



Quisine Analytics

Guide to use Dish Popularity Index (DPI) for menu optimization

What is DPI?

The Dish Popularity Index (DPI) measures the percentage of total daily orders that a specific dish contributes. It provides valuable insight into customer preferences and helps in strategic menu decisions.

Formula:

$$\text{DPI (\%)} = (\text{Dish Orders} / \text{Total Orders on that Day}) \times 100$$

Applications of DPI in Menu Optimization

1. Identify Top-Performing Dishes

- Dishes with high DPI indicate strong customer preference.
- Promote these dishes through advertising and highlight them on menus.
- Ensure steady inventory to meet demand.

2. Detect Underperforming Dishes

- Items with consistently low DPI may be reviewed or removed.
- Investigate causes such as pricing, taste, or portion size.
- Consider testing improvements before retiring the dish.

3. Customize Menus Based on Region

- Analyze DPI across different cities or provinces.
- Localize menus to reflect regional tastes (e.g., Smoked Meat Poutine in Quebec, Veg Poutine in Toronto).
- Reduce waste by aligning offerings with local demand.

4. Forecast Demand and Minimize Food Waste

- Use DPI trends to estimate future demand more accurately.
- Optimize ingredient orders and kitchen prep schedules.
- Helps maintain food waste below 5% target.

5. Plan Promotions and Seasonal Items

- Monitor how DPI shifts during promotional periods or holidays.
- Use DPI data to assess the success of new dishes or limited-time offers.
- Adjust future campaigns based on what resonates with customers.

Implementation Tips

- Track DPI daily or weekly for consistency.
- Visualize data using bar charts or interactive dashboards.
- Segment DPI by customer type, such as dine-in, takeout, or delivery.
- Combine DPI with cost and margin analysis to prioritize both popularity and profitability.



Step-by-Step DPI Calculation:

Lets calculate the DPI for **Smoked Meat Poutine**

Step 1: Identify Orders for Smoked Meat Poutine

Example on 28-02-2025:

- Ajax: 828 orders
- Alma: 828 orders
- Aurora: 782 orders
- Baie-Comeau: 805 orders
- Barrie: 805 orders

Step 2: Get Total Orders for the Same Day

Total orders on 28-02-2025 across all dishes and cities = 453,813

Step 3: Calculate DPI for Each City

Formula:

$$\text{DPI (\%)} = (\text{No. of Orders for Dish} / \text{Total Orders on That Day}) \times 100$$

Examples:

- Ajax: $(828 / 453,813) \times 100 \approx 0.1825\%$
- Aurora: $(782 / 453,813) \times 100 \approx 0.1723\%$
- Barrie: $(805 / 453,813) \times 100 \approx 0.1774\%$

Step 4: Repeat for All Dates and Cities

Apply the same formula to every row in the dataset where the dish is 'Smoked Meat Poutine'.

Step 5: Average All DPI Values for Final Result

Average DPI for Smoked Meat Poutine across all records $\approx 0.17895\%$

Dish Popularity Index (DPI) Summary

Items	Dish Popularity Index (%)
Smoked Meat Poutine	17.90
Classic Poutine	14.66
French Fries	13.80
Cheeseburger	13.10
Veg Poutine	12.37
Chicken Wrap	11.06
Chocolate Cake	10.73
Caesar Salad	10.14
Grilled Chicken	8.37
Veggie Burger	6.93



Dish Popularity Index (DPI) Update – Ensuring Precision

What Was Done:

1. Grouped data by date to calculate total number of orders per day.
2. Calculated DPI for each dish using the formula:
$$\text{DPI (\%)} = (\text{Number of Orders for Dish} / \text{Total Orders on That Day}) \times 100$$
3. Averaged DPI across all dates to smooth out daily fluctuations and identify consistently popular dishes.
4. Sorted results to highlight the most and least popular dishes based on accurate, normalized data.

Why This Ensures Precision:

- Normalized by date: Ensures dishes aren't favored simply due to high-traffic days.
- Reflects real customer preferences: Average DPI gives a truer sense of long-term popularity.
- Supports regional & temporal analysis: Can be further segmented by location or season for deeper insights.
- Useful for menu decisions: Helps prioritize dishes with stable demand, not just daily spikes.