Wonka Candy Sales Performance Analysis

A portfolio project analyzing mock divisional, regional, and product performance data to identify and demonstrate strategic growth opportunities using SQL & Tableau.

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Project Context (Meta)

Why I Chose This Project

This project was created to demonstrate foundational and intermediate proficiency with SQL and Tableau, which are two of the most in-demand tools for data analysts. Beyond skill practice, strengthen my portfolio and position myself more competitively in the Silicon Valley job market. Recruiters and hiring managers increasingly expect recent graduates to show applied, real-world capabilities rather than only classroom learning.

Starting Point

At the outset, my background was uneven. I had some exposure to SQL through university coursework, but the time since then made practical application of SQL more challenging. Tableau, by contrast, was entirely new to me. Entering the project, I saw both a gap in my toolkit and an opportunity to build a stronger foundation.

Conscious Decisions

To address those gaps, I made intentional choices about how to structure the project. I restarted my SQL journey from scratch, revisiting fundamentals instead of relying on partial knowledge. This allowed me to gain clarity and ensure relevance for real-world use. For Tableau, I committed to a focused three-week period, teaching myself the software and practicing daily by experimenting with dashboards and visualization techniques.

Learning Strategy

My approach blended self-study with curated resources. I supplemented hands-on practice with structured courses, reference books, and additional online material, all with a portfolio focus in mind. This combination gave me both technical grounding and practical application, while also training me in independent learning, which is an increasingly important skill for adaptation to new tools and evolving business needs.

Growth Outlook

While this project demonstrates beginner-to-intermediate applications of SQL and Tableau, its true value lies in setting a baseline. It marks the first step in a progression toward more complex work with larger datasets, advanced queries, and sophisticated visualization design. By establishing this foundation, I've created a platform from which future projects can highlight increasing rigor, deeper analytical insight, and stronger professional readiness.

Project Background & Overview

Project Purpose

This project showcases my intermediate proficiency in SQL and Tableau by simulating a real-world analyst workflow. By taking data from analysis to visualization, I am demonstrating applied skills that act as proof of my current abilities and a foundation for future projects.

Key Questions Explored

Divisional Performance: How is each division performing against its annual sales targets, and what are the attainment percentages and dollar gaps?

Seasonal Product Performance: How do product transactions, units sold, and profitability change quarterly, and what seasonal patterns emerge?

Regional Product Performance: What are the total sales and gross profit by product within each state to identify top-performing regional markets?

High-Value Transactions: Which states record the largest or most profitable single transactions within the Chocolate and Sugar divisions?

Customer Segmentation: Who are the most valuable customers, and how can they be segmented based on total lifetime sales and purchasing patterns?

Product Profitability: Which products have profit margins that are below or above average?

Non-Core Product Sales: What are the specific order details for all non-chocolate products sold during the 2021 calendar year?

Scope

- **Data Source & Time Period**: The data was sourced from Maven Analytics and covers a four-year span, from 2021 through 2024, focusing on sales / performance data for "Wonka Candy."
- **Analytical Processes Used**: SQL querying, visualization (Tableau), data prep and iterative refinement of dashboards.

Audience / Use Case

The primary audiences for this project are:

- **Recruiters** who are evaluating my readiness for data analyst or business intelligence roles.
- **Portfolio reviewers** (potential employers, mentors, or peers) who will examine both technical depth and communication of insights.
- **Professors or academic advisors** for feedback on methodological rigor.

Data Overview

Where it came from: [Maven Analytics](https://www.mavenanalytics.io) is an online platform offering data & AI skill-training (courses in Excel, SQL, PowerBI, Tableau, Python, etc.)

Why it's suitable: Because Maven provides clean, mock / guided datasets which are realistic enough to mimic real business data but without some of the messiness of raw corporate data. This allows me to focus more on analysis, querying, visualization, and storytelling rather than spending disproportionate time on cleaning. Also, using data from a recognized source adds credibility when I present what I produced.

Deliverables

The project results in several outputs, designed both for depth and for different audiences or formats:

- A comprehensive written report, detailing methodology, SQL queries, visualizations, insights, and reflections.
- A more concise summary version of the report (for quick review / portfolio snapshot).
- A collection of SQL query files showing the raw queries used.
- Tableau visualizations (interactive dashboards) showing trends, comparisons, and insights.

Data & Tools Used

Data Sources

- **Maven Analytics**
  - Provided the cleaned mock dataset used for the project. This ensured that the data was structured, reliable, and realistic enough to simulate real-world analysis scenarios. Leveraging this source allowed the focus to remain on SQL querying and Tableau visualization rather than raw data cleaning.

Data Management & Querying

- **pgAdmin 4**
  - Primary environment for running SQL queries against the database. pgAdmin was used to extract, manipulate, and validate data, forming the backbone of the analysis.
- **Google Sheets & Microsoft Excel**
  - Both applications were employed for initial data formatting prior to importing datasets into pgAdmin. They were also used for supplementary investigative findings, quick calculations, and exploratory data checks.

Data Visualization & Presentation

- **Tableau Public Edition**
  - Used extensively for creating dashboards and data visualizations that translated raw data into accessible insights.
- **Tableau Public (Online Platform)**
  - Served as the hosting platform for interactive dashboards, allowing findings to be shared publicly.
- **OBS (Open Broadcaster Software)**
  - Utilized to record demonstrations of Tableau dashboards, ensuring portfolio viewers could see analyses in action.

Documentation & Reporting

- **Google Documents**
  - Used for drafting, organizing, and structuring the report throughout its development.
- **GitHub**
  - Functioned as the central repository for compiling the report and making it accessible for public review and collaboration.
- **Wix**
  - Served as the platform for building and presenting the final report within a personal portfolio website.

Learning & Knowledge Resources

- **Udemy (Tableau Course)**
  - Provided foundational knowledge of Tableau, ensuring effective and accurate visualization practices.
- **Communicating Data with Tableau (Book)**
  - Specific sections were studied to strengthen understanding of visualization best practices and communication strategies.
- **How to Become a Data Analyst (Book)**
  - Read in full to provide broader context and structure for portfolio-building, ensuring the project aligned with industry expectations.

AI & Productivity Tools

- **Google Gemini**
  - Used to refine report formatting, proofread SQL queries, and double-check certain Tableau-related questions.

Overarching Problem Statement

The Wonka Company lacks a unified and multi-dimensional analytical framework, preventing leadership from connecting high-level divisional performance with granular insights into product sales, regional trends, customer behavior, and profitability. This fragmented view hinders the ability to diagnose the root causes of underperformance and capitalize on strategic growth opportunities, ultimately slowing down critical, data-driven decision-making.

Section 0 - Wonka Executive Overview

Section 0 - Background

- Section 0 utilizes the Candy_Sales dataset and the Candy_Targets dataset.
- Section 0 serves as an executive overview by combining insights from Sections 1 and 2 into a mixed dashboard that highlights key details from the Wonka data.
- No new or unique queries were created for Section 0; all queries used are already documented within Sections 1 and 2.

Section 0 - Problem Statement

Wonka leadership lacks a consolidated executive view that brings together both division-level performance and product-level sales trends. Without this unified perspective, it is difficult to see how underperforming areas at the division level translate into gaps at the product level, slowing down timely decision-making on sales priorities and inventory planning.

Section 0 - Tableau Overview

Section 0 - Dashboard Information

Wonka Executive Summary Tableau Link

1. *Click on the link to access the fully-interactive, high-quality version of the data visualization.*
2. *The dashboard, an interactive data visualization, is freely available online via Tableau Public. No account creation or software download is required to access it.*
3. *After clicking the link, navigate to the bottom-right corner of the visualization , then, locate and click on the following icon for the full-screen view of the viz.*

Section 0 - Dashboard Snapshot
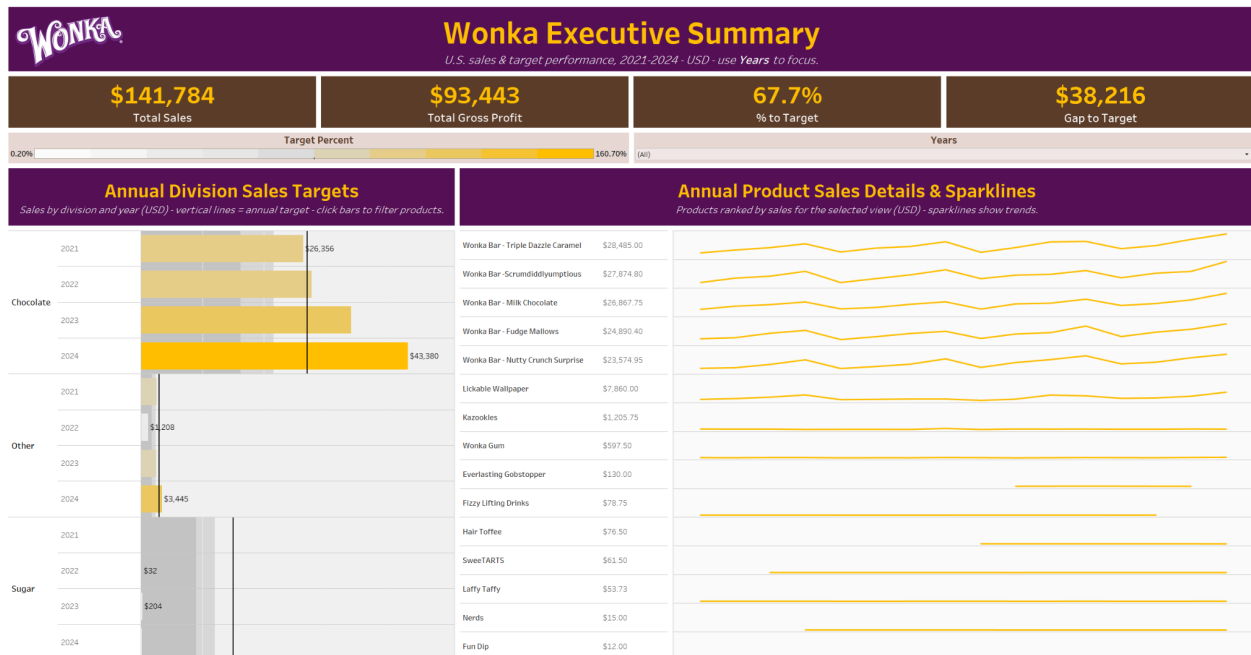
Section 0 - Key Findings

Dashboard 0 Big Picture

The executive summary provides a clear overview of Wonka's 2021–2024 sales performance, revealing mixed results heavily reliant on one of the three divisions, with overall target attainment reaching only 67.7% and leaving a $38,216 performance gap.

Chocolate Division Drives Success

The Wonka Chocolate division stands out as the company's strongest performer, consistently surpassing annual sales targets with only a slight shortfall in 2021 (97.6%). Even with that dip, the division maintained steady year-over-year growth. It also houses all of Wonka's top-performing products, led by the standout "Wonka Bar – Triple Dazzle Caramel."

