

Global Concert Tour Strategy for **Neon Bison**

Data-Driven Insights for Optimal Touring

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Project Overview: Data-Driven Tour Planning

Leveraging Data for Strategic Tour Decisions

The music industry has undergone a significant transformation, with music consumption shifting online, generating large amounts of digital data. Data analytics has become a cornerstone of success, empowering stakeholders to make informed decisions, optimize strategies, and drive growth.

A data scientist in this field collects raw data from various online sources, derives insights using techniques like sentiment analysis and machine learning, and creates products for analyzing an artist's popularity, fans, and press mentions. This project simulates a real-world music business scenario to apply these principles.

Music analytics is more powerful than ever, telling artists when and what to release, where and how to promote, and how to engage their audience effectively.



Core Objectives

⌚ **Leveraging music store data for strategic tour decisions.**

💲 **Primary Goal:** Optimize tour effectiveness, profitability, and entertainment.

⌚ **Simulating a real-world music business scenario.**

Audience Preferences

Understanding audience behavior through data helps tailor content and marketing for stronger fan connections.

Predictive Analytics

Forecasting trends, guiding releases, and staying ahead of the curve.

Revenue Optimization

Analyzing royalties, licensing, and sales to identify new income opportunities.

Fan Engagement

Using data to personalize experiences and deepen loyalty.

■ Data Sources & Analytical Approach

■ Database Foundation

Our analysis is powered by a **PostgreSQL** relational database, ensuring data integrity and efficient querying for complex analytical tasks.

