

CIS4150

Project Final Report

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Ortiz

Introduction

Farmers' markets are integral to local communities, serving as hubs for fresh, nutritious food and platforms for supporting small-scale agricultural enterprises. Access to fresh produce has profound social and economic implications. According to Katz (2021), markets that accept EBT not only increase revenue for vendors but also encourage purchases of non-EBT items, thereby boosting the overall market economy. In Los Angeles, where food insecurity has been exacerbated by economic challenges and the COVID-19 pandemic, initiatives like CalFresh and EBT acceptance have played an essential role in improving food equity (De la Haye et al., 2023). Farmers' markets, as community-driven solutions, are uniquely positioned to meet these needs while supporting the livelihoods of local producers.

Food Access LA operates with a mission to build sustainable food systems that promote social and cultural values. Their farmers' markets and food equity programs are specifically designed to serve Los Angeles' low-to-moderate income residents while supporting California's small- and mid-sized farms and local food retailers through programs like Supplemental Nutrition Assistance Program (SNAP) and Electronic Benefit Transfer (EBT). These markets

make healthy food accessible to low-income households, bridging critical gaps in the food system. (FEED LOS ANGELES. SUPPORT FARMERS., n.d.)

This report explores the dynamics of EBT usage, vendor performance, and sales trends across multiple farmers' markets, using data compiled in the "All Market MMM Data 2021 - 2022" dataset, while seeking to answer key questions about the performance of these markets:

- How does EBT usage impact vendor sales and overall market revenue?
- Which markets and vendor types perform the best in serving community needs?
- What seasonal trends and patterns can be observed in sales and EBT usage?

Through data visualizations and detailed analysis, this report provides actionable insights into optimizing market operations while advancing the overarching goals of Food Access LA. The findings emphasize the critical role of these markets in fostering equity and sustainability in Los Angeles' food system. By leveraging programs like EBT, the organization is addressing both immediate food access challenges and long-term community resilience.

Data Description

Only one data file was used, since all were combined into one

Name of data file: All Market MMM Data 2021 - 2022

Name	Description
Date	Date farmers market was held
Market	Market name
Vendor	Vendor name
Vendor Type	Type of vendor
Sales	Total sales of each vendor: Total amount made (includes cash, credit/debit, tokens) tokens are EBT and other payment types
EBT	EBT sales
Attendance	Describes if vendor was present or absent that day

POG	Percent of Gross: Percent of sales that must be paid to Food Access in stall fees, percentage is based on vendor type
Market Fee	Stall fee based on percentage/sales, except Artisans which have a flat fee
Revenue	Market/stall fee + \$2 CDFA fee

Data Modeling/Data Cleaning

Removed top five row from CRFM and EPFM 2021-2022 and assigned first row as headers:

Before:

The screenshot shows the Power Query Editor interface with a table of data. The table has 19 rows. The first five rows are header-like entries, and the subsequent 14 rows contain market data with columns for Report Run Date, Vendor ID, Market, Vendor, Vendor Type, and Attendance. The 'APPLIED STEPS' pane on the right shows a 'Changed Type' step.

	Report Run Date	Vendor ID	Market	Vendor	Vendor Type	Attendance
1	10/8/2024					
2	null	147996	Filters	Alex's Fruit and Nuts	Food Vendor	Present
3	null		start Date			
4	null		end Date			
5	null		Market			
6	Date	VendorID	Vendor	Vendor Type	Attendance	
7	01/02/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
8	01/09/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
9	01/16/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
10	01/23/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
11	01/30/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
12	02/06/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
13	02/13/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
14	02/20/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
15	02/27/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
16	03/06/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
17	03/13/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
18	03/20/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
19						

After:

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Properties Choose Columns Remove Columns Keep Rows Remove Rows Sort Data Type: Text Use First Row as Headers Merge Queries Append Queries Text Analytics Vision Azure Machine Learning Close New Query Data Sources Parameters Query Manage Column Transform Combine AI Insights

Queries [1]

Data

Date VendorID Market Vendor Vendor Type Attendance

	Date	VendorID	Market	Vendor	Vendor Type	Attendance
1	1/2/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
2	1/9/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
3	1/16/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
4	1/23/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
5	1/30/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
6	2/6/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
7	2/13/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
8	2/20/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
9	2/27/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
10	3/6/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
11	3/13/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
12	3/20/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
13	3/27/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
14	4/3/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
15	4/10/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
16	4/17/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
17	4/24/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
18	5/1/2021	147996	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
19						

Food Vendor

Query Settings

PROPERTIES

Name: Data

APPLIED STEPS

Changed Type1

Source: Navigation: Changed Type: Removed Top Rows: Promoted Headers: Changed Type1: Removed Columns:

24 COLUMNS, 849 ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 7:00 PM

Deleted unnecessary columns such as 'Comment', 'SalesTax', 'Sales+Tax',

'VendorID'(CRFM2021, LARFM2022):

Before:

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Properties Choose Columns Remove Columns Keep Rows Remove Rows Sort Data Type: Text Use First Row as Headers Merge Queries Append Queries Text Analytics Vision Azure Machine Learning Close New Query Data Sources Parameters Query Manage Column Transform Combine AI Insights

Queries [3]

CRFM 2021

EFPM 2021

EFPM 2021

Comment Sales SalesTax Sales+Tax POG Market Fee

	Comment	Sales	SalesTax	Sales+Tax	POG	Market Fee
1		249	0	249	7	
2		360	0	360	7	
3		832	0	832	12	
4		1506	0	1506	7	
5		315	0	315	7	
6		327	0	327	12	
7		229	0	229	7	
8		110	0	110	12	
9		223.44	0	223.44	12	
10		80	0	80	7	
11		515	0	515	7	
12		140	0	140	0	
13		273	0	273	12	
14		250	0	250	12	
15		740	0	740	7	
16		675	0	675	7	
17		1100	0	1100	12	
18		350	0	350	7	
19	cash back for \$10.40	380	0	380	12	
20		390	0	390	12	
21		790	0	790	12	
22	Check Request	599	0	599	7	
23	cash back given for \$23.98	290	0	290	7	
24		518	0	518	12	
25						

22 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 7:18 PM

Query Settings

PROPERTIES

Name: EFPM 2021

APPLIED STEPS

Source: Navigation: Changed Type: Removed Top Rows: Promoted Headers: Changed Type1: Removed Columns:

After:

Power Query Editor Screenshot showing the 'EPFM 2021' query. The table structure is as follows:

	Sales	POG	Market Fee	Revenue	EBT	Market
1	249	7	20.05	20.05	16	
2	360	7	28.1	28.1	57	
3	832	12	101.84	101.84	91	
4	1506	7	111.18	111.18	50	
5	315	7	24.84	24.84	41	
6	327	12	41.24	41.24	15	
7	229	7	18.6	18.6	13	
8	110	12	15.2	15.2	34	
9	223.44	12	28.81	28.81	5	
10	80	7	7.8	7.8	null	
11	515	7	39.34	39.34	null	
12	140	0	0	22	null	
13	273	12	34.76	34.76	30	
14	250	12	32	32	32	
15	740	7	55.65	55.65	32	
16	675	7	50.94	50.94	131	
17	1100	12	134	134	189	
18	350	7	27.38	27.38	34	
19	380	12	47.6	47.6	58	
20	390	12	48.8	48.8	45	
21	790	12	96.8	96.8	63	
22	599	7	45.43	45.43	126	
23	290	7	23.02	23.02	43	
24	518	12	64.16	64.16	60	
25						