Other Division Experiences Inconsistent Growth

The 'Other' division, while containing successful products like Lickable Wallpaper, shows inconsistent growth, experiencing a significant dip below target in 2022 before eventually recovering, and surpassing its target in 2024.

Sugar Division Significantly Drags Overall Wonka Performance

The Sugar division stands out as the primary reason for the overall shortfall in achieving the 2021-2024 targets. Its performance has been consistently disappointing, failing to meet sales targets in each of the past four years. This consistent underperformance has resulted in negligible total revenue contributions from the division, significantly impacting the company's overall financial health and strategic objectives.

Section 1 - Annual Division Performance Review

Section 1 - Background

- Section 1 utilizes the Candy_Sales dataset and the Candy_Targets dataset.
- Section 1 takes a look at how Wonka divisions are meeting their annual division targets.
- Like other sections, this section was built query first, then was implemented into Tableau for visualization.

Section 1 - Problem Statement

Wonka leadership needs a clear, single-source view of how each division is tracking against its annual sales targets, including attainment percentages, dollar gaps, and outcome classifications. This divisional perspective enables quick identification of weaknesses within specific business units and supports corrective action where it is most needed.

Section 1 - SQL Overview

What SQL Keywords Were Utilized?

SELECT	EXTRACT	YEAR	FROM	AS
ROUND	SUM	CASE	WHEN	DESC
THEN	ELSE	END AS	JOIN	ON
GROUP BY	ORDER BY			

Section 1 - Primary Query

```sql
SELECT
-- extracts the year from order dates
        EXTRACT(YEAR FROM ws.order_date) AS "Year",
        dt.division,
        dt.target AS annual_division_sales_target,
-- totals the sales for divisions
        ROUND(SUM(ws.sales),0) AS annual_division_sales,
-- finds the percentage of target made for each division by year
        ROUND(ROUND(SUM(ws.sales),0) / dt.target,3) AS target_percent,
-- subtracts annual total division sales from annual division target
        dt.target - ROUND(SUM(ws.sales),0) AS target_difference,
--buckets each division for each year by target percentage values (percentage of target made)
CASE
        WHEN ROUND(ROUND(SUM(ws.sales),0) / dt.target,3) > 1.5
                THEN 'Significantly Above Target'
        WHEN ROUND(ROUND(SUM(ws.sales),0) / dt.target,3) > 1
                THEN 'Above Target'
        WHEN ROUND(ROUND(SUM(ws.sales),0) / dt.target,3) = 1
                THEN 'Target Met'
        WHEN ROUND(ROUND(SUM(ws.sales),0) / dt.target,3) > 0.5
                THEN 'Below Target'
        WHEN ROUND(ROUND(SUM(ws.sales),0) / dt.target,3) > 0
                THEN 'Significantly Below Target'
        ELSE 'Error'
END AS target_outcome
-- joins division_targets table with wonka_sales table on division column
FROM
        division_targets dt JOIN wonka_sales ws
                ON dt.division = ws.division
-- groups by year, division name, and target value
GROUP BY "Year", dt.division, dt.target
-- orders by year, then division target, then division name
ORDER BY "Year", target_percent DESC, dt.division
```

Section 1 - Primary Query Results

Year	division	annual_division_sales_target	annual_division_sales	target_percent	target_difference	target_outcome
2021	Chocolate	27000	26356	0.976	644	Below Target
2021	Other	3000	2549	0.85	451	Below Target
2021	Sugar	15000	48	0.003	14952	Significantly Below Target
2022	Chocolate	27000	27763	1.028	-763	Above Target
2022	Other	3000	1208	0.403	1792	Significantly Below Target
2022	Sugar	15000	32	0.002	14968	Significantly Below Target
2023	Chocolate	27000	34193	1.266	-7193	Above Target
2023	Other	3000	2462	0.821	538	Below Target
2023	Sugar	15000	204	0.014	14796	Significantly Below Target
2024	Chocolate	27000	43380	1.607	-16380	Significantly Above Target
2024	Other	3000	3445	1.148	-445	Above Target
2024	Sugar	15000	144	0.01	14856	Significantly Below Target

Section 1 - Tableau Overview

Section 1 - Dashboard Information

[Wonka Annual Division Performance Review Tableau Link](#)

1. *Click on the link to access the fully-interactive, high-quality version of the data visualization.*
2. *The dashboard, an interactive data visualization, is freely available online via Tableau Public. No account creation or software download is required to access it.*
3. *After clicking the link, navigate to the bottom-right corner of the visualization , then, locate and click on the following icon for the full-screen view of the viz.*

Section 1 - Dashboard Snapshot
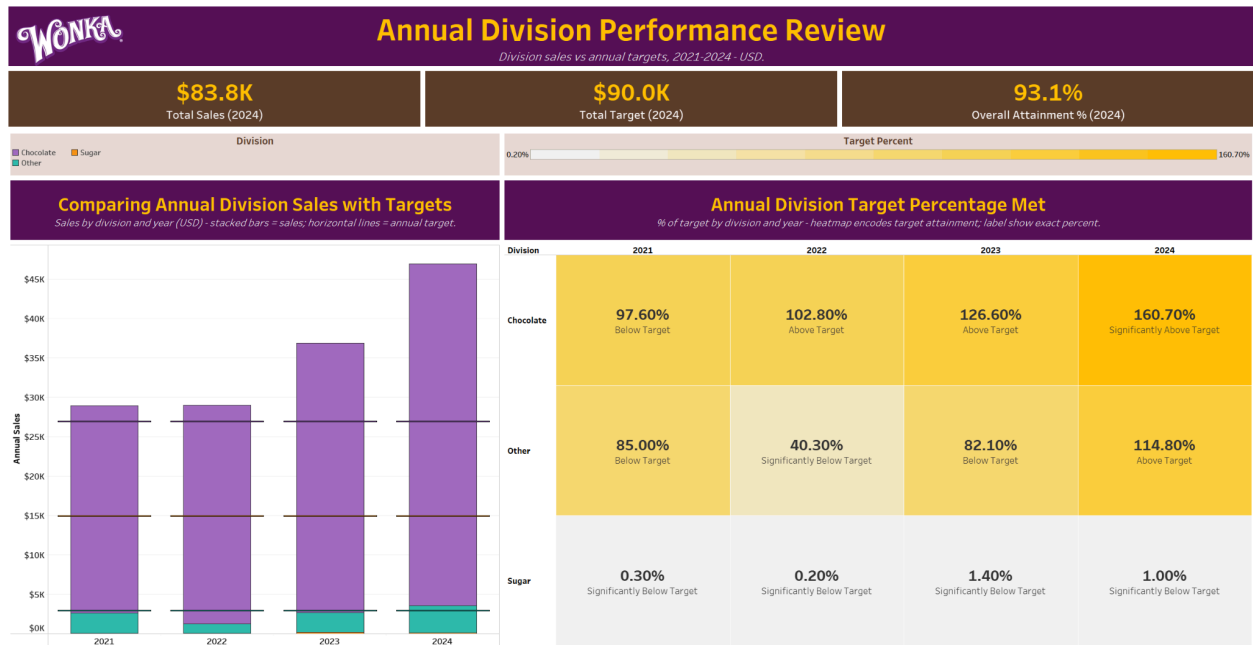
Section 1 - Key Findings

Dashboard 1 - Big Picture

Wonka achieved a solid 93% of its overall 2024 sales target. However, our Annual Division Performance Review Dashboard (2021-2024) reveals that this masks significant performance variations. High-achieving divisions are compensating for underperforming ones, leading to a generally positive sales figure that doesn't reflect individual division performance.

Chocolate Division Leads Divisions

The clear top performer, Chocolate division has experienced consistent growth, surpassing targets for the last three years leading to a 160.7% target attainment in 2024. This large lead in the 2024 sales target as well as less significant but still above-target previous years' sales from the division, offset the shortfalls from other Wonka divisions.

Other Division Inconsistent With a 2024 Turnaround

Wonka's 'Other' division showed inconsistent sales through 2021 - 2024. Despite poor target attainment of 40.3% in 2022, the 'Other' division experienced a strong rebound in 2024, surpassing its target at 114.8%.

Sugar Division Experiences Chronic Underperformance

The Sugar division is in crisis, having missed targets for four years, never exceeding 1.4% of goals. This sustained underperformance requires immediate investigation and a strategic overhaul to address deep-seated issues.

Section 1 - Investigative Findings

NOTE: Detailed product profitability for Sugar will be analyzed later in this report (see Dashboard 6).

Section 1 - Recommendations/Options & Next Steps

'Other' Division Investigation

Determine the strategies, changes, or market conditions that led to 'Other' division's large target attainment recovery.

Sugar Division Dillema

Initiate a review of the Sugar division to address its extreme underperformance with key questions like:

- Are sales targets unrealistic or flawed?
- Are product, pricing, or marketing issues limiting performance?
- Is distribution a major barrier?
- Are external market forces the primary driver?

Depending on the findings, Wonka could pursue a major strategy reset for the Sugar division or even divest entirely, while also weighing whether reallocating its resources to the high-performing Chocolate division would generate greater impact.

Section 2 - Seasonal Performance by Product

Section 2 - Background

- Section 2 utilizes the Candy_Sales dataset.
- Section 2 takes a look at Wonka products over time and from a seasonal perspective.
- In the dataset, an order_id can repeat for the same product if it was purchased in separate transactions on the same day. Therefore, each row will be treated as a distinct transaction.
- Like other sections, this section was built query first, then was implemented into Tableau for visualization.

Section 2 - Problem Statement

To identify seasonal patterns and improve inventory planning, Wonka needs to analyze how each product's transactions, units sold, and profitability have changed quarterly over the past four years.

Section 2 - SQL Overview

What SQL Keywords Were Utilized?

