



# End-to-End Analytics: Powering the Future of LOL Entertainment

University of Chicago MSADS Capstone

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12/07/2024

# Team Members

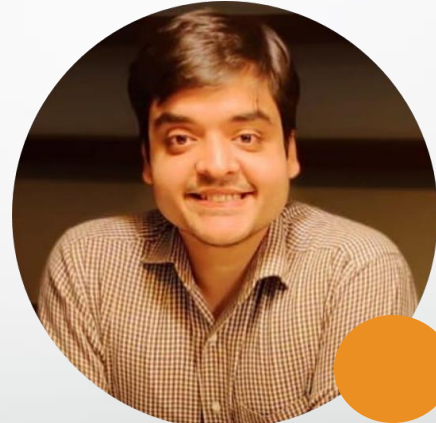
**Nina Zhang**



**Qingling Cui**



**Hasan Zaidi**



**Bianca Gunawan**



# The Client – LOL Entertainment

Started with one  
Museum in Chicago  
in 2021

Grew rapidly to 4  
more locations

Plans of growing  
beyond the MOI into  
other experience-  
based businesses





# Where It All Started- The Museum of Illusions

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Museum of Illusions is a global entertainment company that builds mind-bending sensory exhibits.



LOL brought the Museum of Illusions to North America in 2020 but had to stop operations due to Covid. Did a re-launch in 2021 and have never looked back





# The MOI Timeline



**Chicago, Jan  
2021**



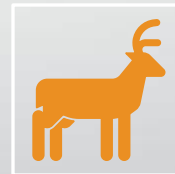
**Philadelphia,  
March 2022**



**Scottsdale,  
March 2023**



**Pittsburgh,  
Dec 2023**



**Boston, Nov  
2024**



# Traffic

Monthly traffic is  
roughly 31,000

That is 10,000 more  
people a month than  
seated at United Center  
(Home of the Bulls)

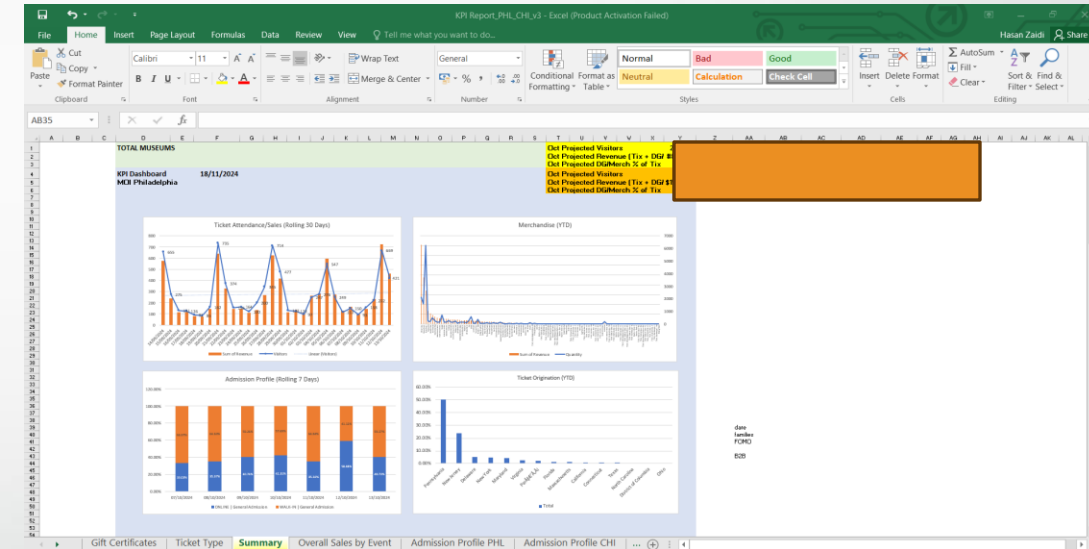


# The Problem: Explosive Growth with Manual Analytics Does Not Scale

Team cannot run manual analytics at scale

"If it is too hard to do, then you don't do it"

"I don't think companies understand how big their data gets"