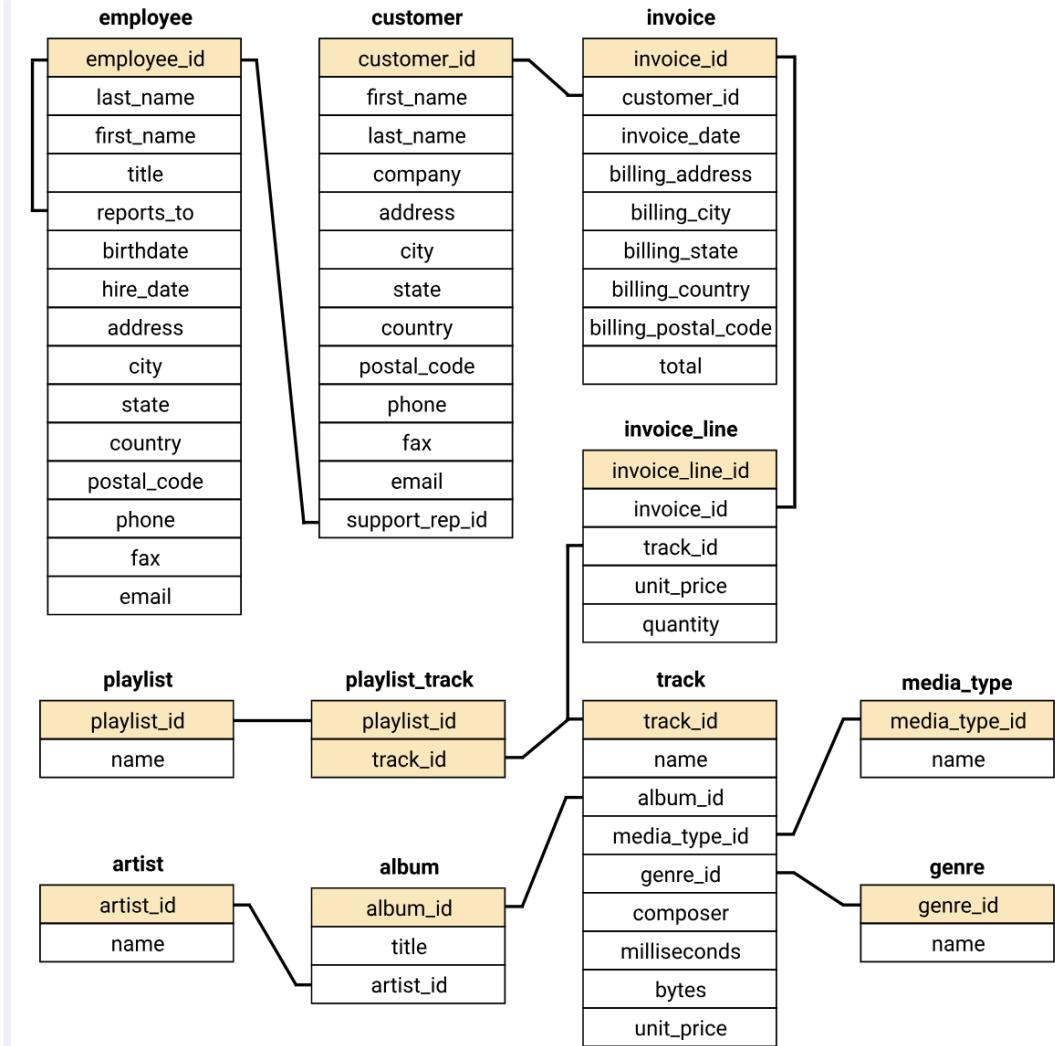
↔ Automated Workflow

Data ingestion is automated using **Python** and **SQLAlchemy**, creating a reliable and repeatable data pipeline for seamless analysis.

≡ Key Data Tables

The schema includes core tables like **Customer**, **Invoice**, **Track**, **Album**, **Artist**, and **Genre** to capture a holistic view of the music ecosystem.

Entity-Relationship Diagram



Rock Reigns: The Leading Genre

MARKET DOMINANCE

Rock Leads All Genres

In both sales volume and total revenue contribution.

Unpacking Rock's Enduring Appeal

- Rock music consistently demonstrates unparalleled market leadership, surpassing all other genres in both sales volume and overall revenue generation, indicating a robust and highly engaged consumer base.
- The genre's success is attributed to high customer engagement and purchase frequency. Loyal fans invest in albums, merchandise, and tickets, fostering a vibrant ecosystem that makes tours highly profitable.
- This market dynamic allows for targeted marketing and optimized tour routing, ensuring Neon Bison can capitalize on the genre's inherent strength and dedicated fanbase.

```
-- Which music genres bring in the highest revenue overall?
SELECT
    g.name AS genre_name,
    ROUND(SUM(il.unit_price * il.quantity)::numeric, 2) AS total_revenue
FROM genre g
JOIN track t ON g.genre_id = t.genre_id
JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY g.name
ORDER BY total_revenue DESC;
```

genre_name	total_revenue
Rock	2608.65
Metal	612.81
Alternative & Punk	487.08
Latin	165.33
R&B/Soul	157.41
Blues	122.76
Jazz	119.79
Alternative	115.83
Easy Listening	73.26
Pop	62.37
Electronica/Dance	54.45

```
-- Find the top 10 artist names with most number of Rock songs
SELECT artist.artist_id, artist.name, COUNT(artist.artist_id) AS total_songs
FROM track JOIN album ON track.album_id = album.album_id
JOIN artist ON artist.artist_id = album.artist_id
JOIN genre ON track.genre_id = genre.genre_id
WHERE genre.name LIKE 'Rock'
GROUP BY artist.artist_id, artist.name
ORDER BY total_songs DESC
LIMIT 10;
```

artist_id	name	total_songs
22	Led Zeppelin	114
150	U2	112
58	Deep Purple	92
90	Iron Maiden	81
118	Pearl Jam	54
152	Van Halen	52
51	Queen	45
142	The Rolling Stones	41
76	Creedence Clearwater Revival	40
52	Kiss	35

High-Value Markets: USA, Canada, Brazil & Germany

Market Concentration

Significant Revenue Generation

Focus on key regions for maximum impact and profitability.

