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GROUP 1 COURSE PROJECT II MEMO

Retro Snow Inc. – December 31, 2020
Disaggregated Revenue Analytics

Purpose: The purpose of this memo is to document plausible trends and expectations for disaggregated revenue data and to identify specific days and locations that warrant further substantive investigation.

Data: We obtained a listing of daily sales by location from the client's IT system. We tested the details for mathematical accuracy, as summarized in the table below:

	Total Sales, 2019	**Total Sales, 2020**
Store Type 1	$22,116,624.03	$21,208,540.04
Store Type 2	$18,517,403.78	$16,401,439.24
Store Type 3	$14,493,050.80	$13,943,639.55
Total	**$55,127,078.61**	**$51,553,618.83**

Procedures: Based on our risk assessment process, we identified the following assertions as significant risks related to revenues/sales:

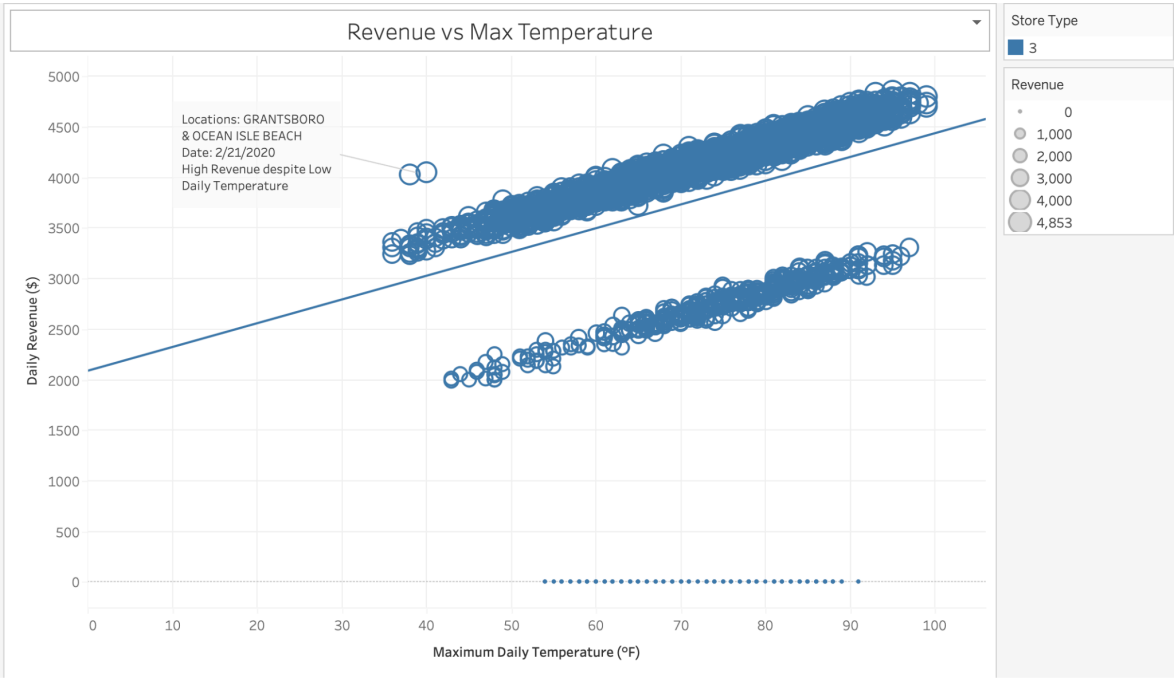
- Recorded sales occurred.
- Sales are accurately recorded.
- Sales are recorded in the proper period.

Because Retro Snow's operations are solely in the state of North Carolina, we obtained disaggregated data that reports daily sales by store location and store type. Based on discussions with management and our review of the board of director minutes, we are unaware of any new store locations nor any closures. However, we learned from management that several one-off events during 2020 are expected to affect revenues relative to 2019: (1) all locations were closed from March 17–31, 2020 in connection with statewide COVID-19 shutdowns; (2) beginning April 1, 2020, each location transitioned to drive-thru and/or delivery-only service whenever local ordinances prohibited or reduced in-restaurant dining capacity; (3) the Raleigh Airport location was disproportionately affected, as air travel remained depressed throughout 2020, operating at approximately 30% of 2019 flight volume even toward year end (corroborated by publicly available data on the RDU website); and (4) one Store Type 3 location was closed for

