

Project: Analyzing a Market Test

Complete each section. When you are ready, save your file as a PDF document and submit it [here](#).

Step 1: Plan Your Analysis

To perform the correct analysis, you will need to prepare a data set. (500 word limit)

Answer the following questions to help you plan out your analysis:

1. What is the performance metric you'll use to evaluate the results of your test?

Ans: Gross Margin

2. What is the test period?

Ans: 2016-April-29 to 2016-July-21

3. At what level (day, week, month, etc.) should the data be aggregated?

Ans: Week

Step 2: Clean Up Your Data

In this step, you should prepare the data for steps 3 and 4. You should aggregate the transaction data to the appropriate level and filter on the appropriate data ranges. You can assume that there is no missing, incomplete, duplicate, or dirty data. You're ready to move on to the next step when you have weekly transaction data for all stores.

Step 3: Match Treatment and Control Units

In this step, you should create the trend and seasonality variables, and use them along with your other control variable(s) to match two control units to each treatment unit. Note: Calculate the number of transactions per store per week to calculate trend and seasonality.

Apart from trend and seasonality...

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.

Ans: Average Monthly Sales

Square_feet has low correlation with Gross margin and is therefore not selected

2. What is the correlation between your each potential control variable and your performance metric?

Ans: 0.79

3. What control variables will you use to match treatment and control stores?

Ans: Trend, Seasonality and Average Monthly Sales

4. Please fill out the table below with your treatment and control stores pairs:

Treatment Store	Control Store 1	Control Store 2
1664	7162	8112
1675	1580	1807
1696	1964	1863
1700	2014	1630
1712	8162	7434
2288	9081	2568

2293	12219	9524
2301	3102	9238
2322	2409	3235
2341	12536	2383

Step 4: Analysis and Writeup

Conduct your A/B analysis and create a short report outlining your results and recommendations. (250 words limit)

Answer these questions. Be sure to include visualizations from your analysis:

1. What is your recommendation - Should the company roll out the updated menu to all stores?

The company should roll out the updated menu to all stores as a comparison of the treatment-control pairs indicates an average lift in Sum_Gross Margin for the treatment units over the control units of 41.9%, which results in an expected impact of 694 on Sum_Gross Margin with 100% of the treatment-control pairs exhibiting a positive lift for the treatment units.

2. What is the lift from the new menu for West and Central regions (include statistical significance)?

Ans: For West region the lift is 37.7% with a statistical significance of 99.7%. For Central region the lift is 46% with statistical significance of 99.6%.

3. What is the lift from the new menu overall?

Ans: The overall lift is 41.9% with statistical significance of 100%.

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Browse (4) - Configuration

Report Profile

1 of 1 Fields ▾ Records 1 to 10 >>

Record Report

1

Analysis of the

Test Start Date: 2016-04-29
Test End Date: 2016-07-21
Additional Information:

2

Test Summary

The average percentage change in period relative to the comparison difference between the treatment More detailed summary statistics f (which immediately follows), while mean average percentage change report.

A comparison of the treatment-co treatment units over the control u Sum_Gross Margin, with 100.0%

Control_treatment (Region) = t_pairs.yxdb "West"

Store_sales_analysi s.yxdb

Results - Browse (4) - Input

3 of 3 Fields ▾ Cell Viewer ▾ 16 records displayed, 264 KB Search Data Metadata

Record	Report	Desc	Other
1	(Multiple Sources) - View Browse Tool Report Tab	Title	[Null]
2	(Multiple Sources) - View Browse Tool Report Tab	Summary	[Null]
3	(Multiple Sources) - View Browse Tool Report Tab	LiftTable	[Null]
4	(Multiple Sources) - View Browse Tool Report Tab	Summary_Stats	[Null]
5	(Multiple Sources) - View Browse Tool Report Tab	DotChart_Title	[Null]
6	(Multiple Sources) - View Browse Tool Report Tab	DotChart1	[Null]
7	(Multiple Sources) - View Browse Tool Report Tab	TimeComparePlot	[Null]
8	(Multiple Sources) - View Browse Tool Report Tab	Box_Whisker	[Null]