Example of manual Dashboard



# The Problem: Diagnostics

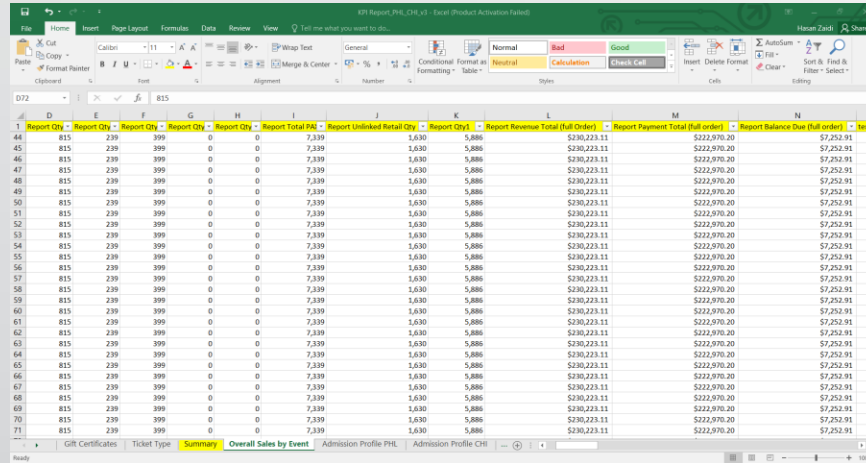
No centralized data collection

Any analysis is manual and slow

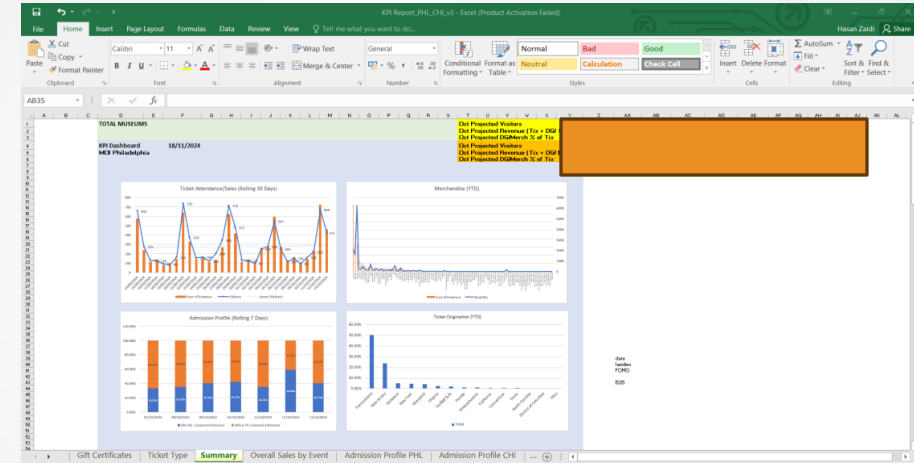
Important data, relevant for business analysis and planning is siloed and trends are being missed.

All three of these problems manifest as lost revenue!

