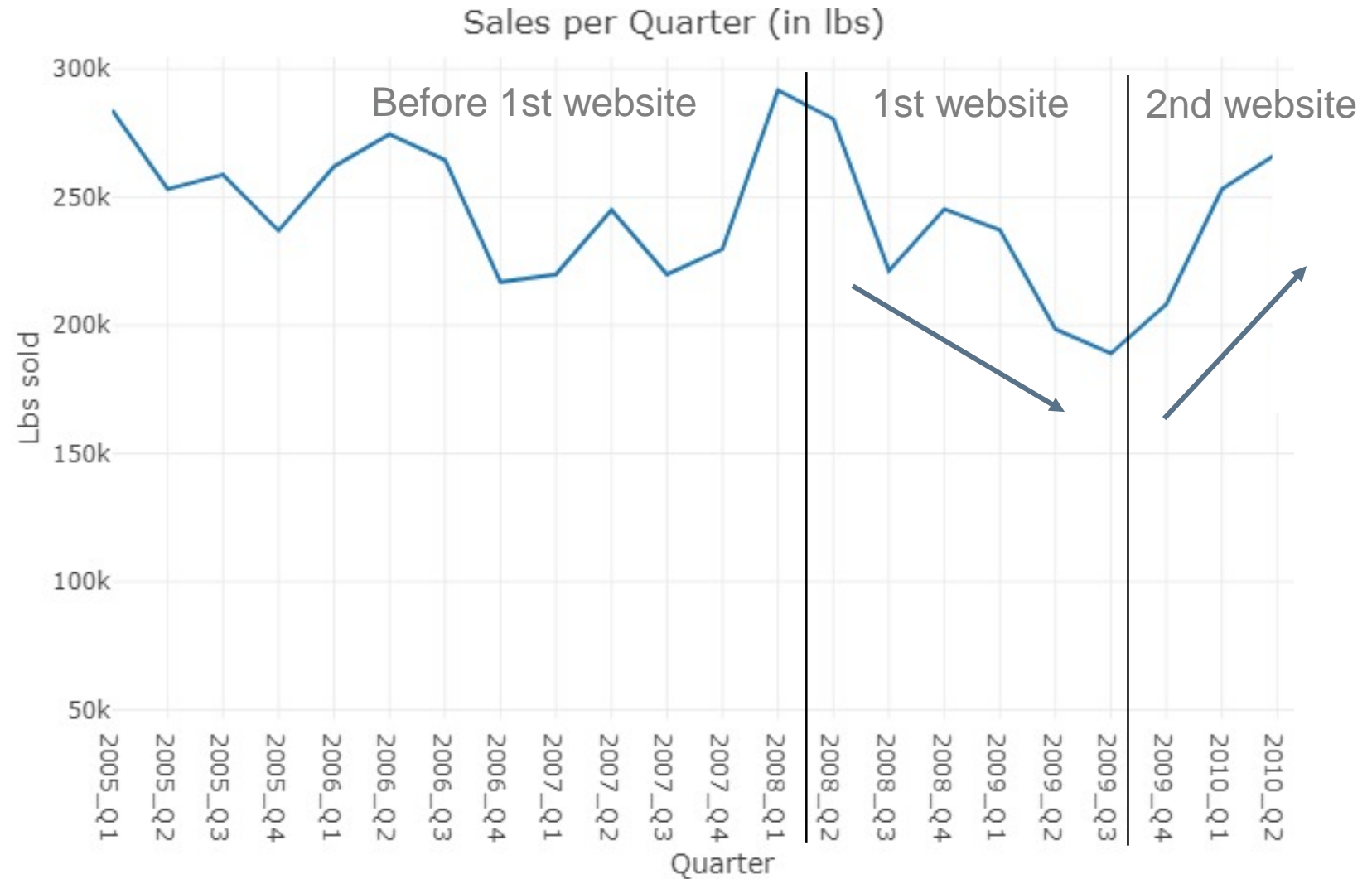
Marketing efforts

- Direct mail, trade advertising, paid listings and ads
- Marketing brochure, company websites

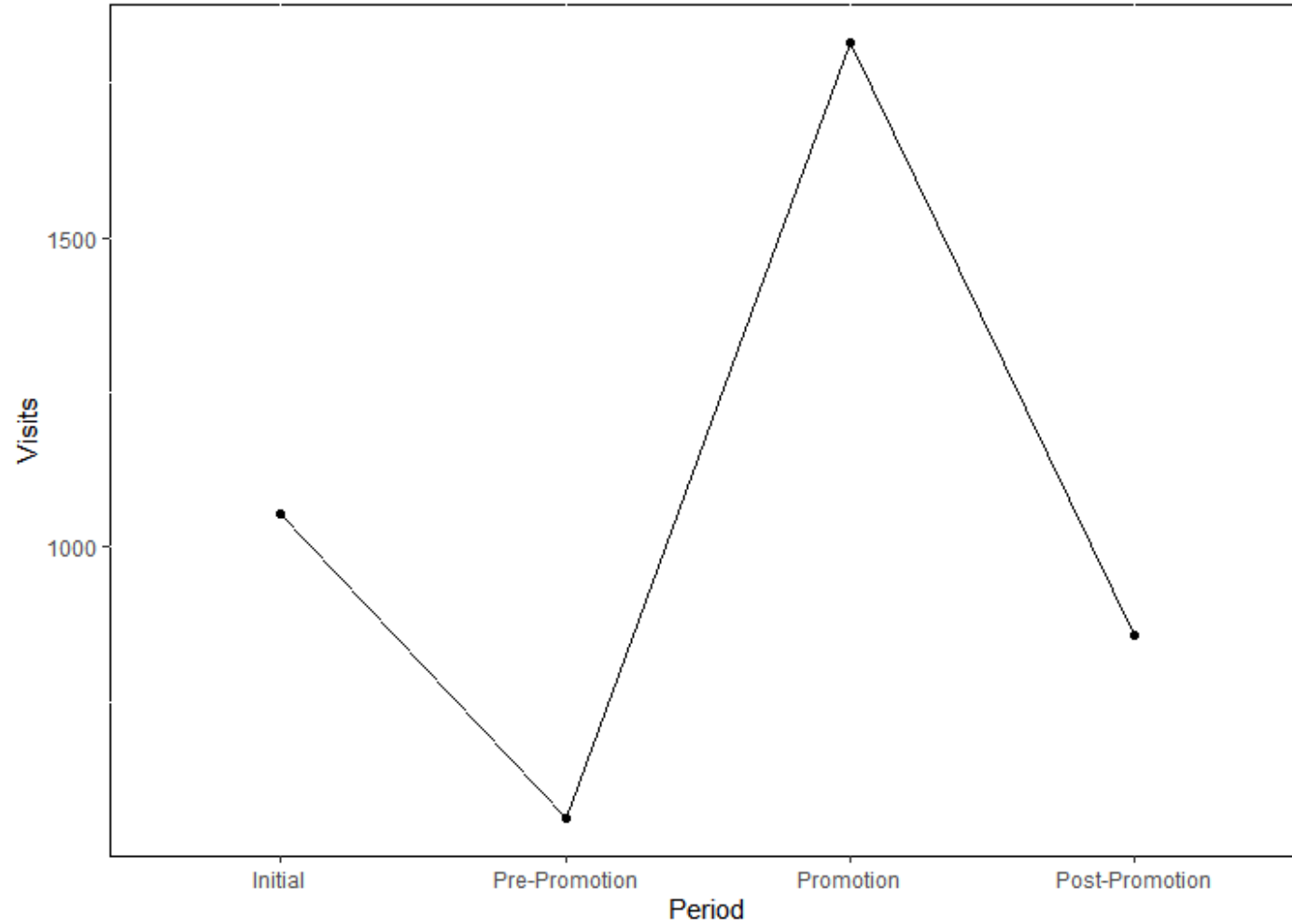
## Insights: Sales increase with second rather than first website