PREVIEW DOWNLOADED AT 7:18 PM

Added new column to HFM 2021 and HFM 2022, new column is named 'Market', where 'Hollywood Farmers' Market FY 2021', 'Hollywood Farmers' Market FY 2022', and 'Hollywood Farmers' Market FY 2023' were added relative to the FY date from the date column:

Before:

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Conditional Column Merge Columns Index Column Trigonometry

From Text From Number From Date & Time Text Analytics

From Date & Time Date Time Duration Vision Azure Machine Learning

From Number

From Text

From Date & Time

Text Analytics

Vision

Azure Machine Learning

General

Queries [6]

CRFM 2021 CRFM 2022 EPFM 2021 EPFM 2022 HFM 2021 HFM MMM Sales 2022

Date Vendor Vendor Type Attendance 1.2 Sales 1.2 POG

Add Conditional Column

Add a conditional column that is computed from the other columns or values.

New column name: Market

Column Name Operator Value Output

If Date is before 7/1/2022 Then ywood Farmers' Market FY 2022

Else If Date is after 6/30/2022 Then ABC ywood Farmers' Market FY 2023

Else ABC

OK Cancel

1/2/2022 Bolanos Family Sprouts Producer (Farmer) Present 598

18 COLUMNS 999+ ROWS Column profiling based on top 1000 rows

Query Settings

Properties

Name: HFM MMM Sales 2022

All Properties

Applied Steps

Source Promoted Headers Changed Type Removed Columns

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After:

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Column From Custom Invoke Custom Examples Column Function

Conditional Column Index Column Duplicate Column

Merge Columns Extract Parse

From Text From Number From Date & Time

Text Analytics Vision Azure Machine Learning

General

Queries [6]

CRFM 2021 CRFM 2022 EPFM 2021 EPFM 2022 HFM 2021 HFM MMM Sales 2022

Market

	Date	Market	Vendor	Vendor Type	Attendance	Sales
1	1/2/2022	Hollywood Farmers' Market FY 2022	Rick's Produce	Producer (Farmer)	Present	
2	1/2/2022	Hollywood Farmers' Market FY 2022	Alex's Fruit and Nuts	Food Vendor	Present	
3	1/2/2022	Hollywood Farmers' Market FY 2022	Vision Sprouts PRODUCER	Producer (Farmer)	Present	
4	1/2/2022	Hollywood Farmers' Market FY 2022	Supple Fe	Artisan (Holidays only)	Present	
5	1/2/2022	Hollywood Farmers' Market FY 2022	Yemetz Family Orchards	Producer (Farmer)	Present	
6	1/2/2022	Hollywood Farmers' Market FY 2022	Lee, Peter (Environmental Arts by Peter Lee)	Producer (Farmer)	Present	
7	1/2/2022	Hollywood Farmers' Market FY 2022	Hopf Chocolate	Food Vendor	Present	
8	1/2/2022	Hollywood Farmers' Market FY 2022	Tallowderm	Artisan (Holidays only)	Present	
9	1/2/2022	Hollywood Farmers' Market FY 2022	Drake Family Farms	Producer (Farmer)	Present	
10	1/2/2022	Hollywood Farmers' Market FY 2022	Shear Rock Farm	Producer (Farmer)	Present	
11	1/2/2022	Hollywood Farmers' Market FY 2022	JRB - 2nd cert for Suarez	Producer (Farmer)	Present	
12	1/2/2022	Hollywood Farmers' Market FY 2022	Gary's Knife Sharpening	Artisan (Holidays only)	Present	
13	1/2/2022	Hollywood Farmers' Market FY 2022	Baltazar Farms	Producer (Farmer)	Present	
14	1/2/2022	Hollywood Farmers' Market FY 2022	Kandarian Organic Farms	Producer (Farmer)	Present	
15	1/2/2022	Hollywood Farmers' Market FY 2022	Eliki Olive Oil	Food Vendor	Present	
16	1/2/2022	Hollywood Farmers' Market FY 2022	Coldwater Canyon Provisions	Food Vendor	Present	
17	1/2/2022	Hollywood Farmers' Market FY 2022	Erva Brew Co.	Food Vendor	Present	
18	1/2/2022	Hollywood Farmers' Market FY 2022	Dates By Davall	Producer (Farmer)	Present	
19						

Hollywood Farmers' Market FY 2022

19 COLUMNS 999+ ROWS Column profiling based on top 1000 rows

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Query Settings

PROPERTIES

Name: HFM MMM Sales 2022

APPLIED STEPS

- Source
- Promoted Headers
- Changed Type
- Removed Columns
- Added Conditional Column
- Reordered Columns

Appended all tables into one table named 'All Market MMM Data 2021 - 2022':

Before:

Power Query Editor - Untitled - Queries [7]

Append

Concatenate rows from three or more tables into a single table.

Two tables Three or more tables

Available tables:

- CRFM 2021
- CRFM 2022
- EPFM 2021
- EPFM 2022
- HFM 2021
- HFM 2022
- LARFM 2022

Tables to append:

- CRFM 2021
- CRFM 2022
- EPFM 2021
- EPFM 2022
- HFM 2021
- HFM 2022
- LARFM 2022

OK Cancel

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After:

Power Query Editor - Untitled - Queries [8]

Table.Skip(#"Sorted Rows",1)

19 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

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Then exported data to Excel:

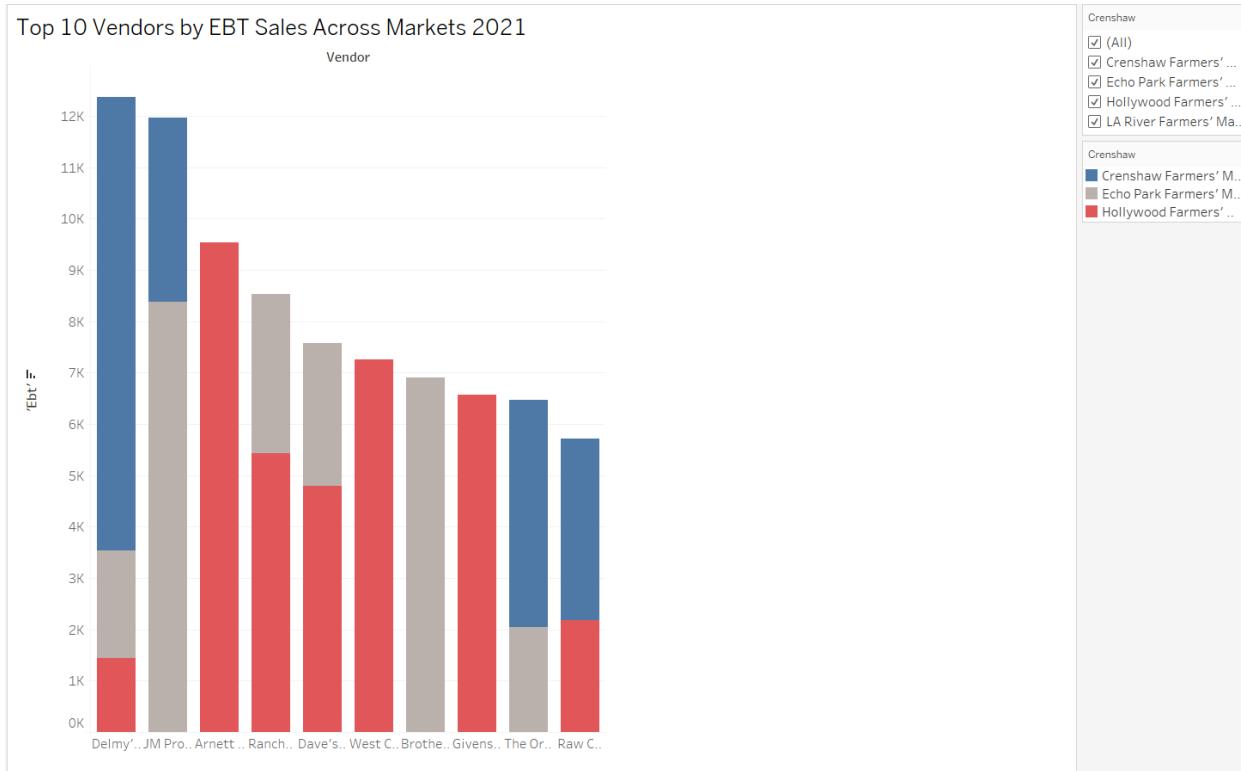
Date	Market	Vendor	Vendor Type	Attendance
1/1/2021	Echo Park Farmers' Market FY 2021	Angel Farms	Producer (Farmer)	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Aunt Willies Apiary	Producer (Farmer)	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Brothers' Products	Food Vendor	Present
1/1/2021	Echo Park Farmers' Market FY 2021	C & L Farms (Raphael Cardenas)	Producer (Farmer)	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Cardenas Farm	Producer (Farmer)	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Dave's Korean BBQ	Food Vendor	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Griffith Family Farms	Producer (Farmer)	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Jarring Gourmet Fermentation	Food Vendor	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Komeme Vegetariano	Food Vendor	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Major Microgreens	Producer (Farmer)	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Patty Farms	Producer (Farmer)	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Simply Natural (Abode)	Artisan	Present
1/1/2021	Echo Park Farmers' Market FY 2021	Sweet Thumb Artisanal Baking Co	Food Vendor	Present
1/1/2021	Echo Park Farmers' Market FY 2021	The Original Tamale Corporation	Food Vendor	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	Alex's Fruit and Nuts	Food Vendor	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	Aunt Willies Apiary	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	C & L Farms (Raphael Cardenas)	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	Don Beto's Farm	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	Finca Bonita	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	G Farms	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	i&M Farms (Castellanos)	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	JM Produce	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	Raw Cane Super Juice (SugarJuice)	Food Vendor	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	T.R. Cairns	Producer (Farmer)	Present
1/2/2021	Crenshaw Farmers' Market FY 2021	The Original Tamale Corporation	Food Vendor	Present
1/3/2021	Hollywood Farmers' Market FY 2021	Achadinha Cheese	Producer (Farmer)	Present
1/3/2021	Hollywood Farmers' Market FY 2021	Aris Natural Food	Food Vendor	Present
1/3/2021	Hollywood Farmers' Market FY 2021	Arnett Farms	Producer (Farmer)	Present
1/3/2021	Hollywood Farmers' Market FY 2021	Autonomy Farms	Producer (Farmer)	Present
1/3/2021	Hollywood Farmers' Market FY 2021	Avilla and Sons Farms, LLC	Producer (Farmer)	Present

Categories covered:

- Assigned first row as headers
- Addition of column with appropriate data based on formula
- Appended all files into one

Data Visualizations

“We aim to explore EBT usage patterns across markets, identifying which vendors have the highest EBT usage and understanding trends over time.”



- Data Source: Extracted EBT sales data for 2021 from the provided datasets covering multiple farmers' markets.
- Top Vendors: Focused on the top 10 vendors by EBT sales across Crenshaw, Echo Park, Hollywood, and LA River markets.
- Market Breakdown: Used color coding to distinguish contributions from each market to individual vendor sales.
- Visualization Tool: Created the bar chart in Tableau for clear comparative analysis of vendor performance.
- Purpose: Highlighted which vendors had the highest engagement with EBT users to understand vendor and market dynamics.

Citation: Warsaw, P., Archambault, S., He, A., & Miller, S. (2021). The economic, social, and environmental impacts of Electronic Benefit Transfer payment at farmers markets. County Health Rankings & Roadmaps. Retrieved from

Summary: This study examines the multifaceted impacts of implementing EBT payment systems at farmers markets, highlighting how such systems can enhance economic outcomes for vendors, improve social equity by increasing access to fresh produce for low-income consumers, and contribute to environmental sustainability by supporting local agriculture.