Altexn Designer x64 - Browse (4)																	
<div> <div> <div>Table</div> <div>Report</div> <div>Profile</div> </div> <div> <div>1 of 1 Fields</div> <div>Records 1 to 10</div> </div> </div>																	
Record	Report																
1	<h2>Analysis of the Test on the Measure Sum_Gross Margin</h2> <p>Test Start Date: 2016-04-29</p> <p>Test End Date: 2016-07-21</p> <p>Additional Information:</p>																
2	<h3>Test Summary</h3> <p>The average percentage change in Sum_Gross Margin was 41.8% for the treatment units in the test period relative to the comparison period. This same measure was 1.1% for the control units, with the difference between the treatment and control units being 40.7%, which is highly statistically significant. More detailed summary statistics for the treatment and control groups are contained in the first table (which immediately follows), while the details of the hypothesis test of a significant difference in the mean average percentage change in Sum_Gross Margin is contained in a table at the end of this report.</p> <p>A comparison of the treatment-control pairs indicates an average lift in Sum_Gross Margin for the treatment units over the control units of 41.9%, which results in an expected impact of 694 on Sum_Gross Margin, with 100.0% of the treatment-control pairs exhibiting a positive lift for the treatment units.</p>																
3	<h3>Lift Analysis for Sum_Gross Margin</h3> <table> <tr> <th>Lift</th><th>Expected Impact</th><th>Significance Level</th></tr> <tr> <td>41.9%</td><td>694</td><td>100.0%</td></tr> </table>		Lift	Expected Impact	Significance Level	41.9%	694	100.0%									
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41.9%	694	100.0%															
4	<h3>Summary Statistics for Sum_Gross Margin by Test Group</h3> <table> <tr> <th>Statistic</th><th>Treatment</th><th>Control</th></tr> <tr> <td>Average</td><td>41.83</td><td>1.13</td></tr> <tr> <td>Minimum</td><td>19.27</td><td>-17.34</td></tr> <tr> <td>Maximum</td><td>69.43</td><td>23.15</td></tr> <tr> <td>Standard Deviation</td><td>15.81</td><td>10.91</td></tr> </table>		Statistic	Treatment	Control	Average	41.83	1.13	Minimum	19.27	-17.34	Maximum	69.43	23.15	Standard Deviation	15.81	10.91
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5	<h3>Plots of the Test Results</h3>																



Table Report Profile

1 of 1 Fields

Records 3 to 12

4

Summary Statistics for Sum_Gross Margin by Test Group

Statistic	Treatment	Control
Average	41.83	1.13
Minimum	19.27	-17.34
Maximum	69.43	23.15
Standard Deviation	15.81	10.91

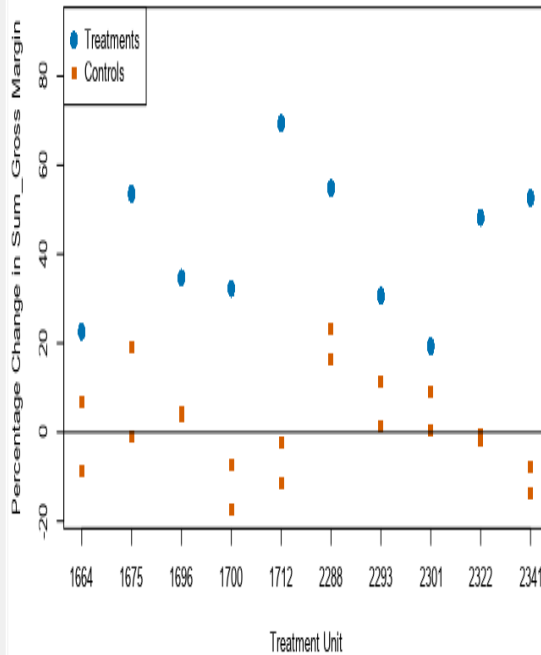
5

Plots of the Test Results

In the dot plot(s) below, each column of dots gives the percentage change in Sum_Gross Margin from the same period as the test period, but one year earlier, and the test period for a treatment unit and the control units assigned to that treatment unit. An examination of a dot plot chart allows for a rapid determination of whether (and which of) the treatment units outperformed the control units with respect to Sum_Gross Margin.