SELECT	EXTRACT	YEAR	FROM	AS
QUARTER	COUNT	AVG	SUM	ROUND
GROUP BY	ORDER BY			

Section 2 - Primary Query

```sql
SELECT
-- extracts the year from order_date column
EXTRACT(YEAR FROM order_date) AS "Year",
-- extracts the quarter from order_date column
EXTRACT(QUARTER FROM order_date) AS "Quarter",
product_name,
-- counts the amount of transactions for a particular product during that year & quarter
COUNT(*) AS transactions,
-- determines average units of that product ordered for that product during that year &
quarter
ROUND(AVG(units),2) AS average_units,
-- determines the total units of that product ordered during that year & quarter
SUM(units) AS total_units,
-- determines the average sales of that product during that year & quarter
ROUND(AVG(sales),2) AS avg_sales,
-- determines the total sales of that product during that year & quarter
ROUND(SUM(sales),2) AS total_sales,
-- determines the total gross profit of that product during that year & quarter
ROUND(SUM(gross_profit),2) AS total_gross_profit

FROM wonka_sales

GROUP BY "Year", "Quarter", product_name

-- orders results by year, quarter, then total sales
ORDER BY "Year", "Quarter", total_sales
```

Section 2 - Primary Query Results

Year	Quarter	product_name	total_orders	average_units	total_units	avg_sales	total_sales	total_gross_profit
2021	1	Laffy Taffy	1	6	6	11.94	11.94	7.44
2021	1	Fizzy Lifting Drinks	2	3	6	11.25	22.5	13.5
2021	1	Wonka Gum	8	3.25	26	4.06	32.5	16.9
2021	1	Kazookles	7	4.29	30	13.93	97.5	7.5
2021	1	Lickable Wallpaper	3	4	12	80	240	120
2021	1	Wonka Bar -Scrumdiddlyumptious	45	3.47	156	12.48	561.6	390
2021	1	Wonka Bar - Nutty Crunch Surprise	46	3.76	173	13.13	603.77	430.77
2021	1	Wonka Bar - Triple Dazzle Caramel	57	3.32	189	12.43	708.75	463.05
2021	1	Wonka Bar - Fudge Mallows	54	3.78	204	13.6	734.4	489.6
2021	1	Wonka Bar - Milk Chocolate	66	3.94	260	12.8	845	548.6
2021	2	Wonka Gum	5	3.8	19	4.75	23.75	12.35
2021	2	Kazookles	5	5	25	16.25	81.25	6.25
2021	2	Lickable Wallpaper	3	6	18	120	360	180
2021	2	Wonka Bar - Nutty Crunch Surprise	63	3.16	199	11.02	694.51	495.51
2021	2	Wonka Bar - Fudge Mallows	67	3.72	249	13.38	896.4	597.6

Section 2 - Tableau Overview

Section 2 - Dashboard Information

[Wonka Product Seasonality & Performance Tableau Link](#)

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Section 2 - Dashboard Snapshot
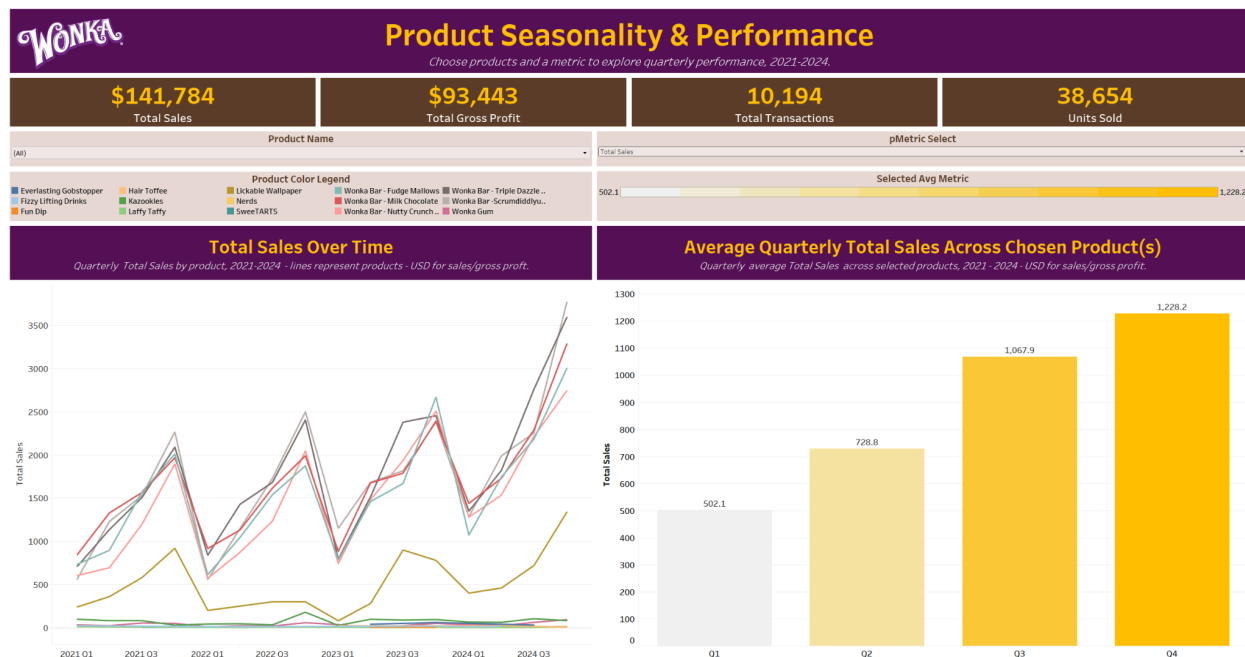
Section 2 - Key Findings

Dashboard 2 Big Picture
Quarterly product sales analysis from 2021 to 2024 demonstrates strong seasonal trends, specifically in the second-half of each of the four years.
A distinct performance pattern exists among different Wonka products, more specifically among higher performing products.

Obvious Seasonal Trends
With few small exceptions, Wonka sales consistently increase throughout the year across the product portfolio. During the four-year period, Q3 demonstrates its position as Wonka's growth period while Q4 emerges as Wonka's peak sales period. Although we lack direct access to Wonka promotional efforts, we can assume holiday seasons and Wonk's attached promotions are the suspected drivers of Wonka consumer demand in Q3 & Q4.

Chocolate Products Lead the Seasons
Wonka chocolate not only presents itself as the highest-selling product group, but also demonstrates the most obvious example of Wonka's overall seasonal trend pattern.
Chocolate products are consistent high-performers and act as a growing contribution to total Wonka revenue.

High-Value Lickable Wallpaper
Lickable Wallpaper stands out as the strongest non-chocolate Wonka product, generating high revenue from only relatively few units sold because of its high price point.

Non-Chocolate Seasonal Performers
Wonka Gum and Kazookles, while far below top chocolate performers, also display a clear seasonal uptick in Q3 and Q4, highlighting the importance of the year's second-half for the broader product line.

Section 2 - Investigative Findings

Sales, Profit, Transactions, and Units

Based on an investigation of other dashboard metrics like Profit, Transactions, and Units, the company's sales and profitability are well-aligned. Chocolate products and Lickable Wallpaper stand out as the top performers, generating the most revenue and, in turn, the highest gross profit. This financial success is further supported by popularity indicators, as metrics like total transactions and units sold confirm that chocolate products are purchased more frequently and in greater quantities than other items, solidifying their position as true best-sellers.

Lickable Wallpaper Investigation

Using Wonka sales data, "Lickable Wallpaper" struggles significantly with customer retention. Out of 88 unique customers, only 4 have ever made a repeat purchase, leading to a very low customer loyalty rate of 4.55%. This pattern holds true even for high-volume buyers, who tend to make a single large purchase and do not return. This suggests that while the product successfully attracts new buyers, it is treated as a novelty item with little repeat business. The core business challenge for Lickable Wallpaper is not acquiring new customers, but creating a reason for them to come back.

Lickable Wallpaper Query

```sql
SELECT
    customer_id,
    product_name,
    SUM(units) AS total_units,
    SUM(sales) AS total_sales,
    COUNT(*) AS transaction_count
FROM wonka_sales
WHERE product_name = 'Lickable Wallpaper'
GROUP BY customer_id, product_name
ORDER BY total_units DESC, customer_id
```

Lickable Wallpaper Query Results

customer_id	product_name	total_units	total_sales	transaction_count
131807	Lickable Wallpaper	14	280	3
122336	Lickable Wallpaper	13	260	1
124163	Lickable Wallpaper	11	220	1
164756	Lickable Wallpaper	11	220	2
107202	Lickable Wallpaper	10	200	1
164770	Lickable Wallpaper	10	200	1
125388	Lickable Wallpaper	9	180	3
140326	Lickable Wallpaper	9	180	1
147900	Lickable Wallpaper	9	180	1
164147	Lickable Wallpaper	9	180	1
106376	Lickable Wallpaper	8	160	1
136924	Lickable Wallpaper	8	160	1
106992	Lickable Wallpaper	7	140	1
128608	Lickable Wallpaper	7	140	2
137001	Lickable Wallpaper	7	140	1

Section 2 - Recommendations/Options & Next Steps

1. Increase inventory for top performing products like those in the Chocolate division and more unique cases like Lickable Wallpaper.
2. Increase marketing and promo campaigns to launch at the beginning of Q3.
3. Consider adding seasonal or different flavors for Lickable Wallpaper to drive the number of returning buyers.
4. Aside from higher unit price, determine any other factors that lead to the success of "Lickable Wallpaper" compared to Wonka's other non-chocolate products.

Section 3 Regional Product Performance Explorer

Section 3 - Background

- Section 3 utilizes the Candy_Sales dataset.
- Section 3 takes a close look at more granular data from individual Wonka products.
- Like other sections, this section was built query first, then was implemented into Tableau for visualization.

Section 3 - Problem Statement

Wonka needs to determine total sales and total gross profit by product within each state and year in order to pinpoint top-performing markets for regional growth opportunities.

Section 3 - SQL Overview

What SQL Keywords Were Utilized?

SELECT	EXTRACT	YEAR	FROM	AS
ROUND	SUM	AS	FROM	GROUP BY
ORDER BY				

Section 3 - Primary Query

```
SELECT
-- extracts year from order_date column
        EXTRACT(YEAR FROM order_date) AS "Year",
-- grabs each state
        state_province AS "state",
-- grabs each product
        product_name,
-- finds the total sales for that product within that state, for that year
        ROUND(SUM(sales),2) AS total_sales,
-- finds the gross profit for that product within that state, for that year
        ROUND(SUM(gross_profit),2) AS total_gross_profit

FROM wonka_sales

GROUP BY "Year", "state",  product_name
-- orders by year, then state, then product name
ORDER BY "Year", "state", product_name
```

Section 3 - Primary Query Results

Year	state	product_name	total_sales	total_gross_profit
2021	Alabama	Lickable Wallpaper	100	50
2021	Alabama	Wonka Bar - Fudge Mallows	39.6	26.4
2021	Alabama	Wonka Bar - Milk Chocolate	100.75	65.41
2021	Alabama	Wonka Bar - Nutty Crunch Surprise	31.41	22.41
2021	Alabama	Wonka Bar -Scrumdiddlyumptious	14.4	10
2021	Alberta	Lickable Wallpaper	100	50
2021	Alberta	Wonka Bar - Fudge Mallows	18	12
2021	Alberta	Wonka Bar - Milk Chocolate	39	25.32
2021	Alberta	Wonka Bar - Triple Dazzle Caramel	15	9.8
2021	Alberta	Wonka Bar -Scrumdiddlyumptious	28.8	20
2021	Arizona	Lickable Wallpaper	380	190
2021	Arizona	Wonka Bar - Fudge Mallows	122.4	81.6
2021	Arizona	Wonka Bar - Milk Chocolate	162.5	105.5
2021	Arizona	Wonka Bar - Nutty Crunch Surprise	115.17	82.17
2021	Arizona	Wonka Bar - Triple Dazzle Caramel	135	88.2