Decreasing quantity of sales during first QA website launch

Sales increase after launch of the second website.



Average visits per Period

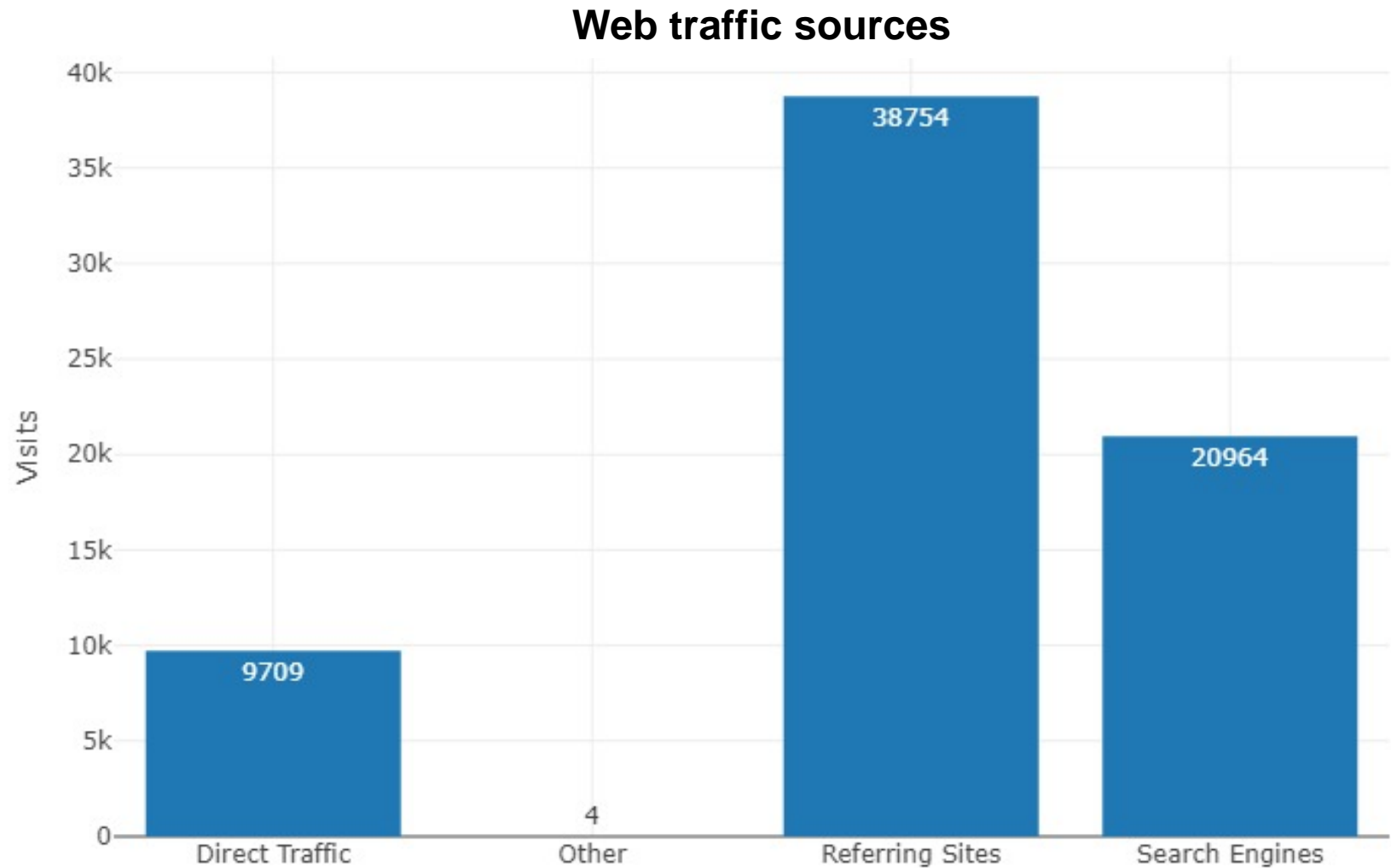


Insights:  
Increased  
visits during  
promotion  
period

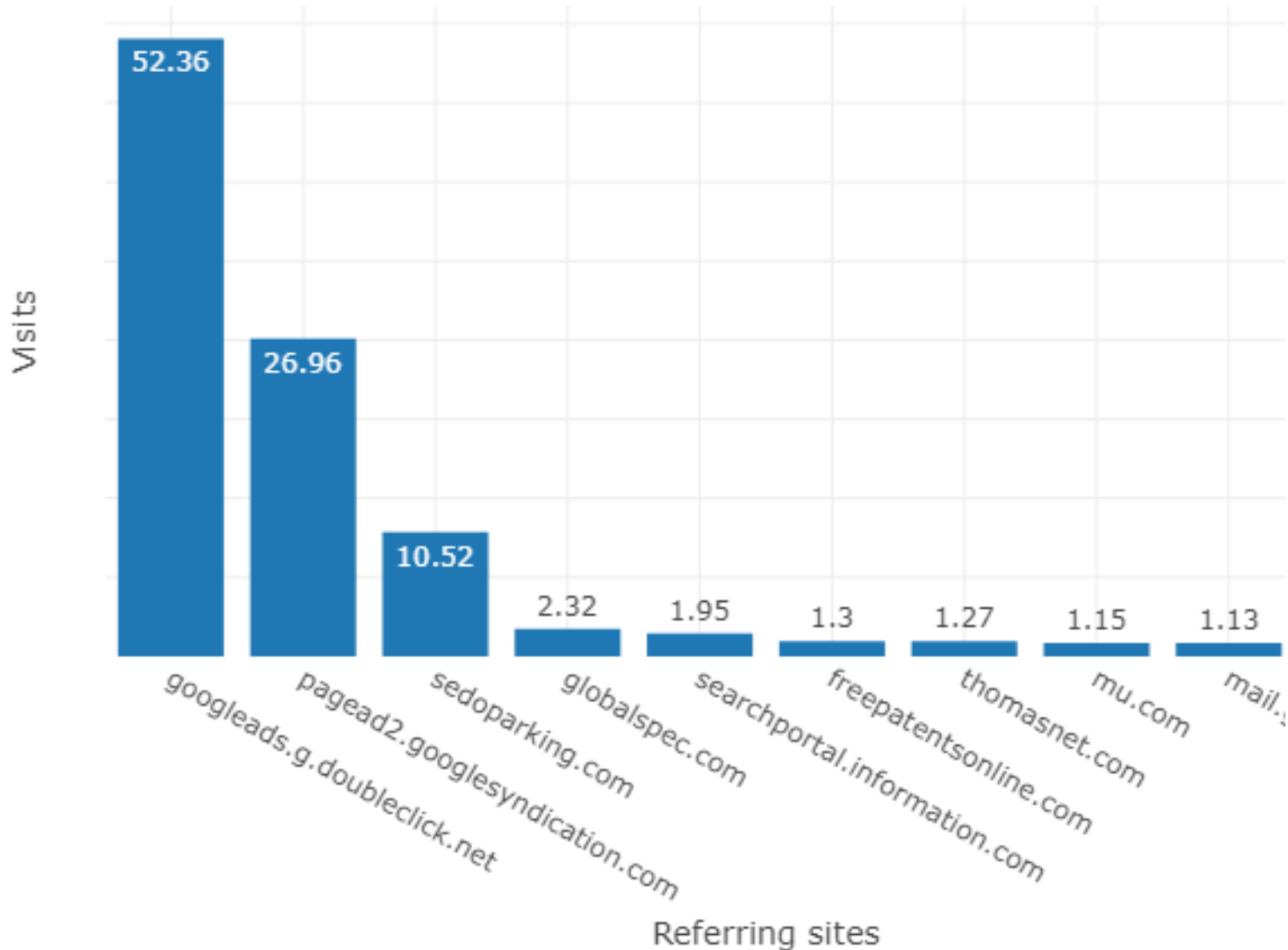
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# Insights: Web traffic stems mainly from referral sites

Referring sites generate most of the traffic for Quality Alloys Inc.



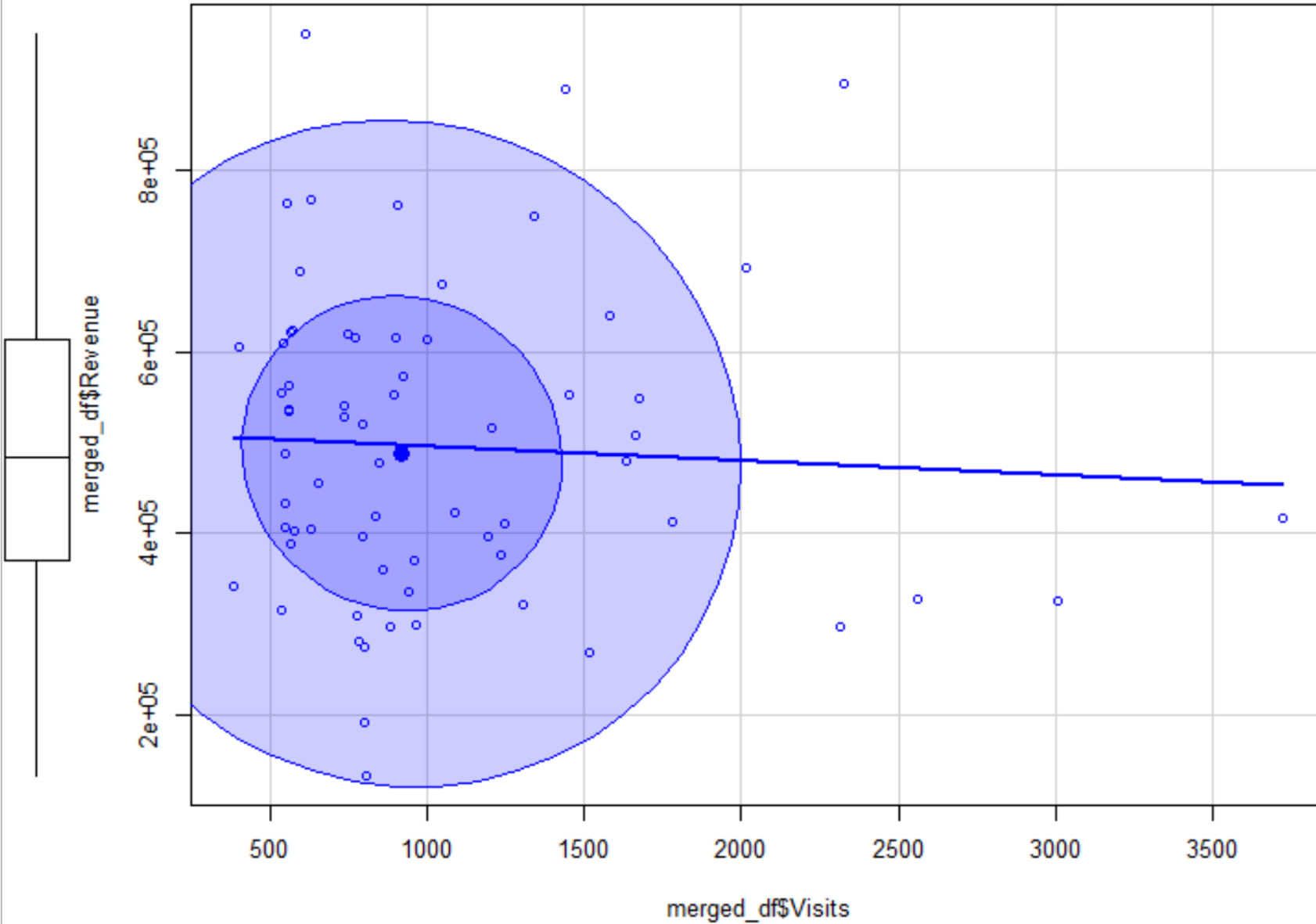
Top 10 Referring sites in %



# Web Traffic Referrals

Quality alloy Inc. pays to GlobalSpec and ThomasNet. However, total traffic generated by both amounts to less than 4%.