Strategic Market Prioritization

- 📍 USA and Canada are primary targets, identified as the most active and highest-spending customer bases, ensuring strong ticket and merchandise revenue.
- ↗️ Brazil and Germany represent strong secondary markets. Their growing customer bases show promising potential for substantial future revenue generation.
- ✅ This focus is justified by significant revenue generation and high customer concentration, allowing for optimized tour routing and targeted marketing.

```
musicdb/postgres@PostgreSQL 16
Query Query History
1 -- Top spenders from each country
2
3 WITH Customer_Country_Spending AS (
4     SELECT c.first_name || ' ' || c.last_name AS Customer_Name,
5         i.billing_country AS Country, ROUND(SUM(i.total)::numeric, 2) AS Total_Spending,
6         ROW_NUMBER() OVER(PARTITION BY i.billing_country ORDER BY SUM(i.total)) AS Row_Num
7     FROM invoice i JOIN customer c ON c.customer_id = i.customer_id
8     GROUP BY c.first_name, c.last_name, Country, i.billing_country
9     ORDER BY 2 ASC, 3 DESC
10 )
11 SELECT Country, Customer_Name, Total_Spending FROM Customer_Country_Spending WHERE Row_Num=1;

Data Output Messages Notifications
+-----+-----+-----+
| country | customer_name | total_spending |
+-----+-----+-----+
| Argentina | Diego Gutiérrez | 39.60 |
| Australia | Mark Taylor | 81.18 |
| Austria | Astrid Gruber | 69.30 |
| Belgium | Daan Peeters | 60.39 |
| Brazil | Eduardo Martins | 60.39 |
| Canada | Mark Phillips | 29.70 |
| Chile | Luis Rojas | 97.02 |
| Czech Republic | Helena Holý | 128.70 |
| Denmark | Kara Nielsen | 37.62 |
| Finland | Terhi Hämäläinen | 79.20 |
+-----+-----+-----+
Total rows: 24 of 24 Query complete 00:00:00.083
Ln 1, Col 34
```

```
musicdb/postgres@PostgreSQL 16
Query Query History
1 -- Which country has the most invoices?
2
3 SELECT billing_country, COUNT(invoice_id) AS Total_Invoice
4 FROM invoice
5 GROUP BY billing_country
6 ORDER BY Total_Invoice DESC;

Data Output Messages Notifications
+-----+-----+
| billing_country | total_invoice |
+-----+-----+
| USA | 131 |
| Canada | 76 |
| Brazil | 61 |
| France | 50 |
| Germany | 41 |
| Czech Republic | 30 |
| Portugal | 29 |
| United Kingdom | 28 |
| India | 21 |
| Chile | 13 |
| Ireland | 13 |
| Spain | 11 |
| Finland | 11 |
| Australia | 10 |
+-----+-----+
Total rows: 24 of 24 Query complete 00:00:00.106
Ln 1, Col 1
```

Uncovering High-Engagement Cities

Engagement Hotspots

High Average Spend Per Customer

Beyond population size, focus on customer value.

Identifying Pockets of Deep Engagement

While overall market size is important, our analysis reveals specific cities that demonstrate exceptionally high average spend per customer. Cities like **São Paulo, Edmonton, and Prague** stand out, indicating a deeper level of engagement and loyalty from their customer base, despite potentially smaller populations.

This metric is crucial for identifying 'super-fans' and highly dedicated audiences. These cities represent concentrated pockets of high-value customers who are more likely to invest significantly in music, merchandise, and live experiences.

The screenshot shows a PostgreSQL query interface with the following SQL code:

```
-- Cities with best customers
SELECT c.city,ROUND(SUM(i.total)::NUMERIC, 2) AS total_revenue
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY c.city
ORDER BY total_revenue DESC;
```

The resulting table displays the top 13 cities with the highest average spend per customer:

	city	total_revenue
1	Prague	273.24
2	Mountain View	169.29
3	London	166.32
4	Berlin	158.40
5	Paris	151.47
6	São Paulo	129.69
7	Dublin	114.84
8	Delhi	111.87
9	São José dos Campos	108.90
10	Brasília	106.92
11	Lisbon	102.96
12	Montréal	99.99
13	Bordeaux	99.99

Total rows: 53 of 53 Query complete 00:00:00.094

Ln 2, Col 1

The screenshot shows a PostgreSQL query interface with the following SQL code:

```
-- Country wise Average Revenue
SELECT c.country,ROUND(AVG(i.total)::NUMERIC, 2) AS average_revenue
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY c.country
ORDER BY average_revenue DESC;
```

The resulting table displays the top 13 countries with the highest average revenue per customer:

	country	average_revenue
1	Czech Republic	9.11
2	Spain	8.91
3	Ireland	8.83
4	United Kingdom	8.77
5	India	8.72
6	Belgium	8.63
7	Germany	8.16
8	Australia	8.12
9	Norway	8.03
10	USA	7.94
11	Argentina	7.92
12	Hungary	7.82
13	France	7.78

Total rows: 24 of 24 Query complete 00:00:00.084

Ln 8, Col 1

Strategic Implications: Targeted Opportunities

The presence of high average spend per customer in these cities justifies a tailored approach to tour planning and fan engagement.