Section 3 -Tableau Overview

Section 3 - Dashboard Information

Wonka Regional Product Performance Explorer Tableau Link

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2. *The dashboard, an interactive data visualization, is freely available online via Tableau Public. No account creation or software download is required to access it.*
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Section 3 - Dashboard Snapshot
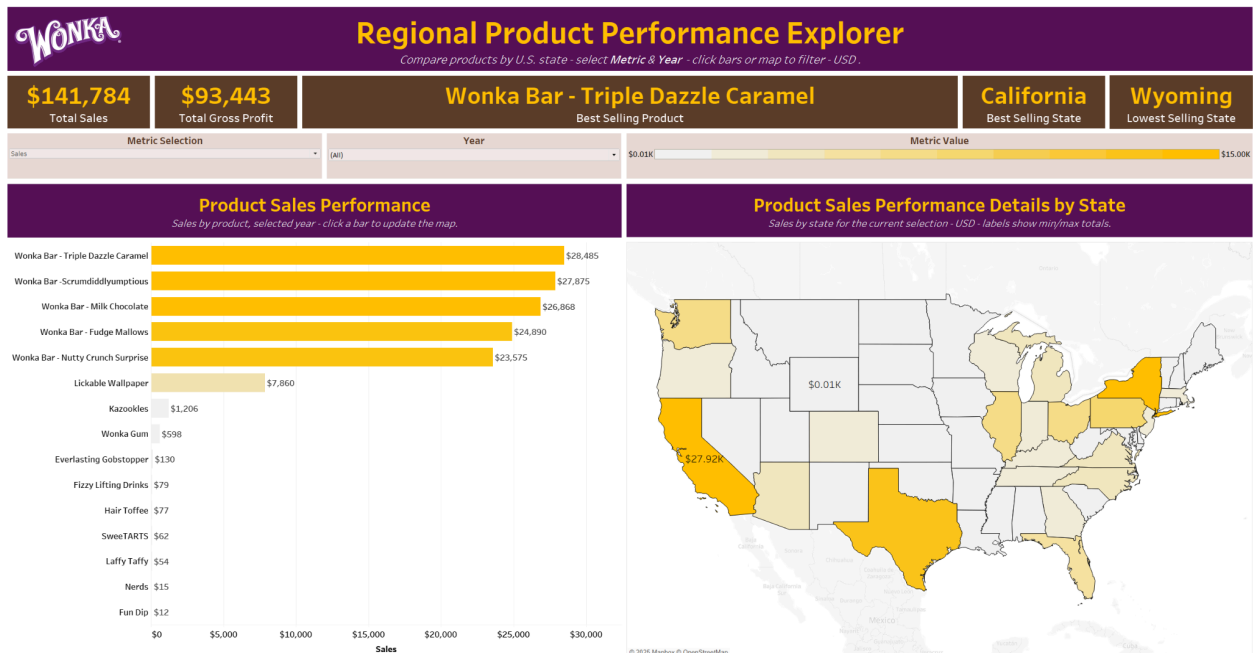
Section 3 - Key Findings

Dashboard 3 Big Picture

Geographic analysis of Wonka product sales since 2021 display while Wonka's chocolate line is the national leader, the performance is concentrated in only a few key states.

Top Wonka Markets

California has been the top market for four consecutive years, consistently driving the majority of sales across the United States, alongside Texas and New York, establishing them as key markets for Wonka's success.

Product Dominance

From 2021 through 2024, the "Wonka Bar - Triple Dazzle Caramel" was the top-selling product in the chocolate division. The strong national sales of Wonka's chocolate line demonstrate the success of the core marketing and distribution strategies.

Emerging Growth in the Midwest & Northwest

Starting in 2023 and continuing into 2024, a noticeable sales increase emerged in multiple Midwestern states and the Northwestern state of Washington. While not top-tier states, Wonka should keep their eye on these growing markets.

Section 3 - Investigative Findings

Factory Correlation

One of the first points of investigation came from visual analysis regarding the heatmap of total sales for Wonka and comparing it with Wonka factories with coordinates provided from the dataset. Visually comparing the two images, there appears to be no direct correlation between where the factories are located and which states have the highest sales. High performing states like California, Texas, and Florida do not have any Wonka factories. Conversely, states with factories like Minnesota show relatively low sales while others like Illinois and Georgia demonstrate only moderate sales performance.

Snapshot of Wonka Factory Locations Based on Dataset
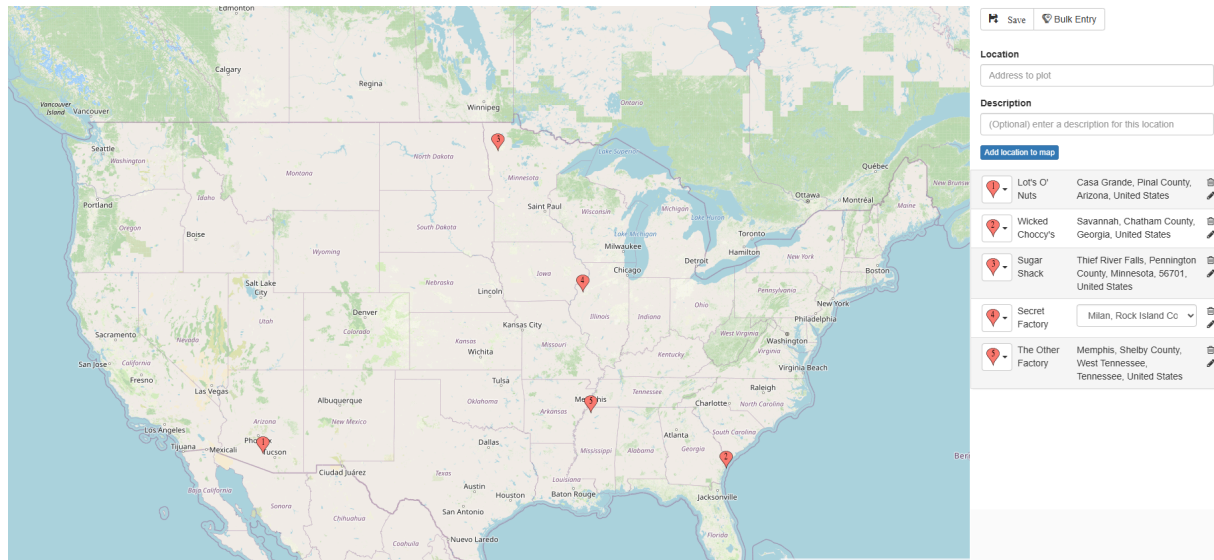
Population-Sales Relationship

A deeper dive into our investigative findings from Dashboard 3 highlights a strong correlation between population size and sales performance. Specifically, when ranking U.S. states by total sales and comparing these rankings to 2023 state population rankings, we observed a strong relationship ($R^2 = 0.75$). This suggests that larger population centers are solid predictors of Wonka's sales success, reinforcing the importance of focusing on highly populated states as primary markets for both current sales strength and future growth opportunities .

state_province	sales_rank	pop_rank	total_sales	population_2023
California	1	1	27917.4	38965193
Texas	3	2	13416.1	30503301
Florida	8	3	4804.02	22610726
New York	2	4	15541	19571216
Ontario	32	5	814.57	15800000
Pennsylvania	4	6	8027.03	12961677
Illinois	6	7	6898.96	12549689
Ohio	7	8	6768.95	11765487
Georgia	13	9	2692.84	11042838
North Carolina	10	10	3450.86	10835491

Population vs. Sales Rank
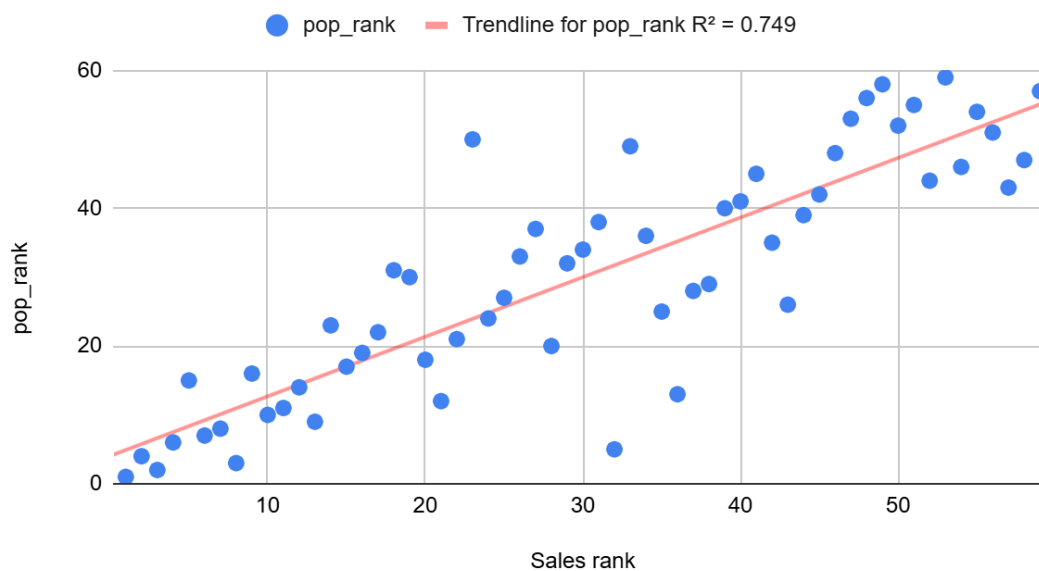
Regional Sales & Distribution

To better understand the balance of sales across states within each region, we assessed distribution using the standard deviation of each state's share of regional sales. A lower value indicates a more even spread, while a higher value reveals heavier reliance on a small number of states. The analysis shows that high-revenue regions like the Pacific, despite generating the most sales, also display the greatest imbalance, with single states accounting for as much as 40–60% of regional revenue. Conversely, the Gulf region, though generating the lowest overall sales, is the most evenly distributed and thus the most stable. This contrast underscores the trade-off between high revenue and market concentration risk .

Regional Sales Distribution Query

```sql
SELECT
    region,
    SUM(sales) AS total_sales
FROM
    wonka_sales
WHERE country_region NOT LIKE 'Canada'
GROUP BY region
ORDER BY total_sales DESC
```

Regional Sales Distribution Query Results

region	total_sales
Pacific	45451.06
Atlantic	39232.67
Interior	31899.35
Gulf	22247.26

By total sales, the Pacific region leads with $45,451, followed by the Atlantic at $39,232, the Interior at $31,899, and the Gulf in last place at $22,247.

Interestingly, higher revenue regions tend to coincide with greater sales concentration by state. The Pacific region displays the most imbalance with a standard deviation of 17.93, while the Atlantic (SD: 11.25), the Interior (SD: 11.85), and the Gulf showing the most balance (SD: 6.31).

The investigations reveal that Wonka's market success is heavily concentrated, with single powerhouse states contributing 40–60% of total sales in top-earning regions. This reliance creates volatility, as the regions generating the most revenue also have the least diversity across states. By contrast, the lowest-selling Gulf region, though less lucrative, is the most stable due to its more balanced distribution.