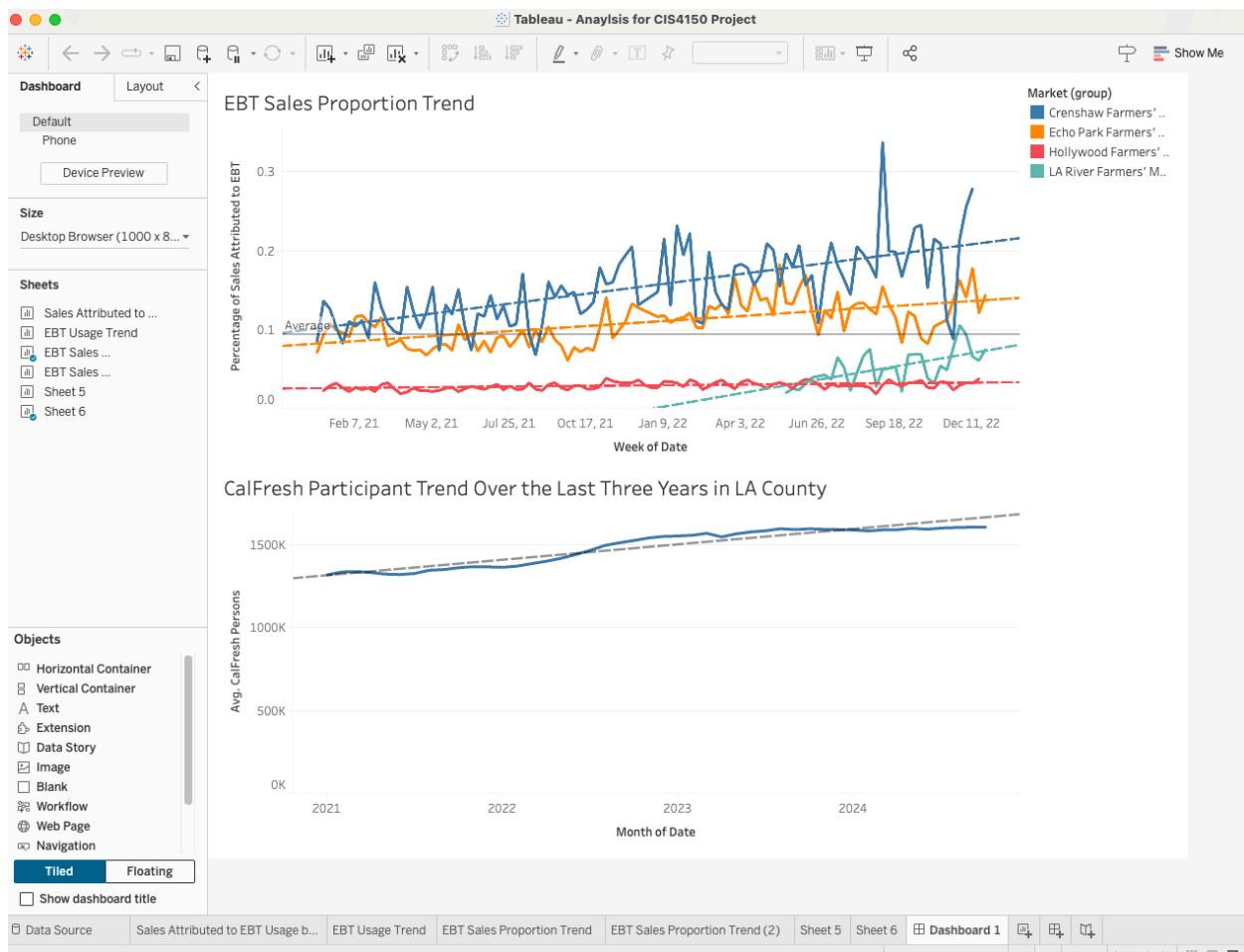
- Market Contributions: Applied color coding to show sales contributions from each market for individual vendors.

- Trend Analysis: Highlighted significant growth in EBT sales, with Delmy's Pupusas experiencing a notable increase compared to 2021.
- Visualization Tool: Created the bar chart in Tableau to provide a clear, comparative view of vendor performance year-over-year.
- Purpose: Identified trends and patterns in EBT sales growth across vendors and markets, offering insights for future planning.

Citation: Farmers Market Coalition. "Farmers Market Facts & Figures 2022." Farmers Market Coalition, June 2022.

Summary: This report provides data on farmers markets, highlighting that since 2017, farmers market and direct marketing farmer redemptions of SNAP have increased by 162%. In 2021, over \$100 million in federal nutrition benefits were redeemed at farmers markets and with direct marketing farmers, with \$59 million from SNAP. Additionally, 572,769 SNAP households made at least one purchase at a farmers market or direct marketing farmer in fiscal year 2021, an increase of 42% since 2020.

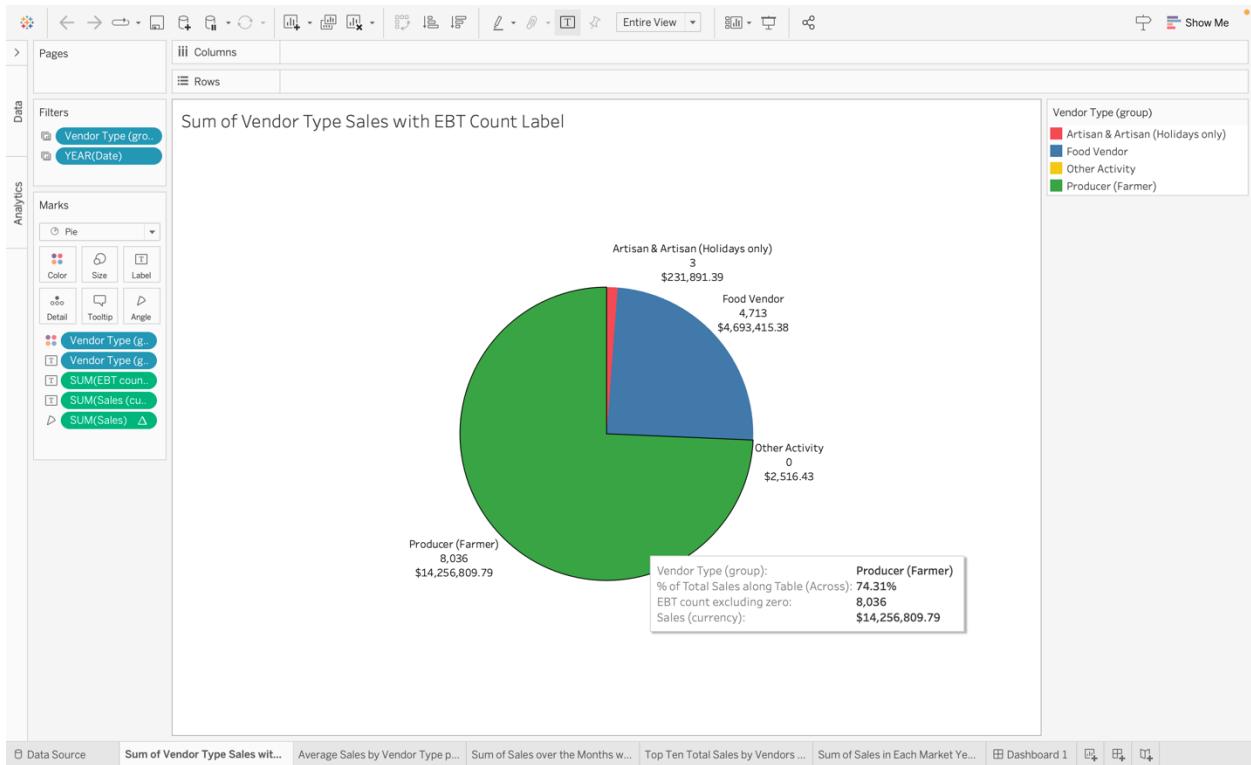
“Is there any identifiable trend in EBT usage relative to total sales and what insights can we get?”



In this visualization there are two charts shown, one showing the proportion of EBT relative to the total sales of each market over the course of two years on a weekly basis, and the other shows the number of CalFresh participants in LA county over the past three years.

- Quick insight: EBT usage is on an upward trend, this could be correlated with more and more people getting into CalFresh and becoming food insecure, de la Haye et al.

“Which vendor types contribute the most to overall sales, and how does EBT usage/payments vary across these vendor types?”



This visualization shows the total sum of sales by each vendor type over all the years across all the markets. It displays:

- The vendor type names
- The percentage of total sales as a figure and as a slice of the pie chart (the bigger the percentage, the bigger the slice)
- The total count of EBT sales made by each vendor type
- The total sales as currency.