## Linear regression- Visits and Revenue

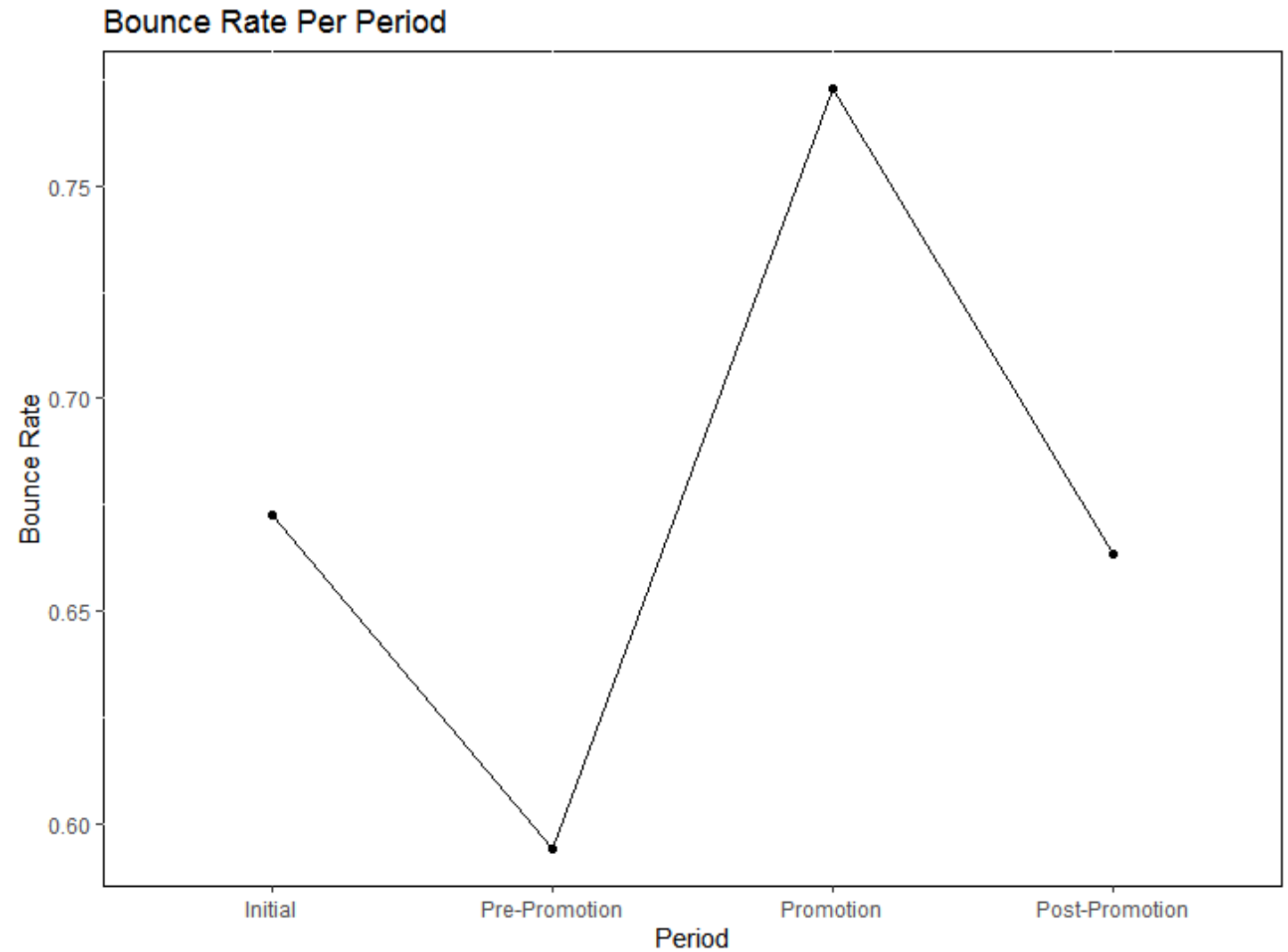


Insights:  
Increased visits  
does not correlate  
with revenue

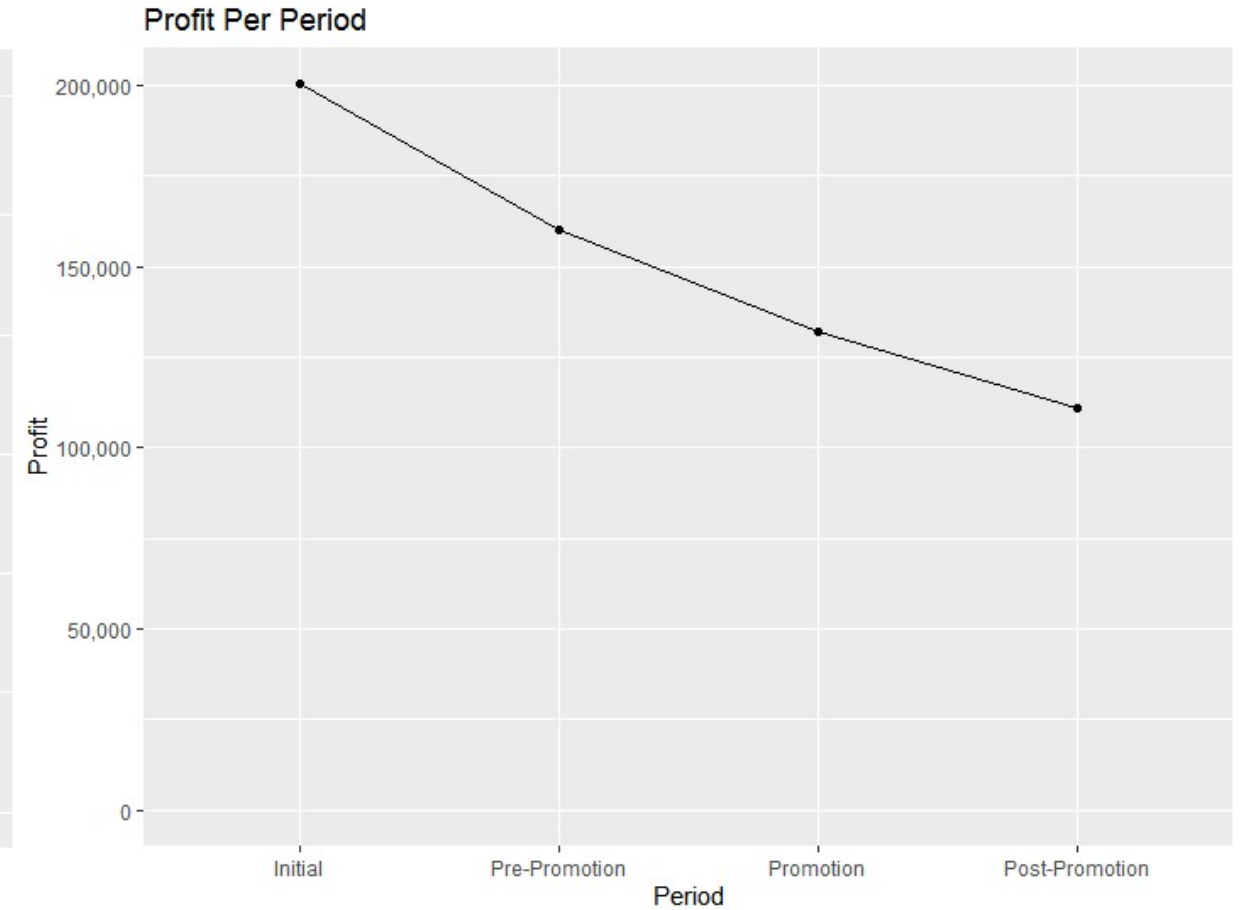
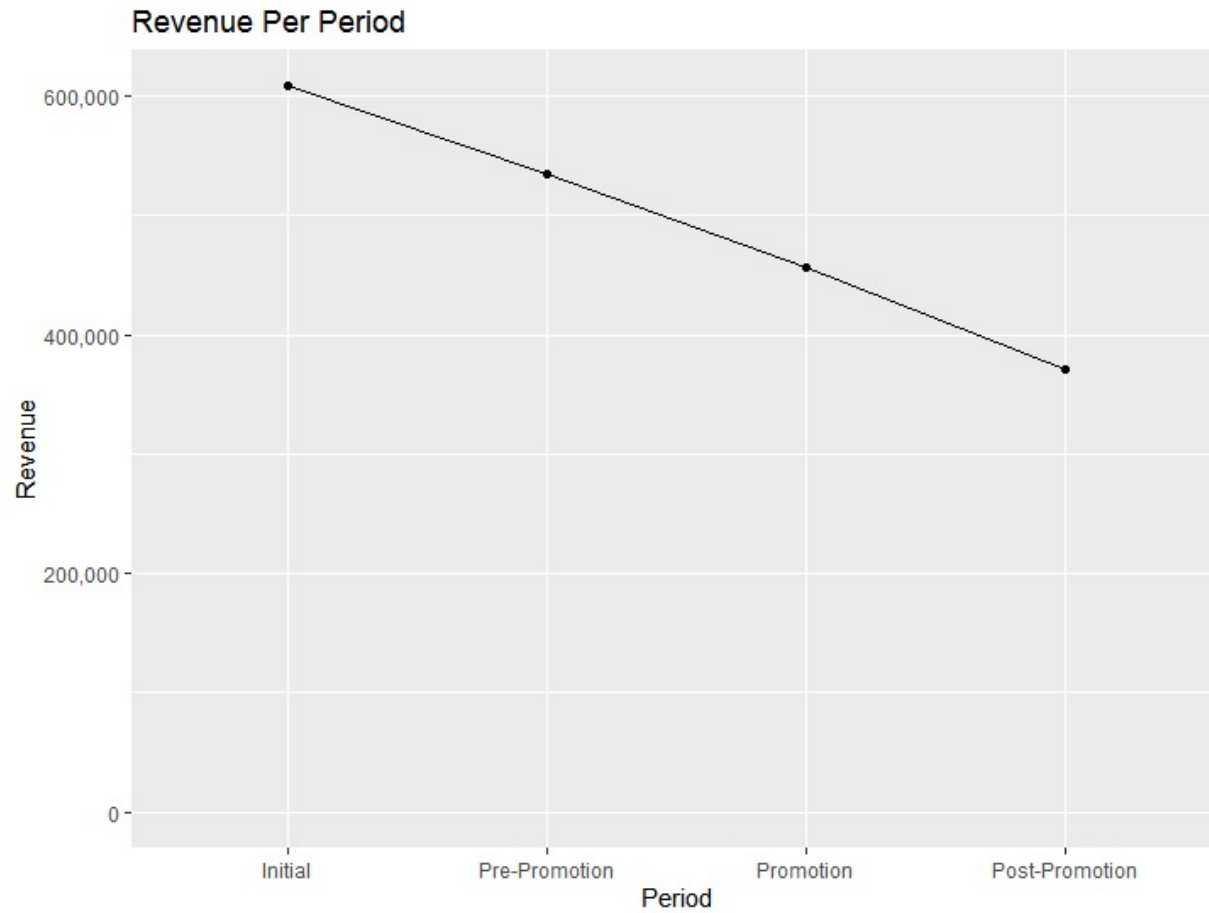
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# Insights: Increased bounce rate during promotion

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# Insights: Promotions did not increase sales or profits

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# Recommendations



Optimize Web Design



Investigate Promotional Activities



Tailor Promotions to Geography



Investigate Possible Customer Defection



Capitalize on Market Position



Track Website Inquiries Effects on Sales

# Risks

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SUBSTANTIAL COST  
INVESTMENT