Section 3 - Recommendations/Options & Next Steps

Three recommendations/options present themselves given data, analysis, and further investigation

1. Protect and Leverage Core Markets: Maintain focus in best-selling states like California, Texas, New York, and other top-performers to defend market share and maximize revenue.
2. Expand Secondary States: Target growth in emerging states like those in the Midwest/Northwest and nurture second-tier states within strong regions to diversify performance.
3. Prioritize by Population: Use population as a key metric to select quotas and allocate resources across states accordingly.

Section 4 - High-Value Transaction Analysis by State

Section 4 - Section Background

- Section 4 utilizes the Candy_Sales dataset.
- Section 4 takes a look at Wonka sales data for the Sugar and Chocolate Division, filtering transactions deemed high-value.
- Like other sections, this section was built query first, then was implemented into Tableau for visualization.

Section 4 - Problem Statement

Wonka aims to identify U.S. states within the Chocolate and Sugar divisions that have recorded notably large or highly profitable single transactions, while also highlighting each state and division's largest and smallest sales and profit lines. This view will help the team pinpoint markets where occasional high-value transactions take place.

Section 4 - SQL Overview

What SQL Keywords Were Utilized?

SELECT	MAX	MIN	AS	FROM
WHERE	AND	IN	GROUP BY	HAVING
OR	ORDER BY	DESC		

Section 4 - Primary Query

```sql
SELECT
    state_province,
    division,
-- create column that finds largest sale
        MAX(sales) AS largest_sale,
-- create column that finds smallest sale
    MIN(sales) AS smallest_sale,
-- create column that finds the most profitable sale
        MAX(gross_profit) AS most_profitable_sale,
-- create column that finds the least profitable sale
        MIN(gross_profit) AS least_profitable_sale
FROM wonka_sales
-- restricts search to the United States and Chocolate/Sugar divisions
WHERE country_region = 'United States' AND division IN('Chocolate', 'Sugar')
GROUP BY
    state_province,
    division
-- limits results to US State Chocolate/Sugar divisions largest single sales greater
-- than 50 or gross profit greater than 25
HAVING
    MAX(sales) > 50
        OR MAX(gross_profit) > 25
ORDER BY
    division DESC, largest_sale DESC;
```

Section 4 - Primary Query Results

| state_province	division	largest_sale	smallest_sale	most_profitable_sale	least_profitable_sale
Colorado	Sugar	60	60	48	48
Florida	Sugar	40	9.95	32	6.2
Virginia	Chocolate	52.5	3.25	34.3	2.11
North Carolina	Chocolate	52.5	3.25	34.3	2.11
Texas	Chocolate	52.5	3.25	34.3	2.11
Nebraska	Chocolate	52.5	3.75	34.3	2.45
California	Chocolate	50.4	3.25	34.86	2.11
Pennsylvania	Chocolate	50.4	3.25	35	2.11
Washington	Chocolate	50.4	3.25	35	2.11
Mississippi	Chocolate	50.4	3.6	35	2.4
Ohio	Chocolate	50.4	3.25	35	2.11
New York	Chocolate	50.4	3.25	34.86	2.11
Kentucky	Chocolate	48.86	3.25	34.86	2.11
Illinois	Chocolate	48.75	3.25	31.85	2.11
Maine	Chocolate	48.75	6.5	31.85	4.22

Section 4 - Tableau Overview

Section 4 - Dashboard Information

[Wonka High Value Transaction Analysis By State Tableau Link](#)

1. *Click on the link to access the fully-interactive, high-quality version of the data visualization.*
2. *The dashboard, an interactive data visualization, is freely available online via Tableau Public. No account creation or software download is required to access it.*
3. *After clicking the link, navigate to the bottom-right corner of the visualization , then, locate and click on the following icon for the full-screen view of the viz.*

Section 4 - Dashboard Snapshot

WONKA High Value Transaction Analysis By State
Orders where Total Sales > $50 or Total Profit > $25 - select Division - click on map or table to filter - USD.

$47.42	$32.46	28
Largest Single Sale (Avg)	Most Profitable Single Sale (Avg)	High Value States

Division
(All)

Most Profitable Sale $25.32 — $80.50

Largest Sale $39.00 $106.80 $60.00 $80.00

High Value Transactions
By state, columns show largest/most profitable/smallest/least profitable from qualified single transaction.

State Provi..	Division	Largest Single Sale	Most Profitable Single Sale	Smallest Single Sale	Least Profitable Single Sale
Colorado	Chocolate	$46.80	$32.50	$3.25	$2.11
	Sugar	$60.00	$48.00	$60.00	$48.00
Florida	Chocolate	$46.80	$32.50	$3.25	$2.11
	Sugar	$40.00	$32.00	$9.95	$6.20
Washington	Chocolate	$50.40	$35.00	$3.25	$2.11
Pennsylvania	Chocolate	$50.40	$35.00	$3.25	$2.11
Ohio	Chocolate	$50.40	$35.00	$3.25	$2.11
Mississippi	Chocolate	$50.40	$35.00	$3.60	$2.40
New York	Chocolate	$50.40	$34.86	$3.25	$2.11
Kentucky	Chocolate	$48.86	$34.86	$3.25	$2.11
California	Chocolate	$50.40	$34.86	$3.25	$2.11
Virginia	Chocolate	$52.50	$34.30	$3.25	$2.11
Texas	Chocolate	$52.50	$34.30	$3.25	$2.11
North Carolina	Chocolate	$52.50	$34.30	$3.25	$2.11
Nebraska	Chocolate	$52.50	$34.30	$3.75	$2.45
Vermont	Chocolate	$46.80	$32.50	$3.49	$2.45
Georgia	Chocolate	$46.80	$32.50	$3.25	$2.11
Maine	Chocolate	$48.75	$31.85	$6.50	$4.22
Illinois	Chocolate	$48.75	$31.85	$3.25	$2.11
Michigan	Chocolate	$46.80	$31.20	$3.25	$2.11
Arizona	Chocolate	$45.50	$29.54	$3.25	$2.11
Alabama	Chocolate	$45.50	$29.54	$3.49	$2.40
Oklahoma	Chocolate	$45.00	$29.40	$3.25	$2.11
Nevada	Chocolate	$39.60	$27.50	$3.25	$2.11
Indiana	Chocolate	$39.60	$27.50	$3.25	$2.11
Oregon	Chocolate	$41.25	$26.95	$3.25	$2.11
Wisconsin	Chocolate	$39.60	$26.40	$3.25	$2.11
Utah	Chocolate	$39.00	$25.32	$3.60	$2.40

High Value Transaction Map
Qualifying orders by state - labels show min/max of largest sales .

$39.00 $106.80

© 2025 Mapbox © OpenStreetMap

Section 4 - Key Findings

Dashboard 4 Big Picture

Transactions which surpassed the high-value transaction threshold held an average of $47.42 for largest single sale as well as $32.46 for most profitable single sales.

Chocolate Division

Chocolate division drives high-value transactions with a large concentration of these sales in Eastern states, specifically for Virginia, North Carolina, New York, and Pennsylvania.

Sugar Division

Despite Wonka's Sugar division producing far fewer high-value transactions, Colorado and Florida are notable exceptions. Interestingly, Colorado recorded the largest single high value transaction sale, across both divisions, of $60.

Cross Division Markets

Both Colorado and Florida were unique in the fact that both states qualified for high-value transactions for multiple divisions. This suggests Colorado and Florida hold customers willing to make large purchases across different product categories.

Section 4 - Recommendations/Options & Next Steps

1. Explore why the Sugar division saw such large transactions in only two states and determine if other states could be tested to see if existing customers that offer high value chocolate sales could also convert to large Sugar division transactions.
2. Increase the marketing and sales efforts in Colorado and Florida. Deeper customer/market analysis should be considered for these two states that led to the two large sales across both divisions.

Section 5 - Top Wonka Customer Segmentation

Section 5 - Background

- Section 5 utilizes the Candy_Sales dataset.
- Section 5 takes a look at Wonka customers and segments them depending on their spending habits.
- An orderID is generated for each unique Product-Day combination, meaning every time a customer buys a specific product on a specific day, it creates one orderID. The Product-Day Touchpoints metric on the dashboard therefore represents the total number of engagement points a customer has, combining both purchase frequency and product variety. This makes it a stronger indicator than simple purchase counts, as it captures customer loyalty (repeat purchases across multiple days) and variety (interest in different products).
- With this definition in place, the insights from the dashboard segment Wonka's top customers along two dimensions: Lifetime Sales on the Y-axis, reflecting total spending, and Product-Day Touchpoints on the X-axis, reflecting breadth and depth of engagement. This framework allows a clearer view of not only who spends the most, but also who interacts most widely and consistently with Wonka's products.
- Note: The data for this analysis was originally pre-filtered to include only top Wonka customers, and the following insights apply specifically to that group.
- Like other sections, this section was built query first, then was implemented into Tableau for visualization.

Section 5 - Problem Statement

The Wonka Company needs to identify and segment its most valuable customers to tailor marketing campaigns and loyalty programs. However, Wonka lacks a clear method to rank customers by their financial value and purchasing patterns. This analysis addresses the problem by creating a dashboard that ranks customers by total lifetime sales, product-sales touchpoints and average sale value, enabling us to discover and target our top customer segments effectively.

Section 5 - SQL Overview

What SQL Keywords Were Utilized?