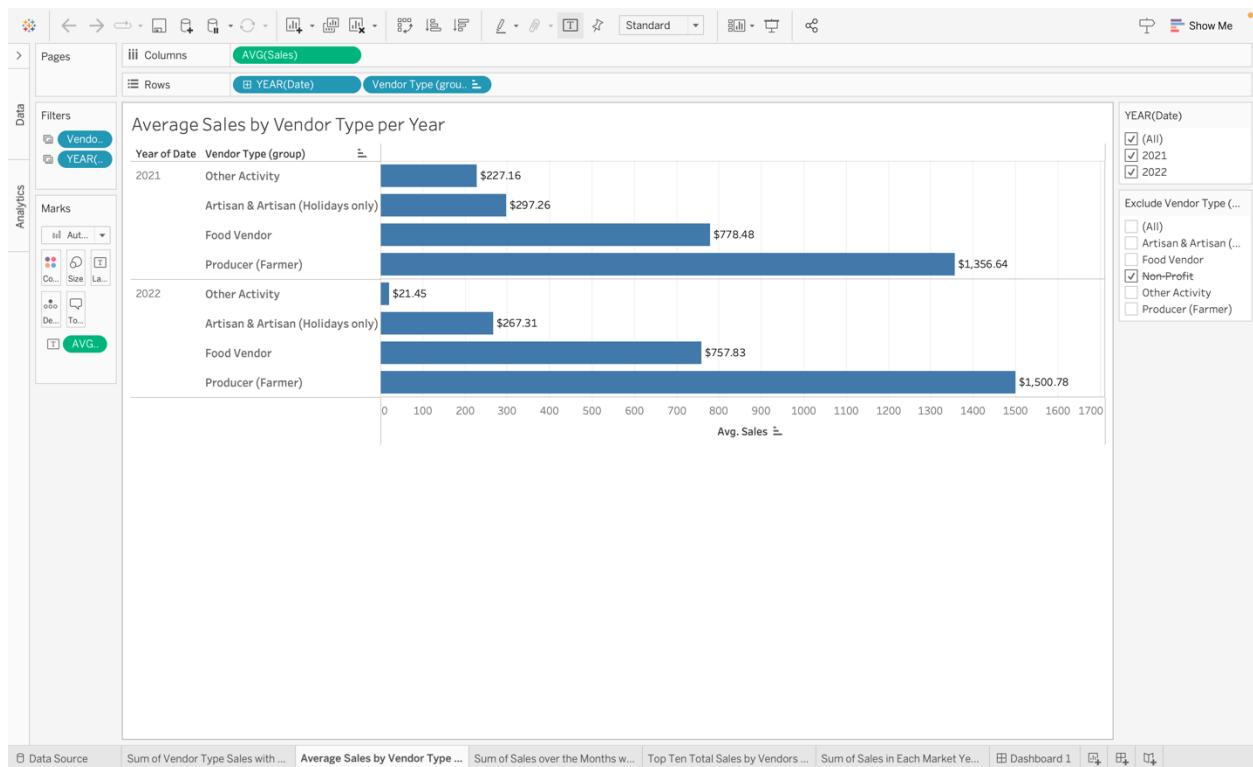
The insights derived from the visualization include:

- **Producers (Farmers) Dominate Sales:** we found out that producers (farmers) dominate approximately 74 percent of total sales, which suggests how important producers (farmers) are for customers.

- **Producers are key contributors to both total sales and EBT usage:** This shows a positive correlation between total sales and the number of times EBT was used as a form of payment by customers, suggesting producers (farmers) are a critical source for low-income households using EBT benefits.

There are usually a lot of farmers at farmer's markets because they make more on their produce at these markets "In 2017, American farmers received only 17.4 cents of every dollar that people spent on food in this country. At farmers' markets, farmers make more like 90 cents on the dollar." (Farmers' Markets, n.d.)

“How has the average sales performance of each vendor type changed between 2021 and 2022?”

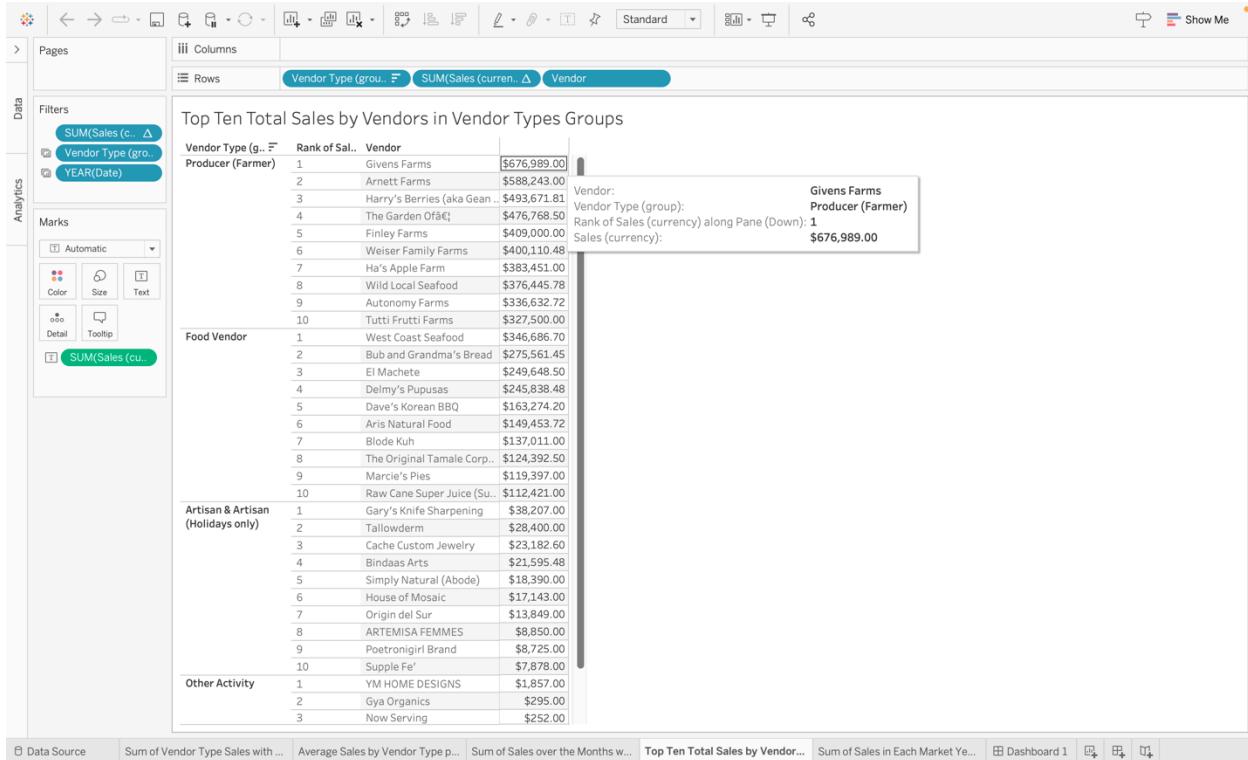


The sum of sales showing producer(farmers) as the dominant vendor type in sales might not tell the whole story due to the possibility of an overinflated number of participating farmers in the markets. “The mean uses all values in the data set to give you an average”. (Scribbr, n.d.)