# The Problem Visualized

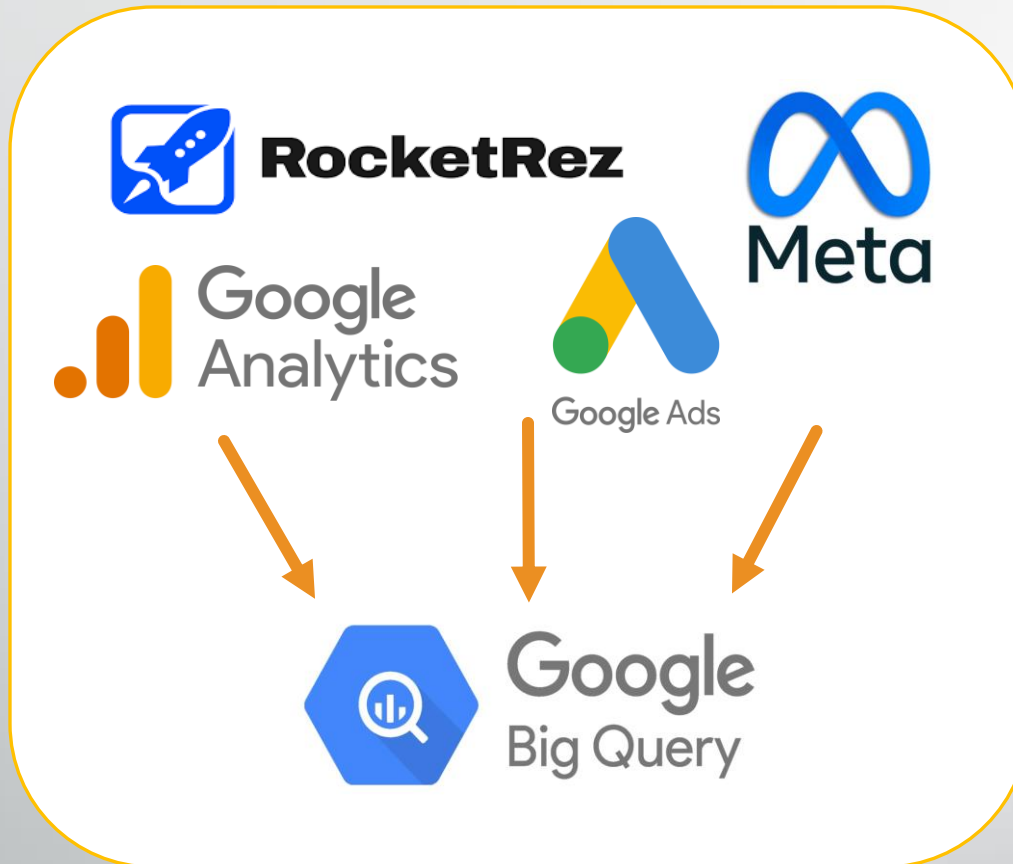


Excel file, kept on a local computer with 20 different sheets and over 50,000 rows, maintained manually. Updated, by hand daily!

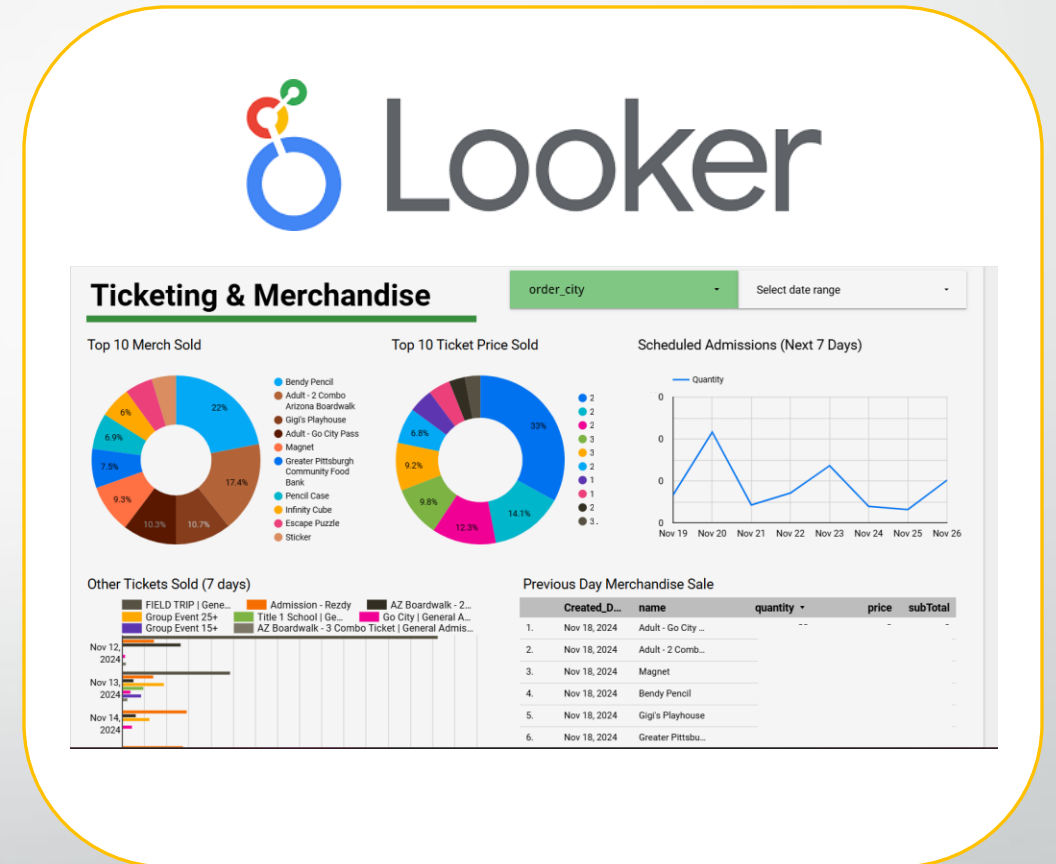


Static Dashboard created on Excel updated manually.  
5 different Dashboards for 5 different locations! No Aggregate.