SELECT	COUNT	AS	SUM	ROUND
FROM	GROUP BY	ORDER BY	DESC	DISTINCT

Section 5 - Primary Query

```
SELECT
-- grabs customer ID for top performing customers
        customer_id,
-- counts the number of unique order IDs for the customer
        COUNT(DISTINCT order_id) AS order_id_count,
-- lifetime sales for the customer
        SUM(sales) AS total_sales,
-- divides total sales by the number of unique order IDs
        ROUND(SUM(sales) / COUNT (DISTINCT order_id),2) AS average_sale_per_order_id
FROM wonka_sales
GROUP BY customer_id
ORDER BY total_sales DESC, order_id_count DESC, average_sale_per_order_id DESC;
```

Section 5 - Primary Query Results

customer_id	order_count	total_sales	average_sale_per_order
131807	15	454.4	30.29
115238	15	380.5	25.37
122336	3	352.2	117.4
164756	5	304.14	60.83
124163	4	247.35	61.84
164770	2	232.4	116.2
125388	6	216	36
163790	6	208.95	34.83
164147	3	204.65	68.22
140326	3	202.05	67.35

Section 5 - Tableau Overview

Section 5 - Dashboard Information

[Wonka Customer Segmentation Tableau Link](#)

1. *Click on the link to access the fully-interactive, high-quality version of the data visualization.*

2. *The dashboard, an interactive data visualization, is freely available online via Tableau Public. No account creation or software download is required to access it.*

3. *After clicking the link, navigate to the bottom-right corner of the visualization , then, locate and click on the following icon for the full-screen view of the viz.*
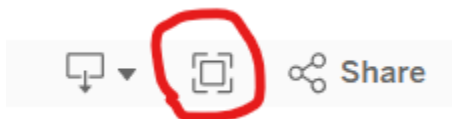
Section 5 - Dashboard Snapshot
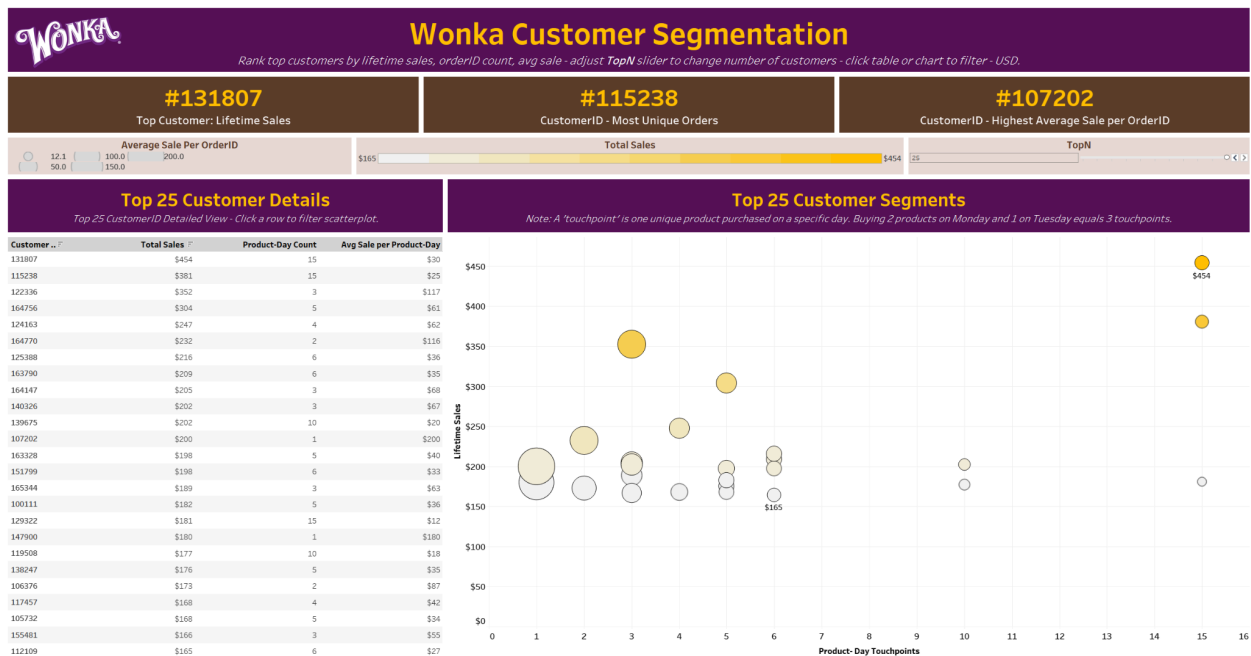
Section 5 - Key Findings

Important Note: Product-day touchpoints don't always indicate variety. Touchpoints may also reflect repeated purchases of just one or two favorite products on different days.

Champions (High Sales, High Touchpoints)
Champions are Wonka's most valuable customers, combining high lifetime sales with frequent product-day touchpoints. They show both loyalty and variety. For example, customers #131807 and #115238 each placed 15 separate orders, averaging $25–$30 per order. Their repeat engagement makes them critical to long-term success.

Bulk Buyers (High Sales, Low Touchpoints)
Bulk Buyers are customers who generate large amounts of revenue from very few orders (1–5 touchpoints). They often make infrequent bulk purchases with a limited product range. For example, customer #107202 reached $200 in lifetime sales from a single order. They provide quick bursts of revenue but are less predictable over time.

Samplers (Moderate Sales, High Touchpoints)
Samplers are customers who engage frequently but spend moderately. They spread small purchases across many products and days, typically with 10+ touchpoints. This segment contributes to engagement and product awareness but drives less consistent revenue.

Core Customers (Moderate Sales, Low to Moderate Touchpoints)
Core customers are the largest segment, generating $150–$250 in lifetime sales across 1–6 touchpoints. They represent the steady backbone of Wonka's customer base, providing reliable, occasional medium-sized purchases. Some are early-stage buyers just beginning to show loyalty, while others are more established. Together, *Core Customers* form a stable and valuable middle tier.

Section 5 - Investigative Findings

To determine which products are more often purchased in bulk, we conducted a query to determine which products had the highest average units in each transaction. The findings pointed to Gobstoppers, Hair Toffee, and Lickable Wallpaper being among the top 3 while products like Nerds, Fun Dip, and Laffy Taffy having the lowest average units in each transaction.

Average Product Units per Transaction Query

```sql
SELECT
    product_name,
    ROUND(AVG(units),2) AS avg_units_in_transaction
FROM
    wonka_sales
GROUP BY product_name
ORDER BY avg_units_in_transaction DESC
```

Average Product Units per Transaction Query Results

product_name	avg_units_in_transaction
Everlasting Gobstopper	4.33
Hair Toffee	4.25
Lickable Wallpaper	4.18
SweeTARTS	4.1
Wonka Gum	3.98
Wonka Bar - Milk Chocolate	3.87
Kazookles	3.86
Wonka Bar - Fudge Mallows	3.8
Wonka Bar - Triple Dazzle Caramel	3.77
Wonka Bar -Scrumdiddlyumptious	3.75
Wonka Bar - Nutty Crunch Surprise	3.73
Fizzy Lifting Drinks	3.5
Laffy Taffy	2.7
Fun Dip	2.67
Nerds	2.5

Section 5 - Recommendations/Options & Next Steps

1. Nurture *Champion* customers with VIP treatment and loyalty programs.
2. Offer *Bulk Buyers* stock-up and save deals on the items they historically buy.
3. Encourage product discovery for *The Samplers* by offering samples, bundles, or incentives for reviewing to help convert top right champions.
4. Gently push *Core Customers* towards either *Champions* by incentivizing them to try new product categories, or *Bulk Buyers* through buy-3-get-1-free deals.
5. Conduct targeted advertising to bring in additional customers for products that are often purchased in bulk.

Section 6 - Wonka Product Profitability

Section 6 - Background

- Section 6 utilizes the Candy_Products dataset.
- Section 6 takes a look at Wonka pricing data and categorizes the products into various buckets depending on different pricing values.
- Like other sections, this section was built query first, then was implemented into Tableau for visualization.

Section 6 - Problem Statement

Wonka leadership needs to know which of their products' profit margins are below and above average in order to improve low-margin products through cost reduction or price optimization.

Section 6 - SQL Overview

What SQL Keywords Were Utilized?

SELECT	ROUND	AS	CASE	WHEN
ROUND	THEN	ELSE	END AS	FROM
GROUP BY	ORDER BY			

Section 6 - Primary Query

```
SELECT
        product_name,
        unit_price,
        unit_cost,
-- profit margin formula utilizing unit price and unit cost
        ROUND(((unit_price - unit_cost) / unit_price),2) AS product_profit_margin,
-- creates profit margin buckets for products to be assigned to
-- Note: average profitability in this case is measured manually to avoid...
-- Note (cont.) ...windows functions & subqueries for later advanced project demonstrations
CASE
        WHEN ROUND(((unit_price - unit_cost) / unit_price),2) > 0.574
                THEN 'Above Average Profitability'
        WHEN ROUND(((unit_price - unit_cost) / unit_price),2) = 0.574
                THEN 'Average Profitability'
        WHEN ROUND(((unit_price - unit_cost) / unit_price),2) > 0
                THEN 'Below Average Profitability'
        ELSE 'Error'
END AS profitability_bucket

FROM product_pricing

GROUP BY product_name, unit_price, unit_cost
-- orders by product name
ORDER BY product_name
```

Section 6 - Primary Query Results

product_name	unit_price	unit_cost	product_profit_margin	profitability_bucket
Everlasting Gobstopper	10	2	0.8	Above Average Profitability
Fizzy Lifting Drinks	3.75	1.5	0.6	Above Average Profitability
Fun Dip	1.5	0.9	0.4	Below Average Profitability
Hair Toffee	4.5	1	0.78	Above Average Profitability
Kazookles	3.25	3	0.08	Below Average Profitability
Laffy Taffy	1.99	0.75	0.62	Above Average Profitability
Lickable Wallpaper	20	10	0.5	Below Average Profitability
Nerds	1.5	0.8	0.47	Below Average Profitability
SweeTARTS	1.5	0.8	0.47	Below Average Profitability
Wonka Bar - Fudge Mallows	3.6	1.2	0.67	Above Average Profitability
Wonka Bar - Milk Chocolate	3.25	1.14	0.65	Above Average Profitability
Wonka Bar - Nutty Crunch Surprise	3.49	1	0.71	Above Average Profitability
Wonka Bar - Triple Dazzle Caramel	3.75	1.3	0.65	Above Average Profitability
Wonka Bar -Scrumdiddlyumptious	3.6	1.1	0.69	Above Average Profitability
Wonka Gum	1.25	0.6	0.52	Below Average Profitability

Section 6 - Tableau Overview

Section 6 - Dashboard Information

[Wonka Product Profitability Tableau Link](#)

1. *Click on the link to access the fully-interactive, high-quality version of the data visualization.*

2. *The dashboard, an interactive data visualization, is freely available online via Tableau Public. No account creation or software download is required to access it.*

3. *After clicking the link, navigate to the bottom-right corner of the visualization , then, locate and click on the following icon for the full-screen view of the viz.*

Section 6 - Dashboard Snapshot

Section 6 - Key Findings

Dashboard 6 - Big Picture
Product profitability analysis for Wonka's product line showed an average product profit margin of 57.4% .

High Margin Standouts
Although overall sales are being dragged down by Sugar division's low volume, two of its products, the Everlasting Gobstopper and Hair Toffee, provide the highest profit margins across all products (80% and 76% respectively).

Reliable Chocolate Profit
All Chocolate division products perform above-average ranging from 65% to 71%. Chocolate offers strong and consistent profit for the company's best-selling product line.

Product Profitability Quadrants
- Premium Products
    - Lickable Wallpaper and Everlasting Gobstopper both offer high unit prices and high unit costs, positioning themselves as premium products amongst other Wonka products.
- Cash Cows
    - While no Wonka product perfectly falls in this quadrant (high unit price, low unit cost), the Everlasting Gobstopper and Hair Toffee are the closest to this grouping which suggests they are very efficient to produce compared to their price offered to customers.
- Volume Plays
    - The majority of Wonka products fall in this quadrant (low unit price, low unit cost). These products rely on selling in high volume for success.

- Action Required
    - Kazookles is the clear product for this quadrant (low unit price, high unit cost), offering the lowest profit margin of 8%.

Section 6 - Investigative Findings

Our first investigative query asked whether the Sugar division's drag was driven by unprofitability or low volume. The margin analysis showed Sugar maintains a healthy 59% average profit margin, being 17 points higher than the Other division. At first glance, margins weren't the problem.