The insights derived from the visualization include:

- The average chart (showing the total number of sales divided by the total number of vendors within a vendor type) still indicates producer(farmers) dominating the markets over two years while maintaining consistency in sales and even showing some growth from 2021 to 2022.
- It confirms Producer (farmers)' dominance even when adjusted for vendor count.

“Who are the top-performing vendors in each vendor group?”

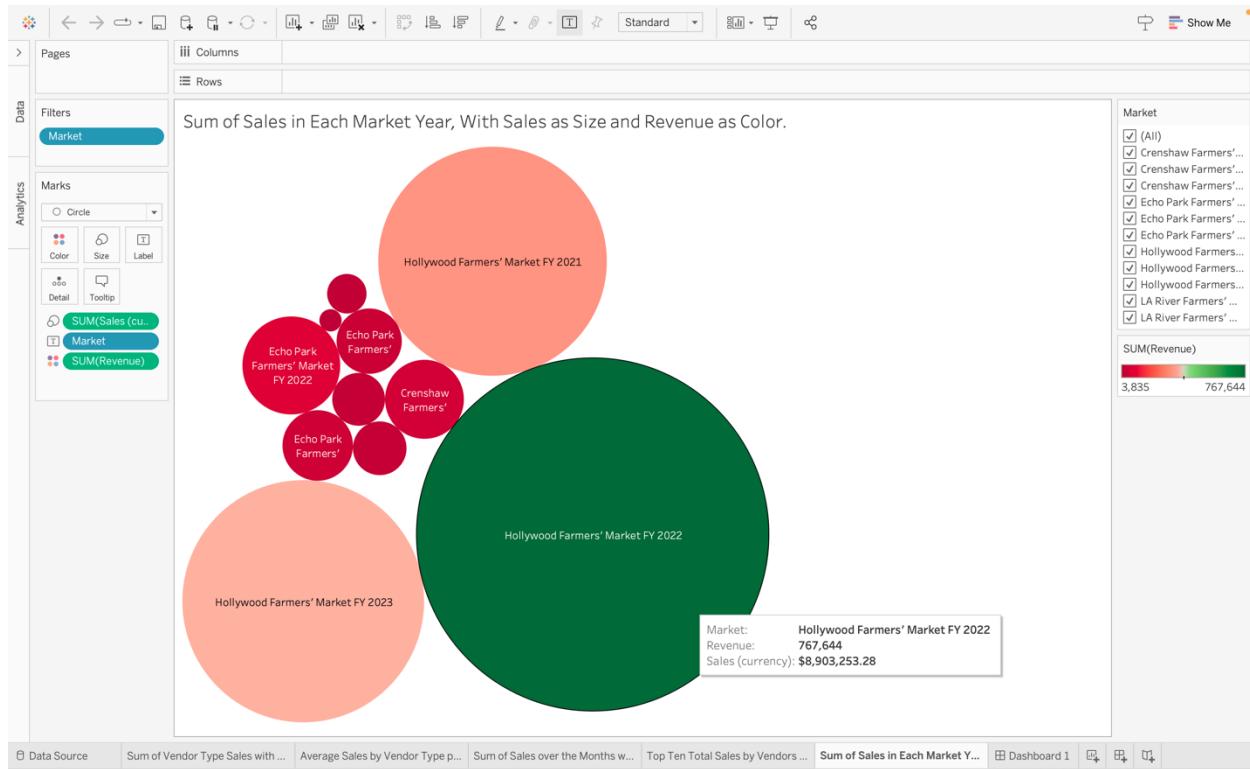


This table ranks the top 10 vendors in each vendor type category. “Table charts provide a visual representation of data, making it easier to understand and interpret.” (are, 2024)

The insights derived from the visualization include:

- Categories include diverse offerings, highlighting the importance of variety in attracting a broad customer base.
- It shows the vendors dominating sales over vendor categories, and this can be further sectioned to show the top ten vendors by years on the dashboard.

Which markets generate the highest sales and revenue?



The market years are analyzed separately as some markets have data for only two years, while others have up to three years. A joint analysis without regard to years could distort the true picture of market performance.

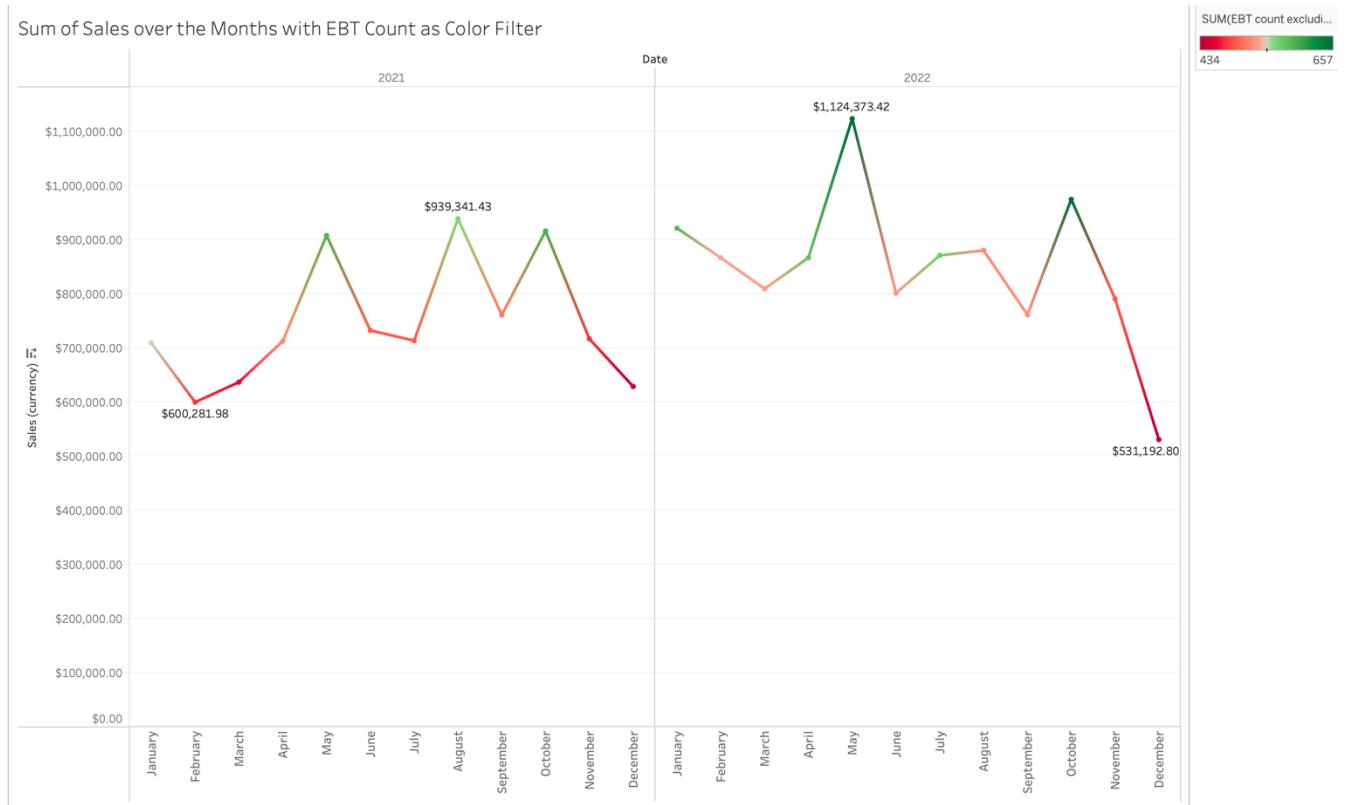
Markets with the highest sales are highlighted by bubble size (larger bubbles = higher total sales).