ASIAN MARKET  
COMPETITION

# Q&A

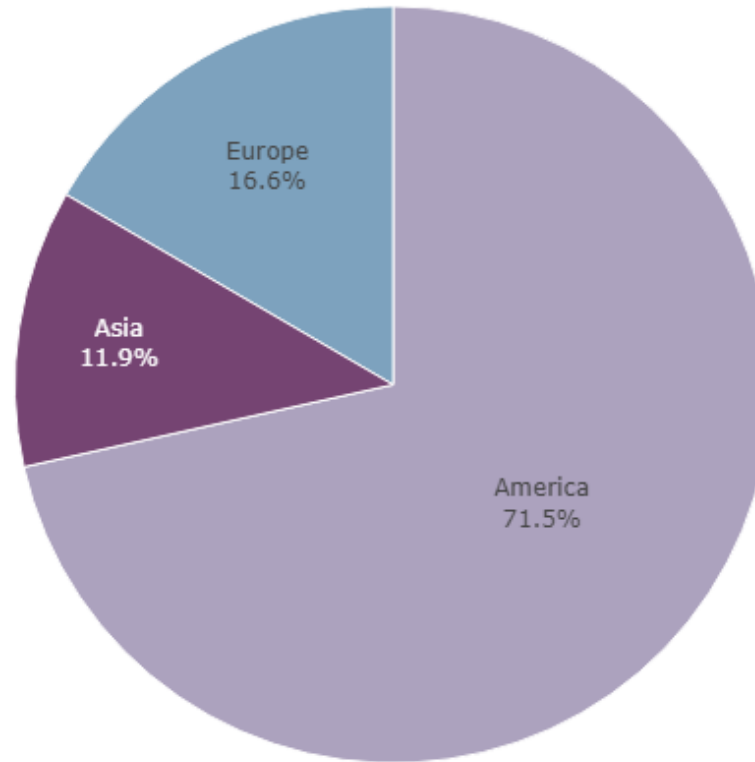
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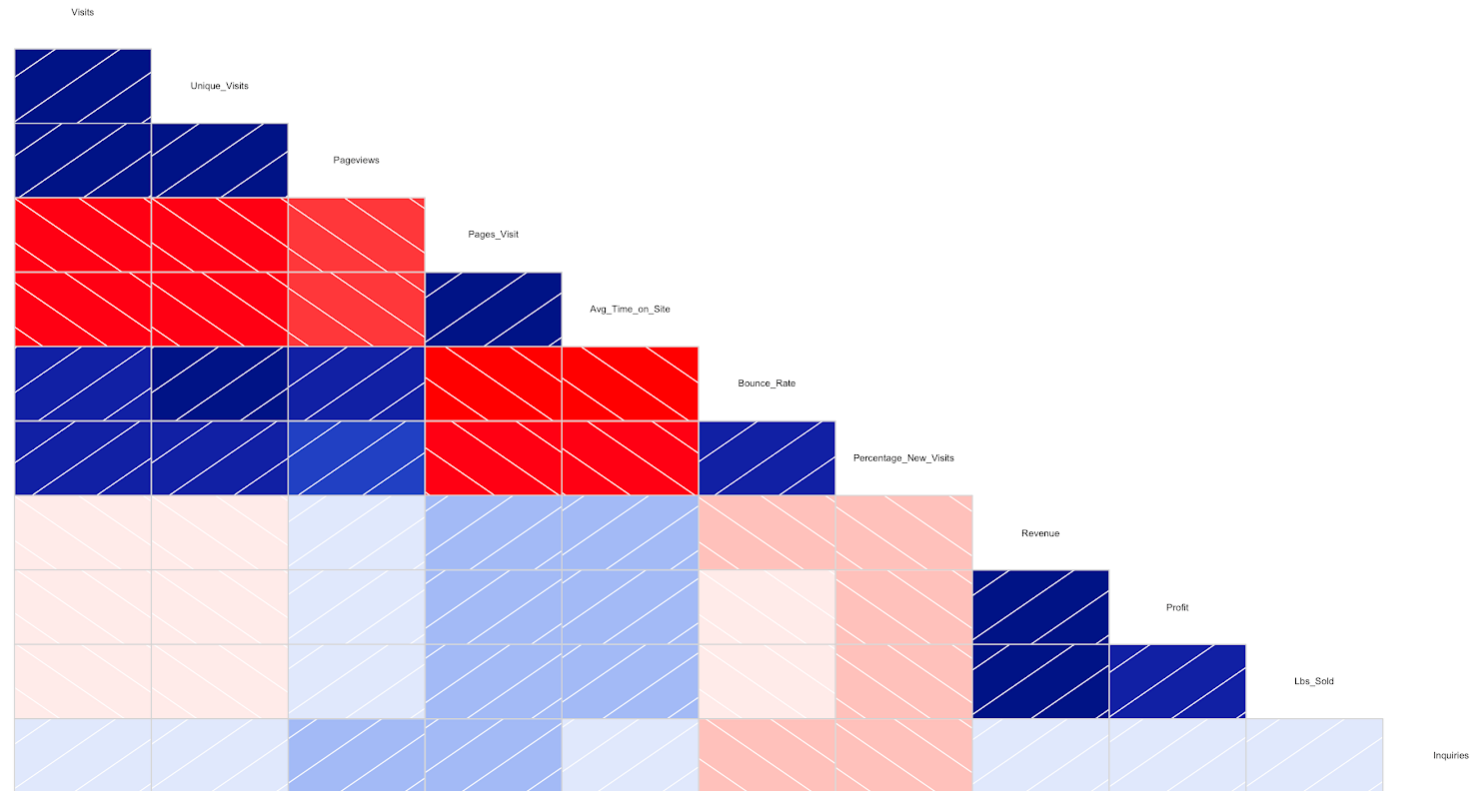