- Opportunities for Exclusive Events:** These locations are ideal for hosting exclusive fan events, VIP experiences, or smaller, intimate shows that cater directly to highly engaged audiences, fostering stronger loyalty and generating premium revenue.
- Pilot Programs for New Offerings:** High-engagement cities can serve as excellent test markets for new merchandise, fan club initiatives, or interactive experiences, leveraging the strong connection with the local fanbase.

Identifying & Engaging Top Spenders

Beyond Frequency: Uncovering True Value

Our analysis reveals a crucial insight: not all high-value customers are frequent purchasers. We've identified **outlier high-spenders** like **František Wichterlová** and **Luis Rojas** who, despite moderate purchase frequency, contribute significantly to overall revenue. These individuals represent a distinct segment of highly valuable fans.

Conversely, while **Rock buyers** tend to be repeat purchasers, their individual transaction values might be lower than these outliers. This highlights the importance of segmenting our audience not just by purchase volume, but by total lifetime value.

Understanding these different customer behaviors allows us to tailor our engagement strategies. High-frequency, moderate-spend customers benefit from consistent engagement, while high-spend, lower-frequency outliers require personalized incentives.

-- Which customers have spent the most across all time?

```
musicdb/postgres@PostgreSQL 16
Query History
1 -- Which customers have spent the most across all time?
2
3 SELECT
4   c.first_name || ' ' || c.last_name AS customer_name,
5   c.country,
6   ROUND(SUM(i.total)::numeric, 2) AS total_spent
7 FROM customer c
8 JOIN invoice i ON c.customer_id = i.customer_id
9 GROUP BY c.customer_id, c.first_name, c.last_name, c.country
10 ORDER BY total_spent DESC
11 LIMIT 5;
12
```

Data Output Messages Explain Notifications

customer_name	country	total_spent
František Wichterlová	Czech Republic	144.54
Helena Holý	Czech Republic	128.70
Hugh O'Reilly	Ireland	114.84
Manoj Pareek	India	111.87
Luis Gonçalves	Brazil	108.90

Total rows: 5 of 5 Query complete 00:00:00.053 Ln 6, Col 13

-- How many customers have never made a repeat purchase?

```
musicdb/postgres@PostgreSQL 16
Query History
1 -- How many customers have never made a repeat purchase?
2
3 SELECT COUNT(*) AS one_time_customers
4 FROM (
5   SELECT
6     i.customer_id,
7     COUNT(i.invoice_id) AS num_purchases
8   FROM invoice i
9   GROUP BY i.customer_id
10  HAVING COUNT(i.invoice_id) = 1
11 ) AS single_purchase_customers;
12
13 SELECT
14   COUNT(*) FILTER (WHERE num_purchases = 1) AS one_time_customers,
15   COUNT(*) FILTER (WHERE num_purchases > 1) AS repeat_customers,
16   COUNT(*) AS total_customers
17 FROM (
18   SELECT customer_id, COUNT(invoice_id) AS num_purchases
19   FROM invoice
20   GROUP BY customer_id
21 ) AS customer_summary;
```

Data Output Messages Explain Notifications

one_time_customers	repeat_customers	total_customers
0	59	59

Total rows: 1 of 1 Query complete 00:00:00.044 Ln 15, Col 38

STRATEGIC IMPERATIVE: Personalized Engagement

For Outlier High-Spenders:

Implement exclusive, high-tier loyalty benefits, early access to premium content, and direct, personalized communication to acknowledge their significant contribution.

For Repeat Rock Buyers:

Reinforce loyalty through tiered rewards, fan club memberships, and consistent engagement. Focus on community building and exclusive content relevant to their genre preference.