Average Divisional Profit Margin Query

```sql
SELECT
    division,
    ROUND(AVG((unit_price - unit_cost) / unit_price),2) AS avg_profit_margin
FROM
    product_pricing
GROUP BY
    division
ORDER BY avg_profit_margin DESC
```

Average Divisional Profit Margin Query Results

division	avg_profit_margin
Chocolate	0.68
Sugar	0.59
Other	0.42

Sales volume turned out to be the Sugar division's primary issue. When we compared unit sales, Sugar sold 9× fewer units than Other and 272× fewer than Chocolate. Taken together, these findings indicate that the division's shortfall is volume-driven rather than margin-driven, i.e., a demand/distribution issue, not a pricing or cost issue.

Divisional Breakdown Query

```
SELECT
    division,
    SUM(sales) AS total_sales,
    SUM(units) AS total_units,
    ROUND((SUM(sales))/SUM(units),2) AS sales_per_unit,
    ROUND(AVG(sales),2) AS avg_transaction_sales,
    ROUND(AVG(units),2) AS avg_transaction_units
FROM wonka_sales
GROUP BY division
ORDER BY total_sales DESC
```

Divisional Breakdown Query Results

division	total_sales	total_units	sales_per_unit	avg_transaction_sales	avg_transaction_units
Chocolate	131692.9	37275	3.53	13.38	3.79
Other	9663.25	1242	7.78	31.17	4.01
Sugar	427.48	137	3.12	10.69	3.43

Digging deeper, we created a more detailed query and uploaded the unit-level data to Google Sheets to calculate total sales value, total cost, profit, and each product's share of total units sold. This revealed that despite the Sugar division's moderate overall profit margin, Kazookles is a significant drag on Wonka's portfolio. Kazookles accounts for nearly all of the Sugar division's already low sales volume (0.96% of total units sold) but generates only $92.75 in profit. By contrast, the Everlasting Gobstopper, which represented just 0.03% of total units sold, produced a slightly higher profit of $104.00. This suggests that underperforming products like Kazookles are a key driver of the Sugar division's weak performance.

Product Breakdown Query

```sql
SELECT
    ws.product_name,
    pp.unit_price,
    pp.unit_cost,
    SUM(ws.units) AS total_units
FROM
    wonka_sales ws JOIN product_pricing pp ON ws.product_id = pp.product_id
GROUP BY ws.product_name,pp.unit_price,pp.unit_cost
ORDER BY total_units DESC
```

Product Breakdown Query Results

product_name	unit_price	unit_cost	total_units
Wonka Bar - Milk Chocolate	3.25	1.14	8267
Wonka Bar -Scrumdiddlyumptious	3.6	1.1	7743
Wonka Bar - Triple Dazzle Caramel	3.75	1.3	7596
Wonka Bar - Fudge Mallows	3.6	1.2	6914
Wonka Bar - Nutty Crunch Surprise	3.49	1	6755
Wonka Gum	1.25	0.6	478
Lickable Wallpaper	20	10	393
Kazookles	3.25	3	371
SweeTARTS	1.5	0.8	41
Laffy Taffy	1.99	0.75	27
Fizzy Lifting Drinks	3.75	1.5	21
Hair Toffee	4.5	1	17
Everlasting Gobstopper	10	2	13
Nerds	1.5	0.8	10
Fun Dip	1.5	0.9	8

Detailed Excel Product Breakdown

product_name	unit_price	unit_cost	total_prod_units	price_total	cost_total	profit_total	total_units	unit_portion_of_total
Wonka Bar - Milk Chocolate	$3.25	$1.14	8267	$26,867.75	$9,424.38	$17,443.37	38654	21.39%
Wonka Bar -Scrumdiddlyumptious	$3.60	$1.10	7743	$27,874.80	$8,517.30	$19,357.50	38654	20.03%
Wonka Bar - Triple Dazzle Caramel	$3.75	$1.30	7596	$28,485.00	$9,874.80	$18,610.20	38654	19.65%
Wonka Bar - Fudge Mallows	$3.60	$1.20	6914	$24,890.40	$8,296.80	$16,593.60	38654	17.89%
Wonka Bar - Nutty Crunch Surprise	$3.49	$1.00	6755	$23,574.95	$6,755.00	$16,819.95	38654	17.48%
Wonka Gum	$1.25	$0.60	478	$597.50	$286.80	$310.70	38654	1.24%
Lickable Wallpaper	$20.00	$10.00	393	$7,860.00	$3,930.00	$3,930.00	38654	1.02%
Kazookles	$3.25	$3.00	371	$1,205.75	$1,113.00	$92.75	38654	0.96%
SweeTARTS	$1.50	$0.80	41	$61.50	$32.80	$28.70	38654	0.11%
Laffy Taffy	$1.99	$0.75	27	$53.73	$20.25	$33.48	38654	0.07%
Fizzy Lifting Drinks	$3.75	$1.50	21	$78.75	$31.50	$47.25	38654	0.05%
Hair Toffee	$4.50	$1.00	17	$76.50	$17.00	$59.50	38654	0.04%
Everlasting Gobstopper	$10.00	$2.00	13	$130.00	$26.00	$104.00	38654	0.03%
Nerds	$1.50	$0.80	10	$15.00	$8.00	$7.00	38654	0.03%
Fun Dip	$1.50	$0.90	8	$12.00	$7.20	$4.80	38654	0.02%
Total	-	-	38654	$141,783.63	$48,340.83	$93,442.80	-	100.00%

Section 6 - Recommendations/Options & Next Steps

1. **Focus on high-margin Sugar products:** Take advantage of strong performers like the Everlasting Gobstopper and Hair Toffee by developing targeted marketing campaigns to boost their sales volume. Increasing share for these products could help offset the Sugar division's overall significant underperformance.

2. **Reassess underperforming Sugar products:** Given Kazookles' role in low unit sales and minimal profits, consider changing, repositioning, or removing the product. This would reduce drag and could allow resources to be redirected toward stronger Sugar division performers.

3. **Evaluate selective price increases on premium products:** Conduct market testing to assess customer willingness to pay slightly higher prices for premium offerings. Modest price adjustments could drive incremental profit without significantly reducing demand.

4. **Monitor Chocolate division margins and costs:** The Chocolate division's high volume and healthy margins are central to overall company performance. Closely track costs to ensure this division continues to offset weaker segments.

Section 7 - 2021 Non-core Product Sales Explorer

Section 7 - Background

- Section 7 utilizes the Candy_Sales dataset.
- Section 7 takes a look at Wonka sales data for non-chocolate products specifically from the Year 2021.
- Like other sections, this section was built query first, then was implemented into Tableau for visualization.

Section 7 - Problem Statement

Wonka executives need a detailed list of all non-chocolate product orders placed during the 2021 calendar year, including product ID and key order details, to support year-end category performance reviews and identify patterns in non-core product sales.

Section 7 - SQL Overview

What SQL Keywords Were Utilized?

SELECT	ORDER BY	FROM	WHERE	NOT
LIKE	%	AND	BETWEEN	

Section 7 - Primary Query

```sql
SELECT
    order_id,
    order_date,
    country_region,
    state_province,
    postal_code,
    product_id,
    sales,
    units
FROM wonka_sales
-- grabs products that do not contain chocolate product_id code
WHERE product_id NOT LIKE 'CHO%'
-- filters non-cholate results to those ordered in 2021
AND order_date BETWEEN '2021-01-01' AND '2021-12-31'
ORDER BY order_date
```

Section 7 - Primary Query Results

order_id	order_date	country_region	state_province	postal_code	product_id	sales	units
US-2021-149020-OTH-GUM-21000	2021-01-10	United States	Virginia	22153	OTH-GUM-21000	1.25	1
US-2021-162775-OTH-KAZ-38000	2021-01-13	United States	Louisiana	71111	OTH-KAZ-38000	9.75	3
US-2021-149524-OTH-GUM-21000	2021-01-14	United States	Pennsylvania	19140	OTH-GUM-21000	5	4
US-2021-107181-OTH-KAZ-38000	2021-02-04	United States	California	92024	OTH-KAZ-38000	13	4
US-2021-125759-OTH-GUM-21000	2021-02-08	United States	Nevada	89031	OTH-GUM-21000	2.5	2
US-2021-103744-OTH-GUM-21000	2021-02-23	United States	Texas	79907	OTH-GUM-21000	3.75	3
US-2021-113880-OTH-LIC-15000	2021-03-01	United States	Illinois	60126	OTH-LIC-15000	60	3
US-2021-104563-OTH-KAZ-38000	2021-03-07	United States	Washington	98103	OTH-KAZ-38000	19.5	6
US-2021-152618-OTH-GUM-21000	2021-03-14	United States	Illinois	60653	OTH-GUM-21000	2.5	2
US-2021-152618-OTH-FIZ-56000	2021-03-14	United States	Illinois	60653	OTH-FIZ-56000	7.5	2
US-2021-148838-OTH-KAZ-38000	2021-03-17	United States	New York	10024	OTH-KAZ-38000	13	4
US-2021-148838-OTH-KAZ-38000	2021-03-17	United States	New York	10024	OTH-KAZ-38000	9.75	3
US-2021-148838-OTH-GUM-21000	2021-03-17	United States	New York	10024	OTH-GUM-21000	5	4
US-2021-148838-OTH-GUM-21000	2021-03-17	United States	New York	10024	OTH-GUM-21000	8.75	7
US-2021-164763-OTH-LIC-15000	2021-03-17	United States	Mississippi	39212	OTH-LIC-15000	80	4

Section 7 - Tableau Overview

Section 7 - Dashboard Information

[Wonka 2021 Non-core Product Sales Explorer](#)

1. *Click on the link to access the fully-interactive, high-quality version of the data visualization.*

2. *The dashboard, an interactive data visualization, is freely available online via Tableau Public. No account creation or software download is required to access it.*

3. *After clicking the link, navigate to the bottom-right corner of the visualization , then, locate and click on the following icon for the full-screen view of the viz.*

Section 7 - Dashboard Snapshot

Section 7 - Key Findings

Dashboard 7 - Big Picture

A detailed review of Non-Core products for 2021 reveals Non-Core products owe the majority of sales performance to a single product which significantly skews the overall geographic trend for the category.

Overall State Hotspots

With all Non-Core products considered, Arizona, California, and Pennsylvania are shown as the top three states for sales in 2021, largely due to Lickable Wallpaper.

State Hotspots Excluding Lickable Wallpaper

Wonka's Non-Core geographic landscape changes dramatically when Lickable Wallpaper is removed from the analysis. New York becomes the leader with performance almost double that of the next closest state in regards to sales. We can assume a different set of market dynamics for the rest of the Non-Core portfolio.