# Appendix 1: Website Visits by Continent

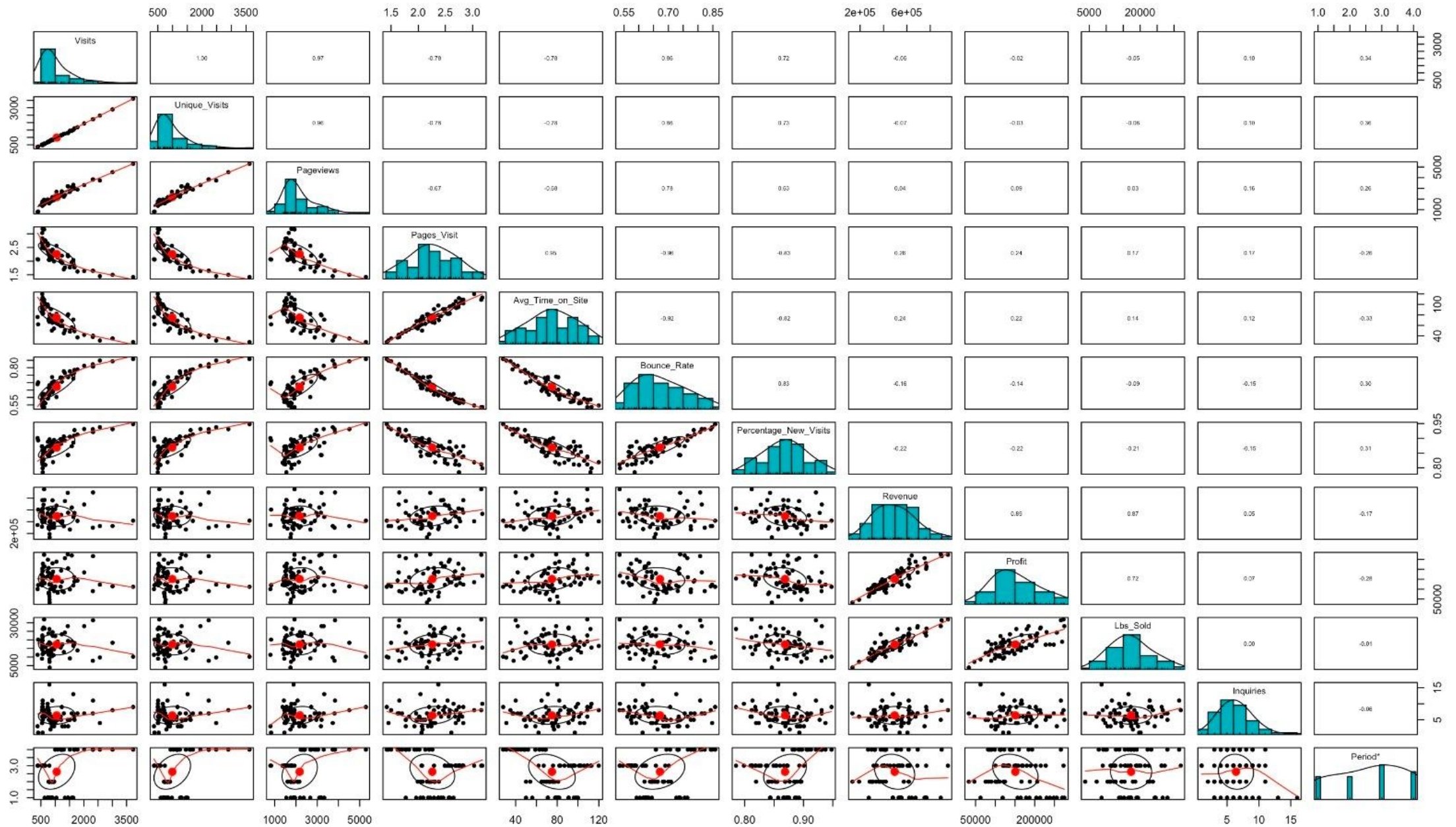
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Visits from Geographic Sources









# Appendix 3: Linear Regression

```
Call:
lm(formula = Profit ~ Visits + Unique_Visits + Pageviews + Pages_Visit +
    Avg_Time_on_Site + Bounce_Rate + Percentage_New_Visits +
    Revenue + Lbs_Sold + Inquiries, data = ln_df1)
```

Residuals:

|  | Min      | 1Q       | Median  | 3Q      | Max     |
|--|----------|----------|---------|---------|---------|
|  | -0.47942 | -0.12180 | 0.05244 | 0.12392 | 0.29235 |

Coefficients:

|                       | Estimate   | Std. Error | t value | Pr(> t )     |
|-----------------------|------------|------------|---------|--------------|
| (Intercept)           | -2.523e+00 | 1.713e+00  | -1.473  | 0.147        |
| Visits                | -1.278e+01 | 1.875e+01  | -0.682  | 0.498        |
| Unique_Visits         | -1.514e+00 | 3.540e+00  | -0.428  | 0.671        |
| Pageviews             | 1.440e+01  | 1.829e+01  | 0.787   | 0.435        |
| Pages_Visit           | -1.430e+01 | 1.835e+01  | -0.779  | 0.439        |
| Avg_Time_on_Site      | 2.871e-04  | 2.581e-01  | 0.001   | 0.999        |
| Bounce_Rate           | -8.109e-02 | 9.114e-01  | -0.089  | 0.929        |
| Percentage_New_Visits | 2.845e-01  | 2.489e+00  | 0.114   | 0.909        |
| Revenue               | 1.154e+00  | 1.504e-01  | 7.672   | 2.99e-10 *** |
| Lbs_Sold              | -1.648e-01 | 1.362e-01  | -1.210  | 0.231        |
| Inquiries             | 2.549e-02  | 5.614e-02  | 0.454   | 0.652        |

---  
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1865 on 55 degrees of freedom  
Multiple R-squared: 0.8325, Adjusted R-squared: 0.802  
F-statistic: 27.34 on 10 and 55 DF, p-value: < 2.2e-16

```
> vif(model1)
      Visits      Unique_Visits      Pageviews      Pages_Visit      Avg_Time_on_Site
1.615709e+05  6.045854e+03  7.726455e+04  2.231861e+04  1.421770e+01
      Bounce_Rate Percentage_New_Visits      Revenue      Lbs_Sold      Inquiries
2.354989e+01  2.057669e+01  5.762545e+00  5.263701e+00  1.526799e+00
```

```
Call:
lm(formula = Profit ~ Visits + Unique_Visits + Pageviews + Pages_Visit +
    Avg_Time_on_Site + Bounce_Rate + Percentage_New_Visits +
    Inquiries, data = ln_df1)
```

Residuals:

|  | Min      | 1Q       | Median  | 3Q      | Max     |
|--|----------|----------|---------|---------|---------|
|  | -1.06298 | -0.18307 | 0.00078 | 0.20280 | 0.74575 |

Coefficients:

|                       | Estimate  | Std. Error | t value | Pr(> t )     |
|-----------------------|-----------|------------|---------|--------------|
| (Intercept)           | 10.31526  | 2.89993    | 3.557   | 0.000763 *** |
| Visits                | 23.42191  | 38.03446   | 0.616   | 0.540473     |
| Unique_Visits         | -13.00170 | 7.06428    | -1.840  | 0.070905 .   |
| Pageviews             | -10.16109 | 37.45858   | -0.271  | 0.787169     |
| Pages_Visit           | 13.50512  | 37.52268   | 0.360   | 0.720238     |
| Avg_Time_on_Site      | -0.42058  | 0.53327    | -0.789  | 0.433569     |
| Bounce_Rate           | 2.14367   | 1.86192    | 1.151   | 0.254406     |
| Percentage_New_Visits | 6.95025   | 4.93649    | 1.408   | 0.164581     |
| Inquiries             | -0.08986  | 0.11521    | -0.780  | 0.438659     |