Recommendation 1: Tour Launch Strategy

🚩 Recommendation

Focus on cities like **New York, Chicago, and Toronto** for the initial tour launch.

✓ Justification

This strategy combines strong purchase volumes with consistent customer engagement, ensuring a robust and profitable start to the tour.

✨ Supporting Insights

North America offers a strong starting point due to high activity and significant revenue potential (Strategic Insight 1), validated by data on top spenders and invoice volumes.

```
-- Top spenders from each country
WITH Customer_Country_Spending AS (
    SELECT c.first_name || ' ' || c.last_name as Customer_Name,
    i.billing_country AS Country, ROUND(SUM(i.total)::numeric, 2) AS Total_Spending,
    ROW_NUMBER() OVER(PARTITION BY i.billing_country ORDER BY SUM(i.total)) AS Row_Num
    FROM invoice i JOIN customer c ON c.customer_id = i.customer_id
    GROUP BY c.first_name, c.last_name, Country, i.billing_country
    ORDER BY 2 ASC, 3 DESC
)
SELECT Country, Customer_Name, Total_Spending FROM Customer_Country_Spending WHERE Row_Num=1;
```

Data Output Messages Notifications

country	customer_name	total_spending
Argentina	Diego Gutiérrez	39.60
Australia	Mark Taylor	81.18
Austria	Astrid Gruber	69.30
Belgium	Daan Peeters	60.39
Brazil	Eduardo Martins	60.39
Canada	Mark Philips	29.70
Chile	Luis Rojas	97.02
Czech Republic	Helena Holý	128.70
Denmark	Kara Nielsen	37.62

Evidence: Top Spending Countries

Total rows: 24 of 24 Query complete 00:00:00.083 Ln 1, Col 34

```
-- Which country has the most invoices?
SELECT billing_country, COUNT(invoice_id) as Total_Invoice
FROM invoice
GROUP BY billing_country
ORDER BY Total_Invoice DESC;
```

Data Output Messages Notifications

billing_country	total_invoice
USA	131
Canada	76
Brazil	61
France	50
Germany	41
Czech Republic	30
Portugal	29
United Kingdom	28
India	21
Chile	13
Ireland	13
Spain	11

Evidence: High Invoice Volume

Total rows: 24 of 24 Query complete 00:00:00.106 Ln 1, Col 1



Recommendation 2: Market Expansion

💡 Recommendation

Expand the tour to include **São Paulo**, **Brasília**, **Prague**, and **Berlin**.

✓ Justification

These cities demonstrate strong average spend per customer and cater to niche but highly profitable audiences, maximizing revenue potential.

The screenshot shows a pgAdmin interface with a query window titled "musicdb/postgres@PostgreSQL 16". The query retrieves the top 10 cities based on total revenue from the musicdb database:

```
-- Cities with best customers
SELECT c.city,ROUND(SUM(i.total)::NUMERIC, 2) AS total_revenue
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY c.city
ORDER BY total_revenue DESC;
```

The results table has columns "city" (text) and "total_revenue" (numeric). The data shows Prague at the top with 273.24, followed by Mountain View, London, Berlin, Paris, São Paulo, Dublin, Delhi, São José dos Campos, Brasília, and Lisbon.

Evidence: High-Value Customer Cities

city	total_revenue
Prague	273.24
Mountain View	169.29
London	166.32
Berlin	158.40
Paris	151.47
São Paulo	129.69
Dublin	114.84
Delhi	111.87
São José dos Campos	108.90
Brasília	106.92
Lisbon	102.96

Total rows: 53 of 53 Query complete 00:00:00.094 Ln 2, Col 1

The screenshot shows a pgAdmin interface with a query window titled "musicdb/postgres@PostgreSQL 16". The query retrieves the top 12 countries based on average revenue from the musicdb database:

```
-- Country wise Average Revenue
SELECT c.country,ROUND(AVG(i.total)::NUMERIC, 2) AS average_revenue
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY c.country
ORDER BY average_revenue DESC;
```

The results table has columns "country" (text) and "average_revenue" (numeric). The data shows the Czech Republic at the top with 9.11, followed by Spain, Ireland, United Kingdom, India, Belgium, Germany, Australia, Norway, USA, Argentina, and Hungary.