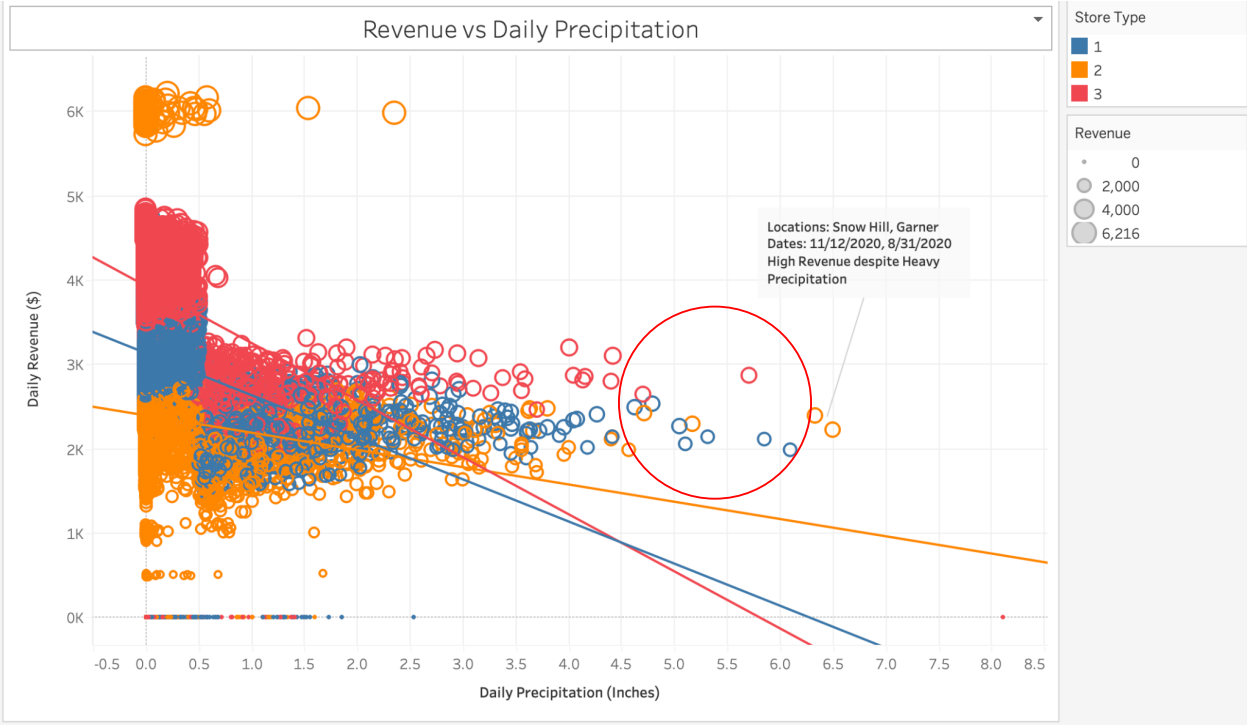
approximately one week in August 2020 due to hurricane-related damage. We also note that, in September 2019, all Store Type 3 locations closed for several days in response to a major hurricane, which suppressed the 2019 baseline for Store Type 3 during that period[BC2] . Aside from those one-off events in 2020, we expect the prior year to be a reasonable baseline expectation for this year's revenues (e.g., similar volumes of revenue by location).

Because the business can also be impacted by weather conditions, which vary by year, we also perform analyses that consider changes in weather patterns to predict expected changes from the prior year's sales. We performed several disaggregated analytics to identify unusual trends compared to the prior year's sales, taking weather conditions into consideration. The purpose of these analytics is to identify specific observations (or specific sets of observations) to select for further substantive testing. The following analyses highlight seemingly unusual patterns that we recommend for more detailed investigation:

- **Visualization Analysis #1: Revenue vs. Weather Condition & Temperature**



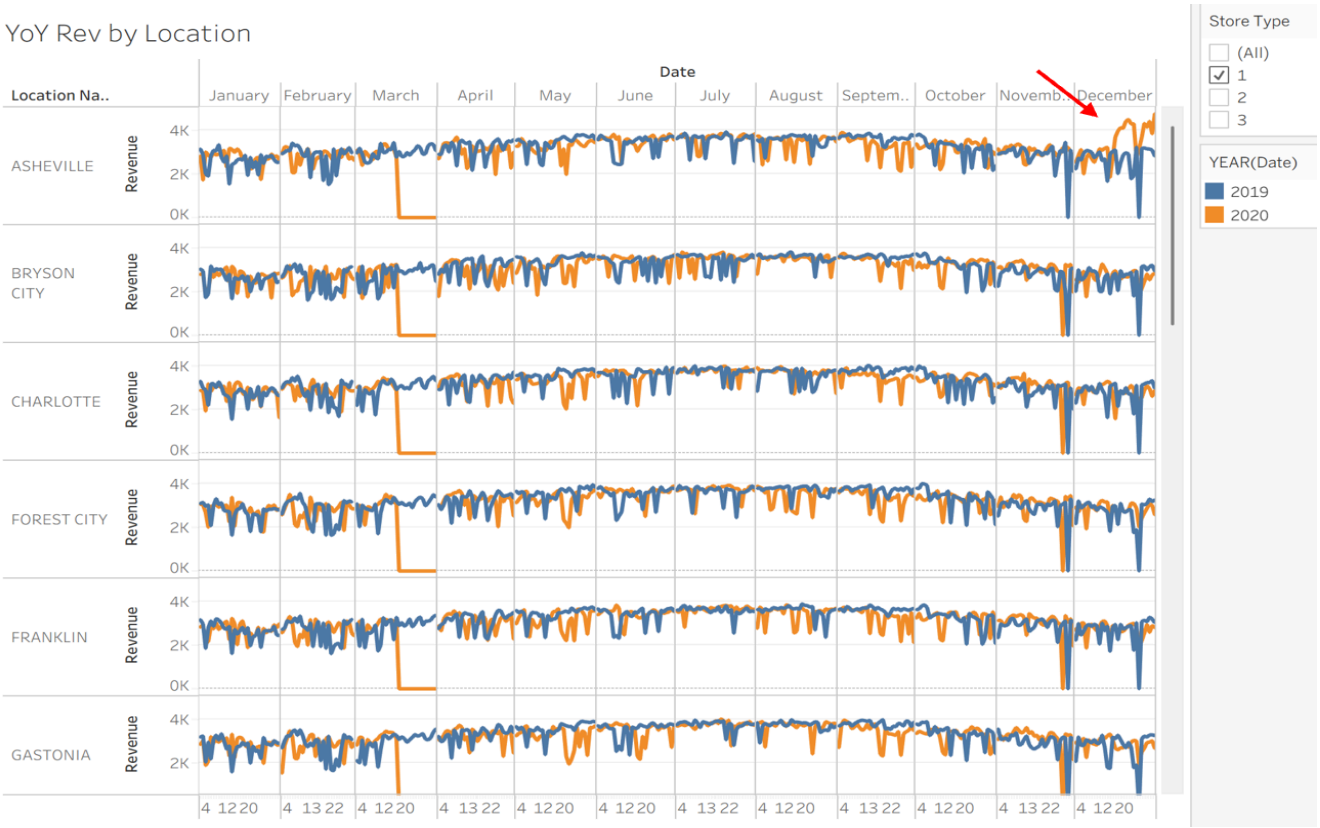
  - From the visualization above, there is a positive linear relationship supporting our findings that as daily temperatures increase, revenue tends to increase as well. When focusing on Store Type 3, two outliers can be detected at the locations: Grantsboro & Ocean Isle Beach on 2/21/2020. We determined that these two locations have abnormally high revenue generated despite the daily temperature being lower, which doesn't fit the trend line expectations.



- After creating a scatter plot between all three store types, there is a negative linear relationship between daily revenue and daily precipitation. As daily precipitation increases, our trend lines expect revenue to decrease due to our company's form of business. Revenue is highest when precipitation is at 0 inches and declines steadily across all store types. However, some outliers were identified for locations that maintained high revenue despite heavy precipitation.