---  
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.3882 on 57 degrees of freedom  
Multiple R-squared: 0.2477, Adjusted R-squared: 0.1422  
F-statistic: 2.347 on 8 and 57 DF, p-value: 0.02961

```
> vif(model_2)
      Visits      Unique_Visits      Pageviews      Pages_Visit      Avg_Time_on_Site
1.533796e+05  5.554539e+03  7.479744e+04  2.154226e+04  1.400728e+01
      Bounce_Rate Percentage_New_Visits      Revenue      Lbs_Sold      Inquiries
2.267989e+01  1.867474e+01  1.484118e+00
```



# Appendix 4: Multiple Regression

```
Call:
lm(formula = Revenue ~ Visits + Unique_Visits + Pageviews + Pages_Visit +
    Avg_Time_on_Site + Bounce_Rate + Percentage_New_Visits +
    Inquiries, data = ln_df1)
```

```
Residuals:
    Min       1Q   Median       3Q      Max
-0.88662 -0.19124  0.03094  0.19110  0.80397
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    12.3710     2.5625   4.828 1.07e-05 ***
Visits         32.1231    33.6094   0.956  0.3432
Unique_Visits -10.7713     6.2424  -1.726  0.0899 .
Pageviews      -21.1889    33.1005  -0.640  0.5246
Pages_Visit    24.3976    33.1571   0.736  0.4649
Avg_Time_on_Site -0.4106     0.4712  -0.871  0.3873
Bounce_Rate     2.3062     1.6453   1.402  0.1664
Percentage_New_Visits 5.9468     4.3622   1.363  0.1782
Inquiries      -0.1204     0.1018  -1.183  0.2418
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.3431 on 57 degrees of freedom
Multiple R-squared:  0.2431,    Adjusted R-squared:  0.1369
F-statistic: 2.288 on 8 and 57 DF,  p-value: 0.03361
```

```
> vif(model_rev)
      Visits      Unique_Visits      Pageviews      Pages_Visit      Avg_Time_on_Site
1.533796e+05  5.554539e+03  7.479744e+04  2.154226e+04  1.400728e+01
      Bounce_Rate Percentage_New_Visits      Inquiries
2.267989e+01  1.867474e+01  1.484118e+00
```

```
>
```

```
Call:
lm(formula = Revenue ~ Visits, data = ln_df1)
```

```
Residuals:
    Min       1Q   Median       3Q      Max
-1.25197 -0.21980  0.04419  0.25976  0.70606
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  13.41366     0.63523  21.116  <2e-16 ***
Visits      -0.05325     0.09285  -0.573   0.568
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.3712 on 64 degrees of freedom
Multiple R-squared:  0.005112,    Adjusted R-squared:  -0.01043
F-statistic: 0.3289 on 1 and 64 DF,  p-value: 0.5683
```

# Appendix 4: Multiple Regression

```
Call:
lm(formula = Lbs_Sold ~ Visits + Unique_Visits + Pageviews +
  Pages_Visit + Avg_Time_on_Site + Bounce_Rate + Percentage_New_Visits +
  Inquiries, data = merged_df)
```

```
Residuals:
    Min       1Q   Median       3Q      Max
-11372  -4053  -1019   3083  15143
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  -7244.725  68109.348  -0.106   0.916
Visits         2.026    91.699   0.022   0.982
Unique_Visits -9.438    86.539  -0.109   0.914
Pageviews      5.240     7.155   0.732   0.467
Pages_Visit   11736.062 10161.602   1.155   0.253
Avg_Time_on_Site -53.142   113.661  -0.468   0.642
Bounce_Rate   58048.964 44352.729   1.309   0.196
Percentage_New_Visits -46108.115 61966.665  -0.744   0.460
Inquiries     -163.857   307.850  -0.532   0.597
```

```
Residual standard error: 5949 on 57 degrees of freedom
Multiple R-squared:  0.1574,    Adjusted R-squared:  0.03908
F-statistic: 1.33 on 8 and 57 DF,  p-value: 0.2474
```

```
> vif(model_sold)
      Visits      Unique_Visits      Pageviews      Pages_Visit      Avg_Time_on_Site
6288.391001      5304.509855      64.970323      32.276332      12.044880
Bounce_Rate Percentage_New_Visits      Inquiries
25.394566      9.416580      1.327518
```

```
>
```

```
Call:
lm(formula = Lbs_Sold ~ Avg_Time_on_Site + Percentage_New_Visits +
  Inquiries, data = merged_df)
```

```
Residuals:
    Min       1Q   Median       3Q      Max
-14389.8  -4575.8    163.5   3063.6  16125.8
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   59865.19  35277.68   1.697   0.0947 .
Avg_Time_on_Site    -22.17    58.33  -0.380   0.7052
Percentage_New_Visits -46567.03  36146.55  -1.288   0.2024
Inquiries        -64.17    275.81  -0.233   0.8168
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 6068 on 62 degrees of freedom
Multiple R-squared:  0.04646,    Adjusted R-squared:  0.0003256
F-statistic: 1.007 on 3 and 62 DF,  p-value: 0.3957
```

```
> vif(model_sold1)
      Avg_Time_on_Site Percentage_New_Visits      Inquiries
3.048788      3.079905      1.024292
```

```
> |
```

# Appendix 4: Multiple Regression

---

```
call:
lm(formula = Lbs_Sold ~ Avg_Time_on_Site + Percentage_New_Visits +
    Inquiries, data = merged_df)

Residuals:
    Min       1Q   Median       3Q      Max
-14389.8  -4575.8   163.5   3063.6  16125.8

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    59865.19   35277.68   1.697   0.0947 .
Avg_Time_on_Site    -22.17     58.33  -0.380   0.7052
Percentage_New_Visits -46567.03  36146.55  -1.288   0.2024
Inquiries         -64.17    275.81  -0.233   0.8168
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 6068 on 62 degrees of freedom
Multiple R-squared:  0.04646,    Adjusted R-squared:  0.0003256
F-statistic: 1.007 on 3 and 62 DF,  p-value: 0.3957

> vif(model_sold1)
      Avg_Time_on_Site Percentage_New_Visits      Inquiries
      3.048788      3.079905      1.024292
> |
```