# Solution: Automated Data Management and Real Time Reporting Reduce Opportunity Cost



All data collected in a single cloud SQL database with automated daily updates.



Dynamic dashboard with daily updates of ticketing data and real time digital marketing information



# Various Data Sources and Data Types Utilized



## Ticketing and Merchandise POS Software

Tickets and merchandise sold

Type of ticket sold

Value of tickets and merchandise sold

Scheduled tour time of visitors

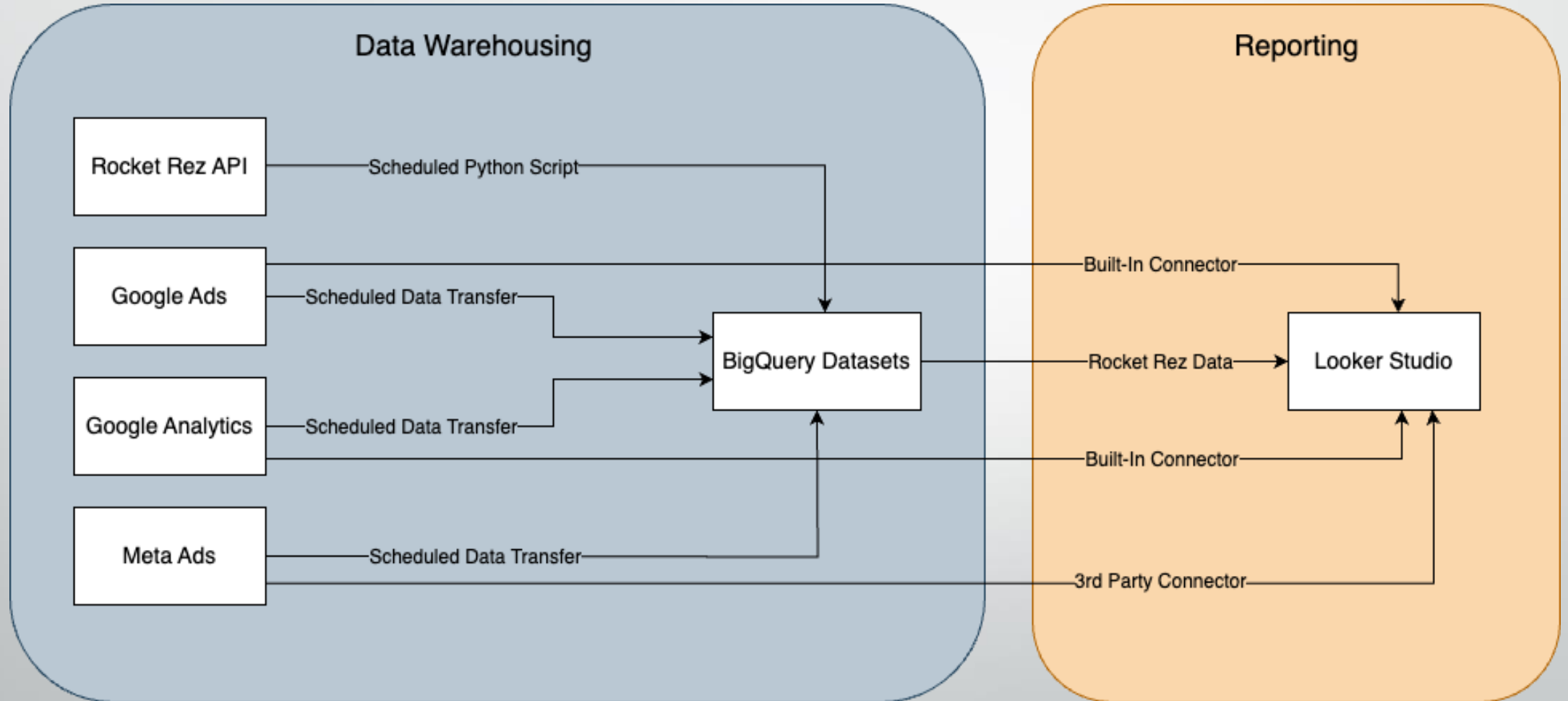


## Digital Marketing Data

Social media (Facebook and Instagram) engagement data, e.g. reach and interactions