6

Dot Plot of the Percentage Change in Sum_Gross Margin Between the Test Period and the Same Period Last Year



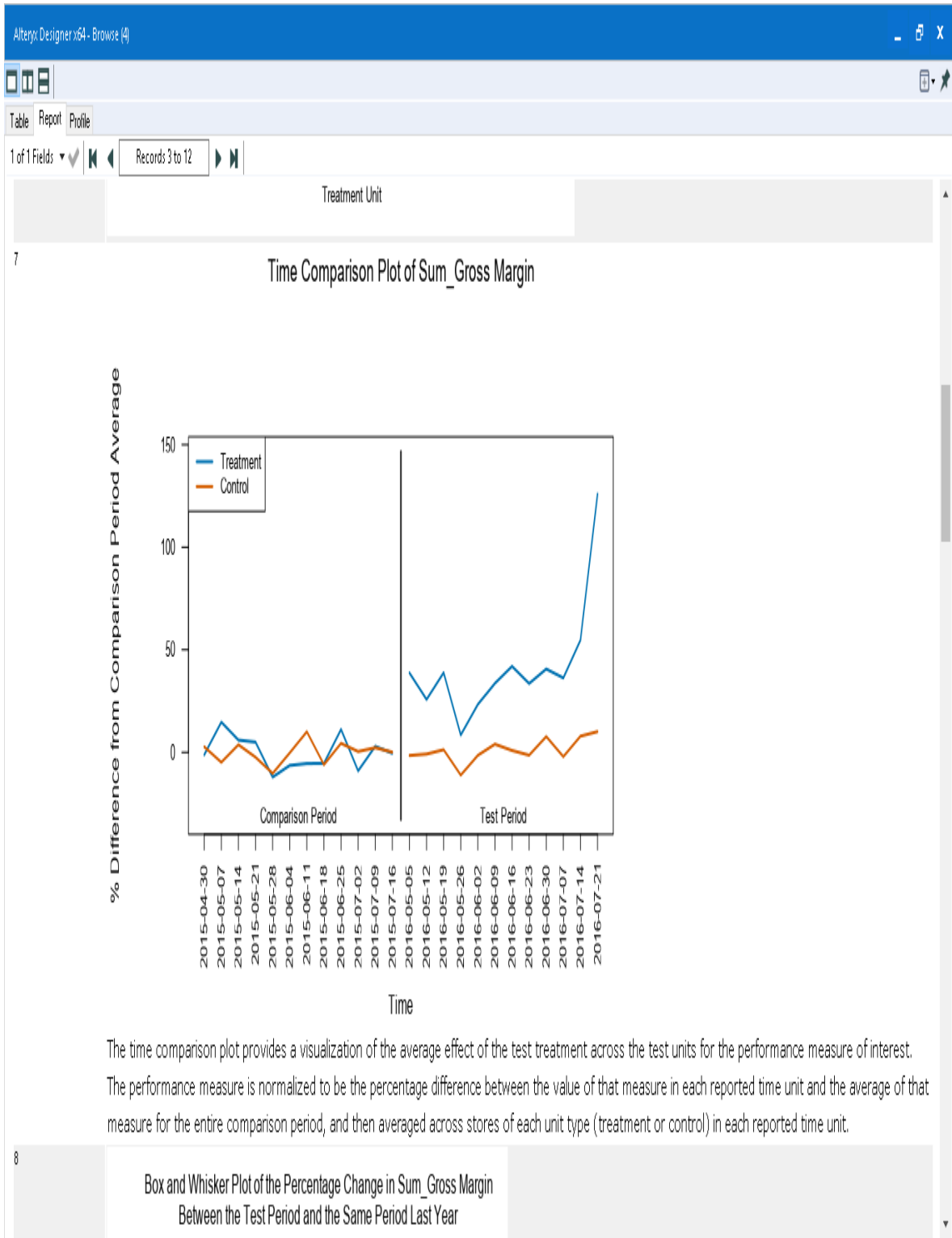




Table Report Profile

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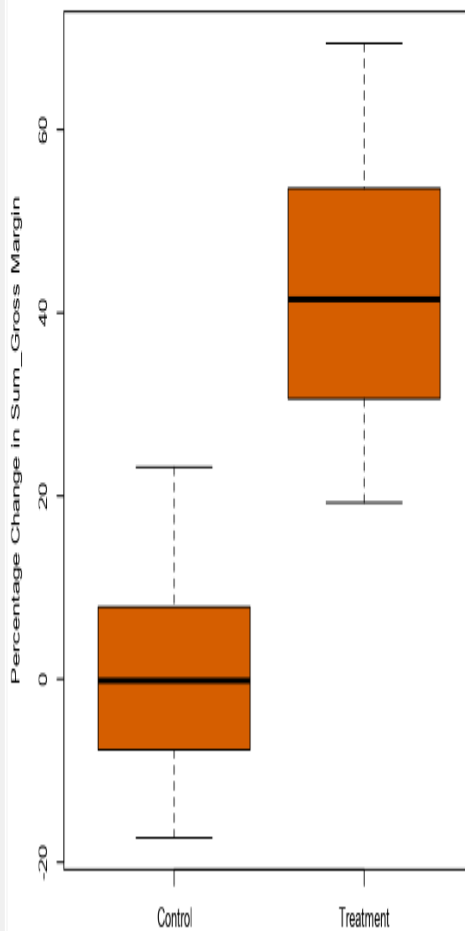
Records 3 to 12