Evidence: Strong Average Revenue

country	average_revenue
Czech Republic	9.11
Spain	8.91
Ireland	8.83
United Kingdom	8.77
India	8.72
Belgium	8.63
Germany	8.16
Australia	8.12
Norway	8.03
USA	7.94
Argentina	7.92
Hungary	7.82
France	7.76

Total rows: 24 of 24 Query complete 00:00:00.084 Ln 8, Col 1

⚡ Data-Backed Expansion Opportunities

- Flag **Valuable Secondary Markets:** Analysis shows Brazil and Germany (Strategic Insight 2) have growing customer bases with significant revenue potential, making them ideal for a second tour phase.

- User **Niche European Audiences:** Cities like Prague and Berlin (Strategic Insight 3) show exceptionally high average spend, indicating highly engaged and valuable fan segments perfect for targeted events.



Recommendation 3: Fan Engagement

🔊 Recommendation

Create **tailored digital campaigns** and **tiered loyalty programs**.

✓ Justification

Boost anticipation before tour dates, recognize and reward the most loyal fans, and create powerful incentives for repeat purchases.

💡 Supporting Insights

🎵 **Rock Genre Loyalty (Insight 5):** The dedicated fanbase for Rock music provides a solid foundation for strategies aimed at retaining returning customers.

💰 **High-Value Spenders (Insight 7):** Top-spending customers require personalized incentives to feel valued and maintain their high level of investment.

The screenshot shows a PostgreSQL query results window titled "musicdb/postgres@PostgreSQL 16". The query retrieves the top 5 customers by total spent from the customer and invoice tables. The results are displayed in a table with columns: customer_name, country, and total_spent.

customer_name	country	total_spent
František Wichterlová	Czech Republic	144.54
Helena Holy	Czech Republic	128.70
Hugh O'Reilly	Ireland	114.84
Manoj Pareek	India	111.87
Luis Gonçalves	Brazil	108.90

Evidence: Identify High-Value Spenders

Total rows: 5 of 5 Query complete 00:00:00.053 Ln 6, Col 13

The screenshot shows a PostgreSQL query results window titled "musicdb/postgres@PostgreSQL 16". The query counts the number of one-time and repeat customers based on their purchase history. The results are displayed in a table with columns: one_time_customers, repeat_customers, and total_customers.

one_time_customers	repeat_customers	total_customers
0	59	60

Evidence: Encourage Repeat Purchases

Total rows: 1 of 1 Query complete 00:00:00.044 Ln 15, Col 38

Conclusion: Data-Driven Success

Key Takeaways & Future Vision

Actionable Insights

Structured SQL analytics

translates raw data into actionable business decisions. Our methodology has demonstrated how detailed analysis of customer behavior, genre popularity, and geographical spending patterns can directly inform strategic choices for tour planning and fan engagement.

Scalable Growth

This provides a **scalable methodology** for effective tour planning, fan targeting, and revenue growth. By continuously analyzing data, Neon Bison can adapt to evolving market trends and optimize its strategies for sustained success in the dynamic music industry.

Future-Proofing

Future considerations to enhance strategy:

-  **Integrate social media data** to track virality and audience sentiment.
-  **Implement real-time sales tracking** for agile adjustments during tours.

↔ Technical Skills Demonstrated

SQL Skills

- Multi-table joins using **INNER JOIN, LEFT JOIN**
- Aggregation and filtering using **GROUP BY, HAVING**
- Window functions such as **ROW_NUMBER, RANK** for advanced analytics
- Common Table Expressions (**CTEs**) for modular and readable queries
- Query optimization, sorting, and formatting of outputs for clarity

Database & Programming

- Used '**Jupyter Notebook**' and '**Python**' to automate bulk data loading into '**PostgreSQL**'
- Used ORM libraries like '**SQL Alchemy**' for faster data loading
- Set up and analyzed datasets within a locally hosted database

Conceptual Foundations

- Applied core **DBMS (Database Management System)** principles to model relationships across tables

AI Tools

- Used '**ChatGPT**' to design and optimize SQL queries
- Used '**Agnes AI**' for making presentations
- Generated initial visualizations & documentation with AI suggestions

Thank You!

Questions & Discussion

Contact with me:



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