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Question 3: What conclusions can you draw from the results from the changes to the quote form?

* Baseline: 32 quotes out of 595 viewers
* Variation 1: 30 quotes out of 599 viewers
* Variation 2: 18 quotes out of 622 viewers
* Variation 3: 51 quotes out of 606 viewers
* Variation 4: 38 quotes out of 578 viewers

I assume that you wish to find out if the results indicate the changes to the quote form are statistically significant in either improving or degrading the success rate in generating a quote for the customer.

I will assume that the number of quotes generated will follow a normal distribution.

I will examine each of the variations individually compared to the baseline to see which if any indicate a significant change. I’ll define significant change as 95% confidence that there is either an improvement or degradation in the rate of quotes being issued to the viewer.

I am also going to assume that the factors which may have biased the results have been held as much as possible common across all the samples so that the cause of difference in quote rates is the use of the different quote forms.

Let’s start with variation 1.

Here is a table showing the combined results of the baseline and variation 1.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Base | V1 | Total |
| Quote | 32 | 30 | 62 |
| None | 563 | 569 | 1132 |
| Total | 595 | 599 | 1194 |

Using the totals for whether or not a quote was issued

The expected rate for a quote is 62/1194 = .052

For Baseline the expected number of quotes is .052\* 595 = 30.9

Using the value I redo the table using the totals and the expected rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Base | V1 | Total |
| Quote | 30.90 | 31.10 | 62 |
| None | 564.10 | 567.90 | 1132 |
| Total | 595 | 599 | 1194 |

Now I compute the variance of the results from the expected;

|  |  |  |  |
| --- | --- | --- | --- |
|  | Base | V1 | Total |
| Quote | 0.04 | 0.04 | 0.08 |
| None | 0.00 | 0.00 | 0.00 |
| Total | 0.04 | 0.04 | 0.083 |

The total variance is 0.083. From the ch-squared table for 95% confidence the variance required is 3.841 so the change in rate of quotes issued is not statistically significant.

Doing the same for Versions 2,3,4 in the following tables

|  |  |  |  |
| --- | --- | --- | --- |
|  | Base | V2 | Total |
| Quote | 32 | 18 | 50 |
| None | 563 | 604 | 1167 |
| Total | 595 | 622 | 1217 |
|  |  |  |  |
|  | Base | V2 | Total |
| Quote | 24.92 | 25.08 | 50 |
| None | 570.08 | 573.92 | 1167 |
| Total | 595 | 599 | 1194 |
|  |  |  |  |
|  | Base | V2 | Total |
| Quote | 2.01 | 2.00 | 4.01 |
| None | 0.09 | 1.58 | 1.66 |
| Total | 2.10 | 3.58 | 5.679 |

The total variance is 5.679. This is greater than 3.841 indicating version 2 has a 95% confidence of change quote rate. Unfortunately the change is a reduction in quite rate.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Base | V3 | Total |
| Quote | 32 | 51 | 83 |
| None | 563 | 555 | 1118 |
| Total | 595 | 606 | 1201 |
|  |  |  |  |
|  | Base | V3 | Total |
| Quote | 41.36 | 41.64 | 83 |
| None | 553.64 | 557.36 | 1118 |
| Total | 595 | 599 | 1194 |
|  |  |  |  |
|  | Base | V3 | Total |
| Quote | 2.12 | 2.10 | 4.22 |
| None | 0.16 | 0.01 | 0.17 |
| Total | 2.28 | 2.11 | 4.391 |

The total variance is 4.381. This is greater than 3.841 indicating version 3 has a 95% confidence of change quote rate and indicates and increase in quote rate.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Base | V4 | Total |
| Quote | 32 | 38 | 70 |
| None | 563 | 540 | 1103 |
| Total | 595 | 578 | 1173 |
|  |  |  |  |
|  | Base | V4 | Total |
| Quote | 34.88 | 35.12 | 70 |
| None | 560.12 | 563.88 | 1103 |
| Total | 595 | 599 | 1194 |
|  |  |  |  |
|  | Base | V4 | Total |
| Quote | 0.24 | 0.24 | 70 |
| None | 0.01 | 1.01 | 1103 |
| Total | 0.25 | 1.25 | 1.501 |

The total variance is 1.501. This is less than 3.841 indicating version 4 does not have a 95% confidence of change quote rate.

My conclusions are that Version 3 of the change in the quote form is the only change showing an improvement in the rates of quotes being issued with a 95% confidence level.

The changes in rates for Versions 1 and 4 is not statistically significant.

Version 2 shows a reduction in the rate of quote generation at a 95% confidence level..

Acme Corp should consider using Version 3 of the quote form in order to increase the rate of quotes being issued to customers. Avoid the changes used in version 2.