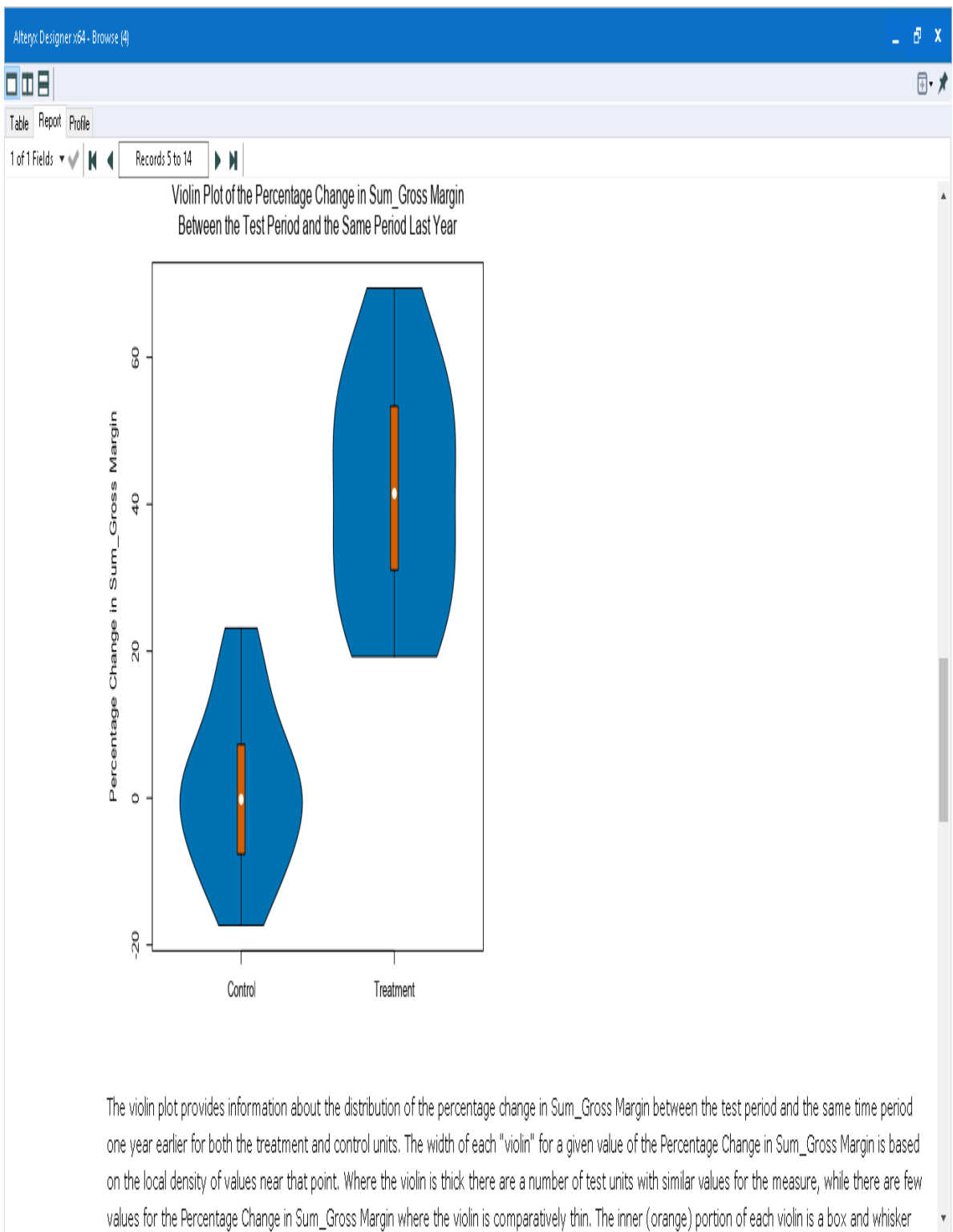


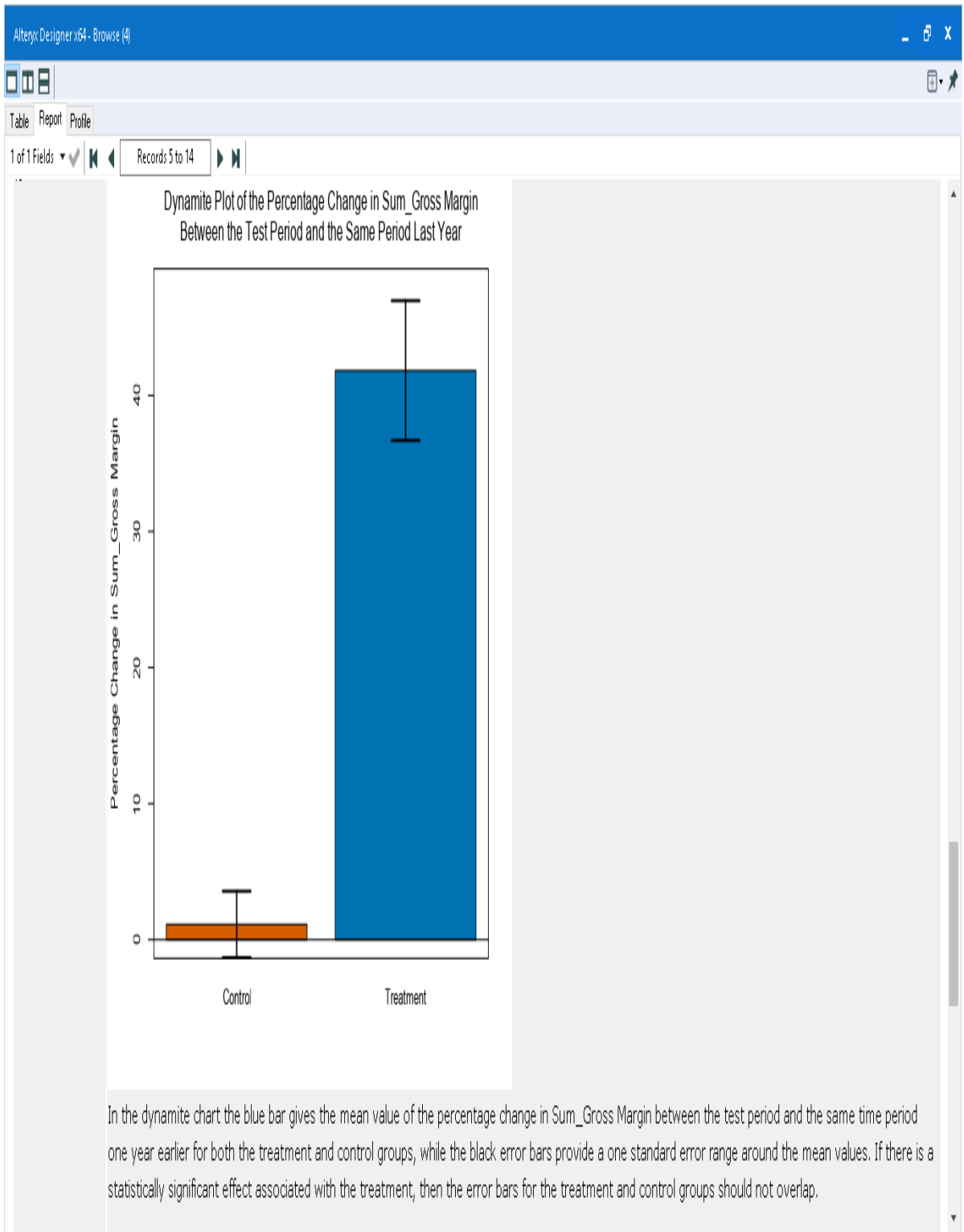
The time comparison plot provides a visualization of the average effect of the test treatment across the test units for the performance measure of interest. The performance measure is normalized to be the percentage difference between the value of that measure in each reported time unit and the average of that measure for the entire comparison period, and then averaged across stores of each unit type (treatment or control) in each reported time unit.