Color gradient (red to green) indicates EBT sales count, from low (red) to high (green).

The insights derived from the visualization include:

- Hollywood Farmers' Market dominated both total sales and EBT usage count over the years. As seen in the Food Access LA's website, Hollywood markets are open on more days than other markets, they are even open on holidays, and they host more vendors over the years as a result. (Market, 2014)
- There is a positive correlation between the EBT usage count and total sales across the markets with the bigger bubbles being green and the smaller ones being red.

What seasonal trends in sales and EBT usage can be observed across 2021 and 2022?



This chart shows the total monthly sales across all markets over 2021 and 2022 as well as the total EBT usage over the months with a color gradient of red to green with red indicating lower numbers and green indicating higher numbers.

This monthly chart can be used to see if there are spikes in certain months showing peak sales.

The insights derived from the visualization include:

- There is a positive correlation between EBT usage and monthly sales, with the green points spiking higher than the red points. In his 2021 Forbes article, Elie Katz argues that accepting EBT can boost revenue by attracting more foot traffic and encouraging customers to spend on non-EBT items in addition to food staples.
- The highest and lowest sales points over the two years are also green and red respectively, showing the consistent pattern of total sales and EBT usage.
- EBT usage and sales are consistently lower between November and December over both years.

Story Telling

Analyzing the dataset "All Market MMM Data 2021 - 2022" provides a comprehensive view of farmers' market trends in Los Angeles, focusing on EBT (Electronic Benefit Transfer) sales. These insights are drawn from visualizations that explore EBT usage patterns, vendor contributions, and market performance across multiple dimensions. The findings emphasize the growing significance of EBT in fostering economic equity and sustaining farmers' markets.

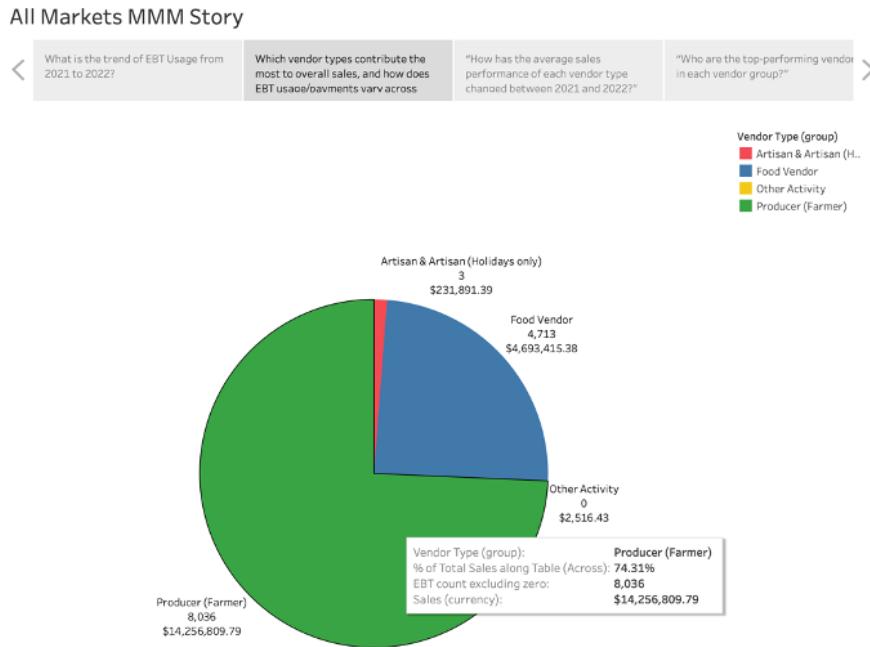
EBT Usage Trends Over the Years 2021 and 2022



The data illustrates a steady increase in EBT sales from 2021 to 2022, reflecting an upward trend in food assistance utilization. This growth aligns with the broader rise in CalFresh participation as food insecurity became more prominent in Los Angeles, as noted by De la Haye et al. (2023). Markets like Hollywood Farmers' Market, which had the most consistent operations throughout the year, as seen in the bubble chart showing the markets' performances by year, led in EBT transactions and overall sales. This observation supports Katz's assertion that accepting EBT can boost revenue by attracting more foot traffic and encouraging purchases of non-EBT items. Hollywood's extended hours and diversity of vendors contributed to its leading position, demonstrating how market dynamics can drive increased usage of food assistance programs.

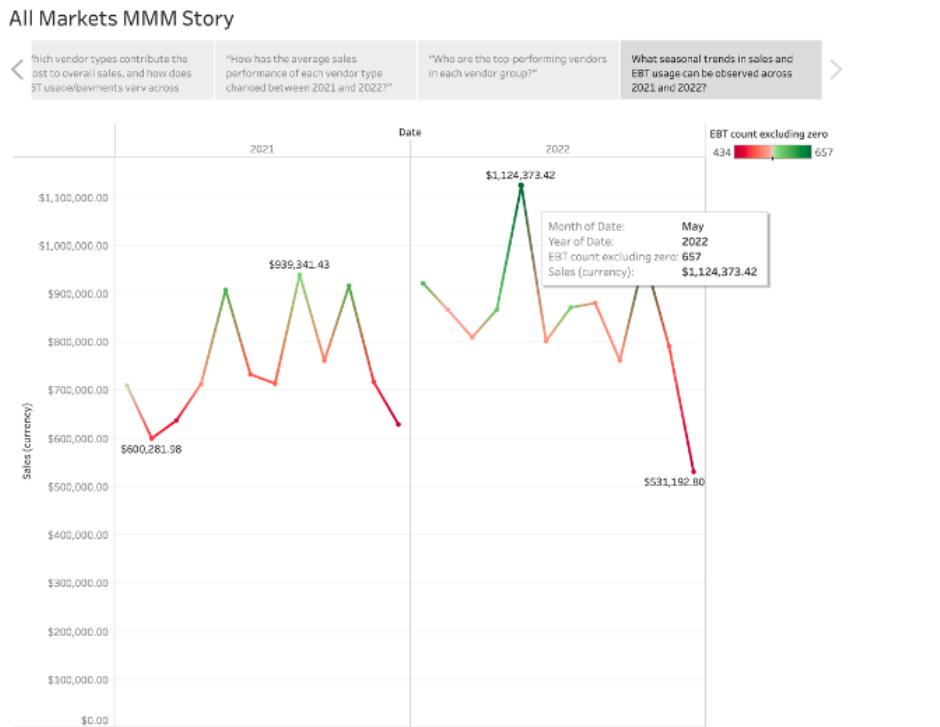
(Katz, 2021)

Vendor Contributions to Sales and EBT Usage



Producers (farmers) are the dominant contributors, accounting for approximately 74% of total sales across all markets. Their impact on EBT usage is similarly significant, showcasing their central role in providing fresh produce to low-income communities. This aligns with findings from the Farmers' Market Coalition (2022), which reported that farmers benefit from higher revenue retention at markets—up to 90 cents per dollar compared to the national average of 17.4 cents. Such financial advantages incentivize producer participation and ensure fresh, locally grown produce remains accessible to those relying on EBT benefits. Furthermore, the positive correlation between total sales and EBT transactions highlights the importance of supporting producers, who are a critical bridge between economic stability and food equity.