Online Advertisement performance data, e.g. clicks, conversions, and cost

# Data Engineering: Architecture Diagram



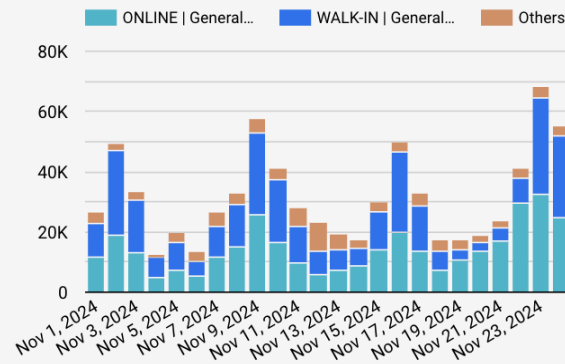
# Analytics Dashboard

## Ticketing & Merchandise

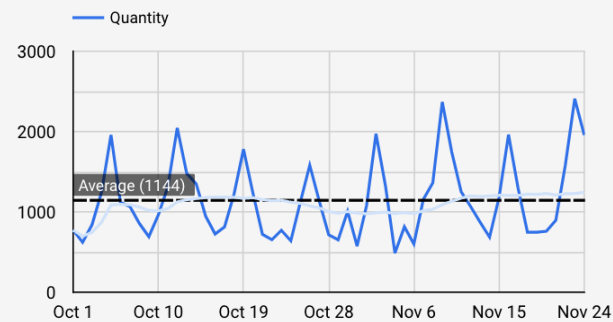
order\_city

Select date range

Monthly Walk-in vs Online Sales (in USD)



Number of Tickets Sold



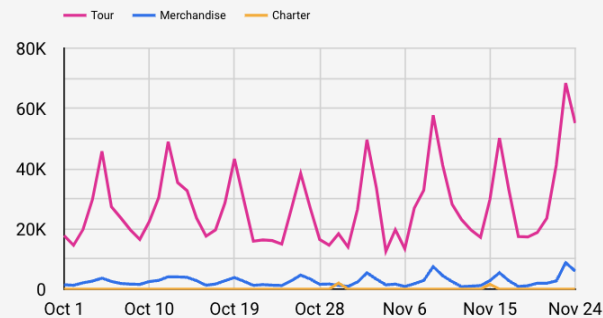
Total Ticket Sales (USD)

\$X,XXX,XXX.XX

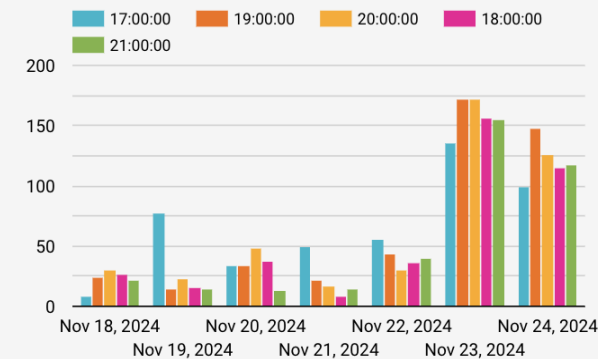
Total Ticket Sales (Quantity)

XX,XXX

Total Rev, Tours and Non Tours



Popular Visit Times (7 days)



Total Merchandise Sales (in USD)

\$XXX,XXX.XX

Total Revenue (in USD)