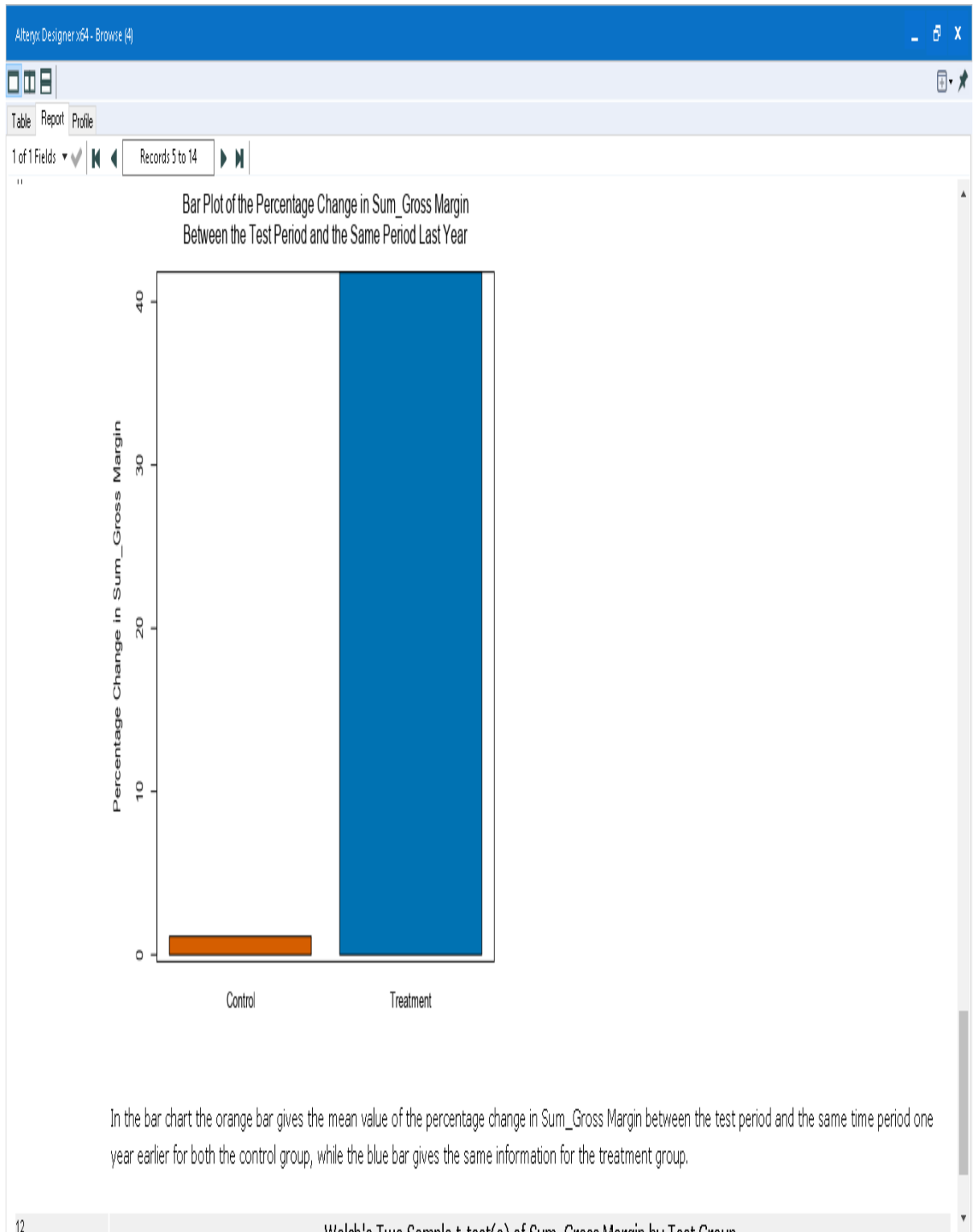
8

Box and Whisker Plot of the Percentage Change in Sum_Gross Margin
Between the Test Period and the Same Period Last Year









Before you Submit

Please check your answers against the requirements of the project dictated by the [rubric](#) here. Reviewers will use this rubric to grade your project.