Seasonal Trends in Sales and EBT Transactions



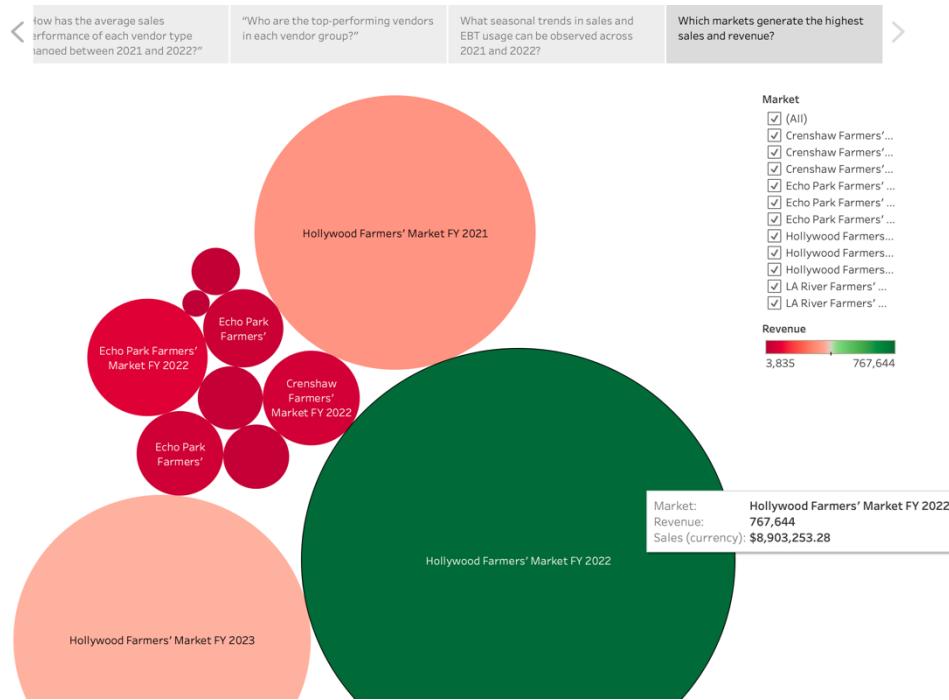
Seasonal patterns reveal distinct sales and EBT usage peaks during Spring and Summer, likely driven by seasonal produce availability and favorable market attendance weather conditions.

Conversely, the data shows a decline in November and December, which could be attributed to the holiday season and reduced vendor participation. Katz (2021) highlights that online EBT acceptance could mitigate these declines by providing consumers with flexible options, such as home delivery or curbside pickup, which could address barriers like transportation challenges, as the USDA's FoodAPS reported that "distance to stores and vehicle access affects low-income shopper's food spending" (*USDA ERS - Summary Findings*, n.d.), as well as reduce the stigma attached to using SNAP benefits and EBT payments. Incorporating these strategies would not only stabilize seasonal fluctuations but also expand the reach of farmers' markets.

Market Revenue and Vendor Performance Analysis

All Markets MMM Story

EBT Usage from	Which vendor types contribute the most to overall sales, and how does EBT usage/payments vary across	"How has the average sales performance of each vendor type changed between 2021 and 2022?"	"Who are the top-performing vendors in each vendor group?"
◀			
Producer (Farmer)	Rank of Sales	Vendor	
1	Givens Farms	\$676,989.00	
2	Arnett Farms	\$588,243.00	
3	Harry's Berries (aka Gean..)	\$493,671.81	
4	The Garden Of...	\$476,768.50	
5	Finley Farms	\$409,000.00	
6	Weiser Family Farms	\$400,110.48	
7	Ha's Apple Farm	\$383,451.00	
8	Wild Local Seafood	\$376,445.78	
9	Autonomy Farms	\$336,632.72	
10	Tutti Frutti Farms	\$327,500.00	
Food Vendor	1	West Coast Seafood	\$346,686.70
	2	Bub and Grandma's Bread	\$275,561.45
	3	El Machete	\$249,648.50
	4	Delmy's Pupusas	\$245,838.48
	5	Dave's Korean BBQ	\$163,274.20
	6	Aris Natural Food	\$149,453.72
	7	Blode Kuh	\$137,011.00
	8	The Original Tamale Corp..	\$124,392.50
	9	Marcie's Pies	\$119,397.00
	10	Raw Cane Super Juice (Su..)	\$112,421.00
Artisan & Artisan (Holidays only)	1	Gary's Knife Sharpening	\$38,207.00
	2	Tallowderm	\$28,400.00
	3	Cache Custom Jewelry	\$23,182.60
	4	Bindaas Arts	\$21,595.48
	5	Simply Natural (Abode)	\$18,390.00
	6	House of Mosaic	\$17,143.00
	7	Origin del Sur	\$13,849.00
	8	ARTEMISA FEMMES	\$8,850.00
	9	Poetronigirl Brand	\$8,725.00
	10	Supple Fe'	\$7,878.00



The Hollywood Farmers' Market is the top performer in revenue and EBT transactions. Its extended operational days, even on holidays, and robust vendor participation have made it a cornerstone for the community. Notably, vendors like Delmy's Pupusas demonstrated significant growth in EBT usage between 2021 and 2022, highlighting how consistent vendor presence and targeted engagement can drive sales. Markets with diverse vendor offerings and consistent operations attract a broader customer base, fostering financial sustainability for vendors and improved food access for the community. Connell and Hergesheimer assert that “Farmers markets must attract enough vendors to offer the quantity and variety of products needed to retain customer interest.” (Connell & Hergesheimer, 2014)

Insights and Recommendations

The findings from this analysis underscore the crucial role of EBT programs in promoting

economic equity while supporting the markets as vital community hubs. Based on the trends and dynamics observed, the following recommendations are proposed:

- **Expand Online EBT Options:** Implementing online payment systems for EBT transactions would enable markets to reach a broader audience and reduce barriers such as transportation and stigma associated with in-person usage.
- **Strengthen Producer Incentives:** Providing additional support for producers, such as reduced stall fees or marketing assistance, would further solidify their position as the backbone of farmers' markets.
- **Leverage Seasonal Trends:** Markets could capitalize on peak months through targeted promotions and increase engagement during slower months with holiday-themed events or special discounts.
- **Diversify Vendor Offerings:** Expanding the range of vendor types and encouraging participation from diverse groups would enhance customer satisfaction and market resilience.

These strategies, combined with continued investment in EBT programs, can sustain the growth of farmers' markets while addressing critical issues that serve the community, like food insecurity and economic inequity.

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