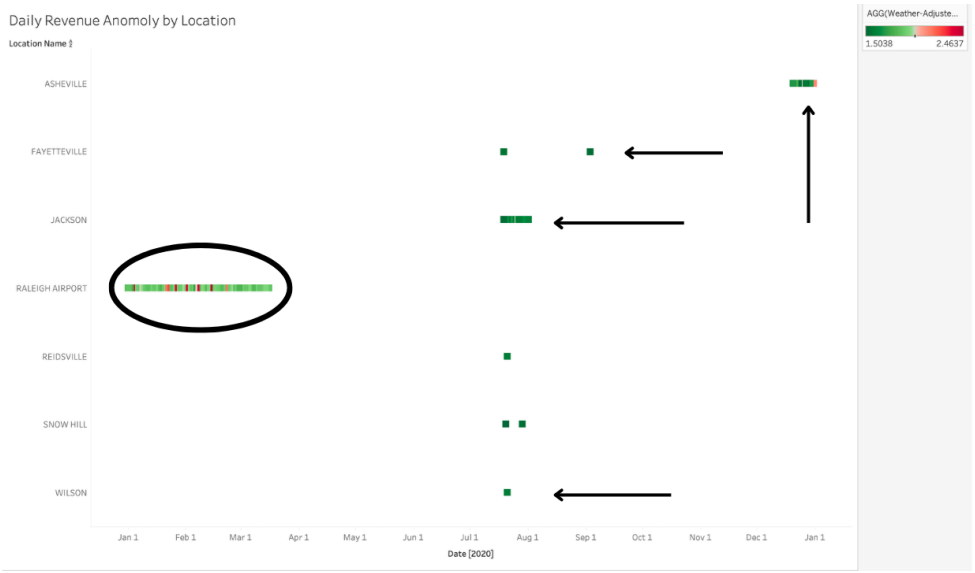
- Store Type 2 (Raleigh Airport) at the top is expected to maintain constant revenue regardless of rainfall due to it being independent. However, numerous anomalies were identified highlighted in the red circle in the scatter plot. We believe that these stores are outliers due to the fact that their revenues are still relatively high, not matching the projected trend line, despite high precipitation on those days.

- **Visualization Analysis #2: Year-Over-Year Revenue Comparison by Location**



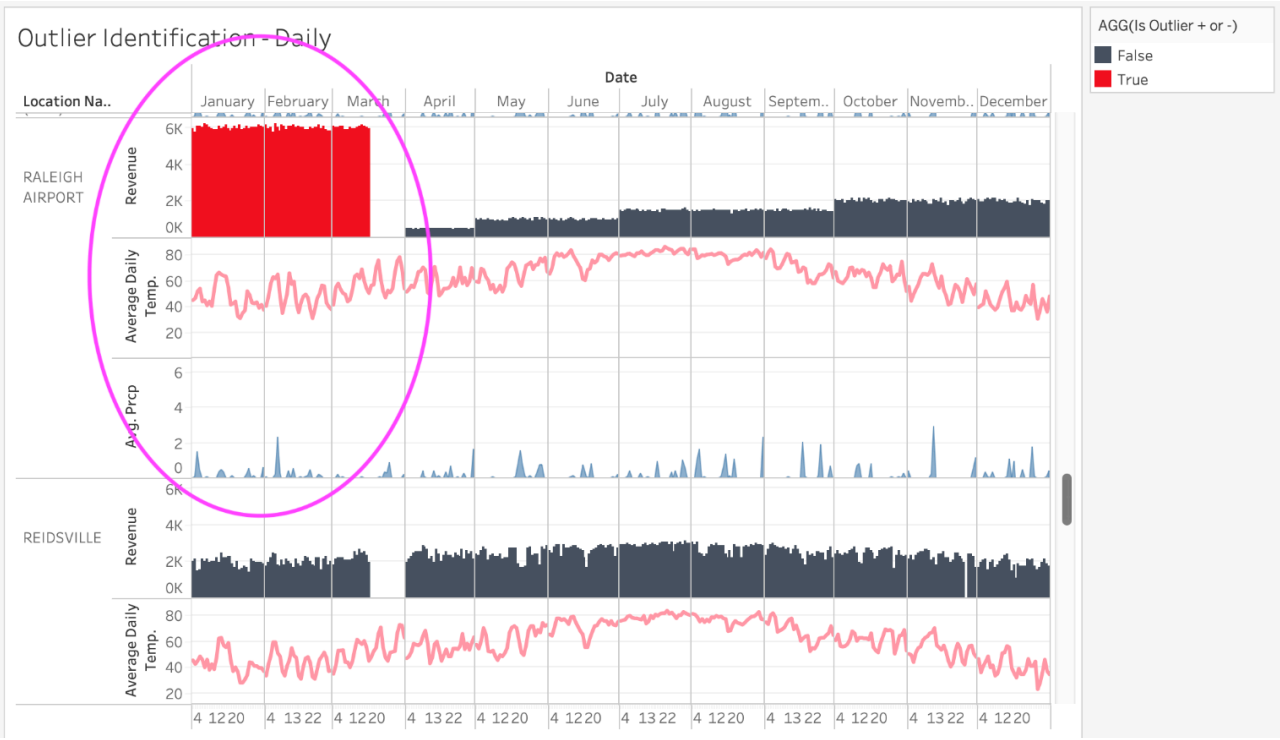
  - The year-over-year revenue comparison for Store Type 1 locations reveals that Asheville reported materially higher 2020 revenue relative to 2019 in December, with the variance most pronounced at year end. Across the dataset, 2020 revenues are broadly consistent with or below 2019 levels, which aligns with expected COVID-related impacts on operations. However, Asheville's 2020 revenue visibly exceeds its 2019 baseline during this period, representing an unexplained positive variance that does not conform to the overall trend.