\$X,XXX,XXX.XX

This dashboard shows measures related to ticket sales and museum visit times



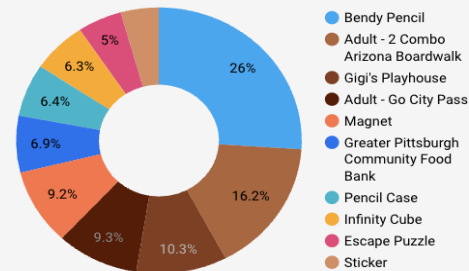
# Analytics Dashboard

## Ticketing & Merchandise

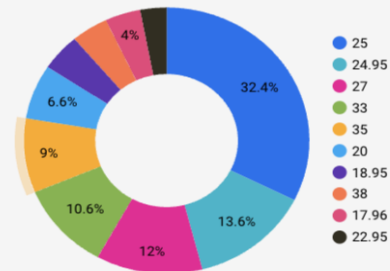
order\_city

Select date range

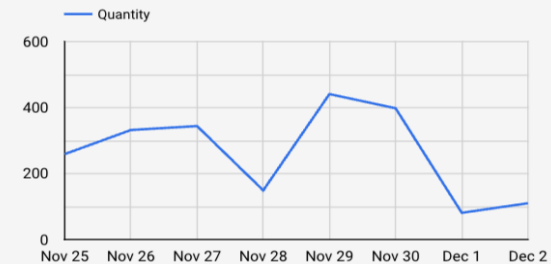
Top 10 Merch Sold



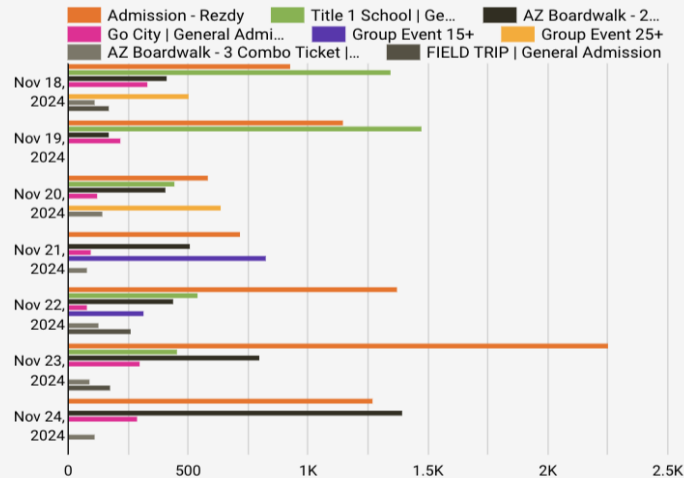
Top 10 Ticket Price Sold



Scheduled Admissions (Next 7 Days)



Other Tickets Sold (7 days)



Previous Day Merchandise Sale

	Created_D...	name	quantity	price	subTotal
1.	Nov 24, 2024	Bendy Pencil	125		
2.	Nov 24, 2024	None	77		
3.	Nov 24, 2024	Adult - 2 Comb...	56		
4.	Nov 24, 2024	Magnet	43		
5.	Nov 24, 2024	Infinity Cube	39		
6.	Nov 24, 2024	Gigi's Playhouse	33		
7.	Nov 24, 2024	Mozi Vortex Ri...	22		
8.	Nov 24, 2024	Child - 2 Comb...	21		
9.	Nov 24, 2024	Kinetic Spinner	19		
10.	Nov 24, 2024	Sticker	17		
11.	Nov 24, 2024	Adult - Go City ...	16		
12.	Nov 24, 2024	Greater Pittsbu...	14		
13.	Nov 24, 2024	Mag Cube Puz...	14		

This dashboard shows measures related to ticket and merchandise sales

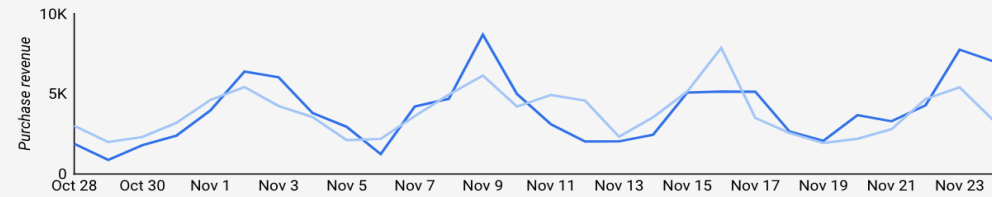
# Analytics Dashboard

## Google Analytics

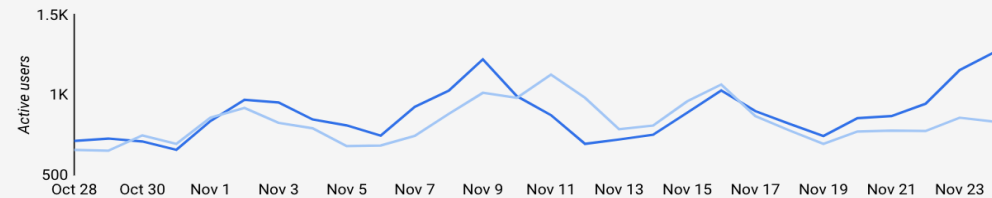
Default Data  
Click to select Google Analy