Section 7 - Investigative Findings

Key Sales Spike

On April 13, 2021, Wonka experienced a notable sales spike totaling $260 from a single purchase in Pennsylvania. The transaction came from customer #122336 in Philadelphia, who placed four orders that day: three from the Chocolate division and one from the "Other" division. The standout driver of revenue was Lickable Wallpaper, which carried a significantly higher price tag compared to the other products purchased, despite similar unit counts.

Further analysis shows this spike was somewhat of an anomaly. The customer did not make any additional purchases during Wonka's four-year analysis period, and a transaction of similar size did not occur again until 2023 and 2024. Even then, the comparable sales were $20 lower than the April 2021 transaction. The exceptional revenue performance was primarily due to Lickable Wallpaper's high price point, rather than repeatable purchasing behavior.

Sales Spike Query

```sql
SELECT
    order_id,
    order_date,
    customer_id,
    state_province,
    city,
    division,
    product_name,
    sales,
    units
FROM wonka_sales
WHERE order_date = '2021-04-13'
```

Sales Spike Query Results

order_id	order_date	customer_id	state_province	city	division	product_name	sales	units
US-2021-167724-CHO-TRI-54000	2021-04-13	167724	Maryland	Baltimore	Chocolate	Wonka Bar - Triple Dazzle Caramel	11.25	3
US-2021-122336-CHO-MIL-31000	2021-04-13	122336	Pennsylvania	Philadelphia	Chocolate	Wonka Bar - Milk Chocolate	13	4
US-2021-122336-CHO-SCR-58000	2021-04-13	122336	Pennsylvania	Philadelphia	Chocolate	Wonka Bar -Scrumdiddlyumptious	36	10
US-2021-122336-OTH-LIC-15000	2021-04-13	122336	Pennsylvania	Philadelphia	Other	Lickable Wallpaper	260	13
US-2021-122336-CHO-SCR-58000	2021-04-13	122336	Pennsylvania	Philadelphia	Chocolate	Wonka Bar -Scrumdiddlyumptious	43.2	12

Section 7 - Recommendations/Options & Next Steps

Lickable Wallpaper performs so well compared to other Non-Core products that it requires its own dedicated marketing and strategy for sales. Wonka should further analyze its key markets to understand the customer profile and use those insights to expand into similar demographics in other states.

Major Findings

1. **Company Performance is Driven Entirely by the Chocolate Division**. Wonka's overall success is misleading. The company is heavily dependent on its Chocolate division, which consistently exceeds sales targets. This strong performance masks the critical underperformance of the other two divisions, especially the Sugar division.

2. **The Sugar Division is Failing Due to a Lack of Sales Volume, Not Poor Profitability**. The Sugar division is the primary cause for the company missing its overall targets, never achieving more than 1.4% of its goal in four years. However, this failure is not due to low profit margins because some sugar products are the most profitable in the company. The core issue is a severe lack of sales volume, with products like Kazookles contributing almost nothing to the bottom line.

3. **Sales are Geographically Concentrated in High-Population States**. A few key states like California, Texas, and New York drive the vast majority of Wonka's sales. This strong correlation between population and sales highlights a dependence on these core markets, creating both a significant opportunity for focused growth and a potential risk due to a lack of market diversification.

4. **"Lickable Wallpaper" is a High-Revenue Anomaly with Low Customer Loyalty**. As a non-chocolate product, Lickable Wallpaper stands out by generating substantial revenue from a high price point rather than high sales volume. However, data shows it is treated as a novelty item with an extremely low repeat purchase rate (4.55%), indicating a major challenge in building customer loyalty for the product.

5. **Distinct Seasonal Trends and Customer Segments Offer Clear Growth Opportunities**. Wonka's sales consistently peak in the third and fourth quarters, presenting a clear opportunity for targeted holiday marketing and inventory planning. Furthermore, customers can be segmented into distinct groups like "Champions" (loyal and high-spending) and "Bulk Buyers" (infrequent large purchases), allowing for tailored marketing strategies to increase value from each group.

Major Next Steps & Strategic Priorities

1. **Conduct a Full Strategic Review of the Sugar Division**. This is the highest priority. The division is the primary drag on company performance. A review must determine the root cause of its chronic low sales volume and whether it's flawed targets, distribution issues, or poor product-market fit. Based on the findings, a decisive action must be taken:
   - **Overhaul** the division with a new strategy.
   - **Divest** the division entirely.
   - **Reallocate** its resources to the high-performing Chocolate division.

2. **Protect and Leverage the Core Business**. Maintain sharp focus on the successful Chocolate division and the top-performing geographic markets (California, Texas, and New York). This includes monitoring costs to protect profitability, ensuring inventory is prepared for seasonal Q3/Q4 peaks, and defending market share in these critical, high-population states.

3. **Reassess and Revitalize Underperforming Products.** Immediately address the products causing the most damage. Kazookles, with its minimal profit and low sales, should be considered for repositioning or removal. Conversely, high-margin but low-volume products like Everlasting Gobstoppers and Hair Toffee require targeted marketing campaigns to boost their sales and capitalize on their profitability.

4. **Implement Targeted, Segment-Based Marketing**. Move away from a one-size-fits-all approach. Develop and launch specific campaigns tailored to the identified customer segments:
   - **Champions**: Nurture with VIP loyalty programs.
   - **Bulk Buyers**: Encourage larger purchases with "stock-up and save" deals.
   - **Lickable Wallpaper**: Create a dedicated strategy that embraces its novelty status and analyzes its unique customer profile to find new markets.

5. **Diversify Geographic Sales by Targeting Secondary Markets**. To reduce the risk of over-reliance on a few states, initiate a growth plan for emerging markets. Use population density as a primary metric to identify and expand into second-tier states, particularly those showing nascent growth in the Midwest and Northwest.

Project Documentation

Phase 1: Preparation & Data Setup

I began by studying the book, *How to Become a Data Analyst*, taking detailed notes to refine my understanding of analysis frameworks. To apply these concepts, I sourced the Candy Distribution dataset from Maven Analytics. The raw data was downloaded, organized, and uploaded into pgAdmin 4 for structured querying and analysis.

Phase 2: SQL Query Development

I explored the dataset extensively, writing over 30 exploratory queries. From these, I identified and refined 13 that offered the clearest insights, designating them as Key Queries. To improve clarity and efficiency, I merged and enhanced these queries, reducing them to five strong final queries. Each was documented with problem statements, explanatory comments, and keyword checklists to ensure analytical rigor. Later, I expanded this set to seven finalized queries in order to incorporate additional keywords and analytical dimensions.

Phase 3: Visualization in Tableau

The finalized SQL outputs were imported into Tableau Public Edition, where I experimented with visualization formats. After initial iterations, I rebuilt and refined each dashboard to ensure consistency in structure, color schemes, and formatting. This process highlighted the most effective ways of presenting the data, balancing readability with depth.

Phase 4: Insights & Reporting

Once dashboards were finalized, I reviewed each carefully to extract key insights and align them with the original problem statements. These findings, along with supporting query outputs, were compiled into a comprehensive written report. The documentation was organized in Google Docs, polished for clarity, and formatted for presentation.

Phase 5: Publishing & Portfolio Integration

To make the project publicly accessible, I published the dashboards on Tableau Public and compiled the complete report on GitHub. Finally, I integrated the project into my personal portfolio website, ensuring recruiters and reviewers could easily access both the written analysis and the interactive dashboards.

Challenges & What I Learned

This project was a significant opportunity for growth, presenting a series of challenges that ultimately strengthened my technical skills and determination. While the technical hurdles were manageable, the primary challenge was the learning curve associated with mastering new tools and refreshing existing knowledge outside of a formal academic environment.

Technical Hurdles & The Learning Curve
The most noticeable learning curve was with Tableau. While I had some very basic knowledge, this project required a deeper dive into the software's logic, particularly the distinction between dimensions and measures and how they dictate visualization design. I spent considerable time grappling with dashboard formatting to ensure the final product was not only functional but also intuitive and visually compelling. Integrating the data source and navigating the software's interface were key steps in this learning process.

Additionally, the project served as a strong refresher for my SQL skills. Although I had a solid foundation from my coursework at Santa Clara University, it had been over two years since I had used it extensively. I dedicated time to reinforcing my understanding of SQL principles to effectively query and manipulate the data needed for the analysis.

Resourcefulness & Problem Solving

To overcome these challenges, I adopted a multi-faceted learning strategy that combined structured courses with practical, hands-on problem-solving. For Tableau, I enrolled in Kirill Eremenko's "Tableau A-Z" course on Udemy and supplemented it with Ben Jones's book, Communicating Data with Tableau, and various tutorials from creators like Alex the Analyst on YouTube. For my SQL refresh, I relied on practical exercises from SQL-Practice.com and instructional videos from YouTube channels such as Alex the Analyst, Kenji Explains, Kevin Stratvert, and Data with Baraa.

My problem-solving approach often involved a combination of trial and error and leveraging diverse learning tools. When faced with a stubborn query or a tricky Tableau feature, I would experiment with different solutions. I also utilized AI tools like Google Gemini to clarify complex SQL queries or get quick tips on Tableau functionalities, which proved to be an efficient way to resolve specific issues.

Personal and Professional Development

Beyond the technical skills, this project was a test of persistence. Completing a large-scale project without the external pressure of a grade demonstrated my personal drive and eagerness to develop the skills of a data analyst. The process of self-teaching and being resourceful has not only improved my technical abilities but has also significantly boosted my confidence in my capacity to learn and adapt. It was rewarding to see noticeable improvements in my skills over the course of the project.

Future Improvements

Looking ahead, I am eager to build upon the foundation this project has provided. My goal for future projects is to tackle more complex SQL queries and explore the more advanced features of Tableau to create even more sophisticated analyses and visualizations. Furthermore, I plan to work with data sources that are less clean to provide me with a greater opportunity to practice the crucial skill of data cleaning and preparation.

Links, Sources & Contact

Dataset Source:
- https://mavenanalytics.io/data-playground/us-candy-distributor

All Project Tableau Dashboards:
- https://public.tableau.com/app/profile/brendan.henderson3582/vizzes

Condensed Report:
- Google Drive PDF Link
- Github Link

GitHub Repository & SQL Code:
- Repository
- SQL Code

LinkedIn Profile:
- https://www.linkedin.com/in/brendan-henderson28/

Software & Downloads
- [Maven Analytics - Candy Distribution dataset](#)
- [Microsoft Excel](#)
- [pgAdmin 4](#)
- [Tableau Public (Software)](#)
- [OBS](#)

Platforms
- [Google Docs](#)
- [Google Sheets](#)
- [Tableau Public (Platform)](#)
- [Google Gemini](#)
- [Wix](#)
- [GitHub](#)
- [Tableau A-Z course (UDemy)](#)

Youtube
- [Alex the Analyst (Youtube)](#)
- [Kenji Explains (Youtube)](#)
- [Kevin Stratvert (Youtube)](#)
- [Data with Baraa (Youtube)](#)

Books
- [How to Become a Data Analyst (Book)](#)
- [Communicating Data with Tableau (Book)](#)

Websites
- [SQLPractice](#)