- **Visualization Analysis #3: Daily Revenue Anomaly Chart**



  - The anomaly score is a weather-adjusted Z-score measuring how far each store's daily revenue deviates from the 2020 fleet-wide average of $2,941 per day, with additional weight applied when high revenue is reported during adverse weather conditions. Locations that score above 1.5 are flagged as Elevated, and above 2.5 as High-Review.
  - The Daily Revenue Anomaly chart reveals that Raleigh Airport experienced a prolonged cluster of elevated scores from January through mid-April 2020, making it the only location with sustained day-over-day flagging rather than isolated spikes. Asheville shows a brief concentration of elevated days in late November and early December. Other locations, such as Fayetteville, Jackson, and Wilson, show brief isolated elevated days in July–August, suggesting short-term irregularities rather than ongoing patterns. Raleigh Airport and Asheville are the strongest candidates for further review, given the duration and timing of their flagged activity.

- **Visualization Analysis #4: Daily Revenue Outlier Chart Compared Against Daily Precipitation and Average Daily Temperatures**



  - The "Outlier Identification - Daily" chart reveals that Raleigh Airport stands out as the most prominent outlier location, exhibiting a continuous cluster of flagged days (shown in red) concentrated in January through Mid-March in 2020. This sustained period of above-threshold revenue days is visually distinct from all other locations, which display only sparse or isolated outlier flags throughout the year. The circled region in the chart highlights this anomalous concentration at Raleigh Airport, where revenue consistently exceeded the outlier threshold across multiple consecutive months rather than appearing as random one-off spikes. When considered alongside daily precipitation and average temperature overlays, the outlier activity at Raleigh Airport does not appear to be driven solely by weather events, as favorable weather conditions alone would not explain such a prolonged and sustained revenue spike. This pattern warrants further investigation into operational, promotional, or external demand factors specific to Raleigh Airport during that time period.

Conclusion:

With reference to the procedures described above, the audit team will pull supporting sales information to substantively test transactions from the following locations and days. By

targeting these selections, the audit will be successful in pinning down observations that display unusual patterns across multiple analytical procedures.

Location	Dates/Period	Analysis Reference	Rationale for Selection
Grantsboro (Store Type 3)	February 21, 2020	Analysis #1	Identified as an outlier where revenue was abnormally high despite low daily temperatures, contradicting the expected positive relationship between temperature and revenue.
Ocean Isle Beach (Store Type 3)	February 21, 2020	Analysis #1	Exhibited the same unusual trend as Grantsboro, with elevated revenue under low-temperature conditions, suggesting potential issues with recording or cutoff.
Snow Hill & Garner (primarily Store Type 2/3)	Specific high-precipitation days (e.g., mid-December 2020)	Analysis#1	These locations maintained relatively high revenue despite heavy precipitation, deviating from the expected negative relationship between precipitation and sales.
Asheville (Store Type 1)	December 1–15, 2020	Analysis #2 and #3	Demonstrated a significant positive year-over-year variance during a period when most locations experienced flat or declining revenue. Also showed clustered elevated anomaly scores, increasing audit risk.
Raleigh Airport (Store Type 2)	January 6–31, 2020	Analysis #3 and #4	Presented an extended and continuous pattern of elevated anomaly scores and outlier flags. This sustained deviation is not explained by weather trends and represents the population with the highest risk for potential misstatement.
Fayetteville, Jackson, Wilson	1–2 specific days each in July–August	Analysis #3	These locations show momentary upticks in anomaly scores. While less severe than Raleigh Airport, selective testing of a small sample of these dates is necessary to determine if issues are systemic or isolated.

As a result of the duration and consistency of anomalies, which signal a higher risk of material misstatement, the audit team should concentrate on Raleigh Airport and Asheville. The observations under Grantsboro and Ocean Isle Beach on February 21, 2020, are noteworthy as well due to the apparent contradictions in how weather and revenue are expected to intermingle. Targeted sampling of precipitation-related outliers and standalone anomalies (as seen in Snow Hill, Garner, Fayetteville, Jackson, and Wilson) will conclude if these instances are one-time events or are pointing to a broader issue. By directing attention to systematic anomalies such as clusters, and impactful outliers such as unusual days, the efficiency of the audit, in combination with thorough risk coverage, is balanced when considering all four analyses.