Select date range

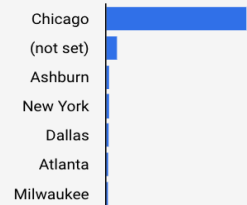
### Total Revenue



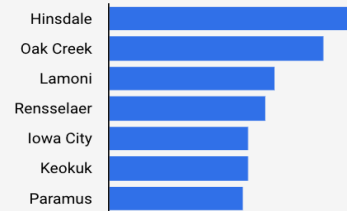
### Total Active Users



### Top City Engagement



### Top Average Revenue per Paying User



### Total eComm Purchases

X,XXX

### Purchase revenue

\$XXX,XXX.XX

### Average Order Value

\$XXX

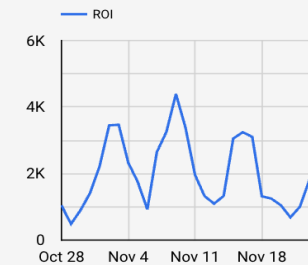
### Revenue per User

\$X.XX

### Conversion Rate

X.XX%

### ROI



This dashboard shows measures related to Google Analytics revenue and ROI

# Analytics Dashboard

## Google Ads



Default Data  
Click to select your data

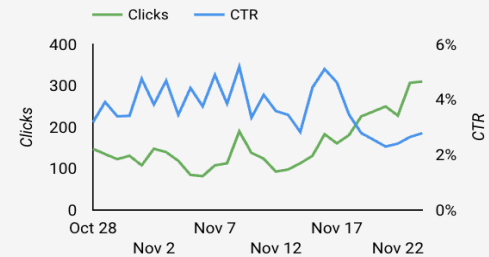
Select date range

### Click Through Rate & Impressions

by Clicks, CTR, and Impressions

Clicks CTR Impressions

xxx xx% xxx k

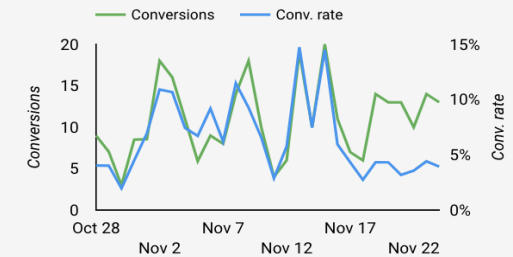


### Conversion Rate & Cost

by Conversions Rate and Cost / Conv.

Conversions Conv. rate Cost / conv.

xxx xx % \$ xx

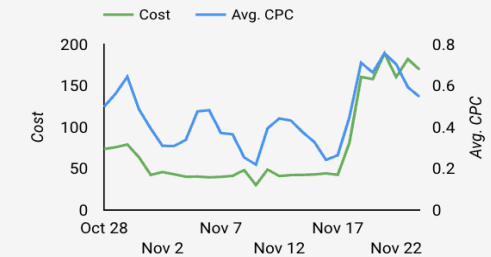


### Cost Per Click

by Cost, CPC, and CPM

Cost Avg. CPC Avg. CPM (deprecated)

\$ xxxx \$xxx \$xxxx



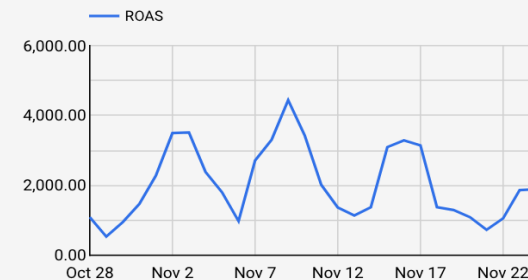
### Top Campaigns

by CTR, Avg. CPC, and Cost / Conv.

Campaign	CTR	Avg. CPC	Cost / conv.
1. AC:Search^Chicago^...	17.41%	\$0.23	\$1.37
2. AC:Search^Chicago^...	15.18%	\$0.63	\$5.91
3. AC:Search^Chicago^...	9.61%	\$0.57	\$29.51
4. AC: Performance Ma...	2.38%	\$0.52	\$12.07
5. GDN - Reach	0%	\$0	\$0

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### ROAS



This dashboard shows the measures of click and cost data from Google Ads



# Analytics Dashboard

## Meta Ads

Data Source name

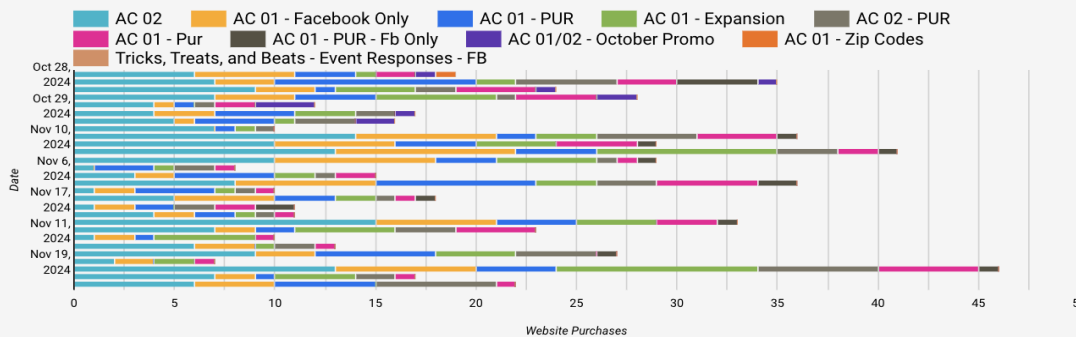
Campaign Name

Campaign Effective Status

Select date range

Cost	Impressions	Link Clicks	CPC	CTR	CPM
\$ XXX	XXX,XXX	X,XXX	\$ XX	XX%	\$XX

### Conversions (Website purchases) by Campaign



### Website Purchases

XXX

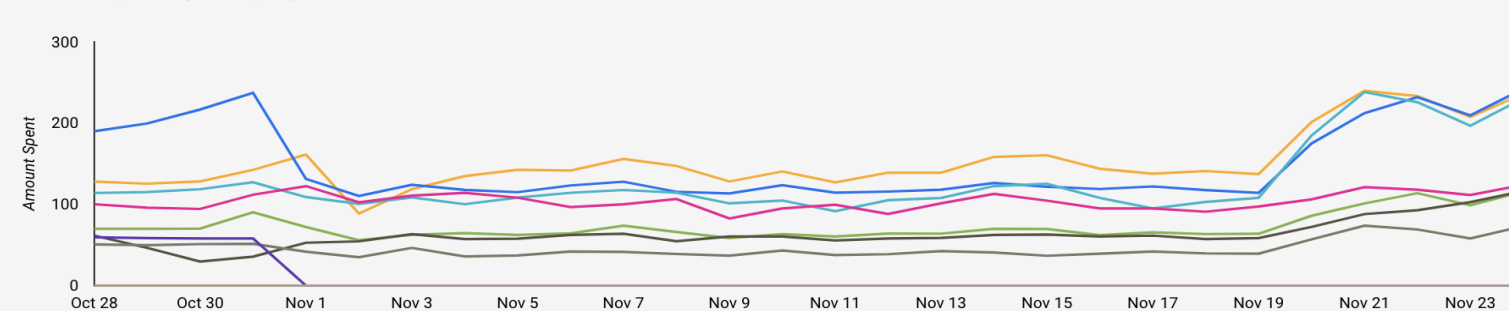
### Cost per Website Purchase

\$XX

### Website Purchases Conversion Value


\$XXX,XXX

### Amount Spent by Campaign




This dashboard shows measures related to Meta Ads campaign costs, interactions, and revenue


# Conclusion



The dashboard and central database are now LOL Entertainment's benchmark, offering a clear and easy way to access key information for future projects.



The dashboard, which is updated daily, is actively utilized by the team to monitor business-sensitive metrics, streamlining processes.



The real value is lower opportunity cost! Time saved, not having to dig through the data manually and having a self serve automated solution that can be used to make business decisions

# Appendix



# References

- [A Survey Of Data Mining Techniques For Smart Museum Applications](#)
- [Machine Learning-based Modelling For Museum Visitations Prediction](#)
- [Real-time Analytics: Concepts, Architectures, And ML/AI Considerations](#)
- [An Approach Of Sales Prediction System Of Customers Using Data Analytics Techniques](#)
- [Demand Forecasting Of Retail Sales Using Data Analytics And Statistical Programming](#)
- [Data Cleaning In Data Warehouse: A Survey Of Data Pre-processing Techniques And Tools](#)