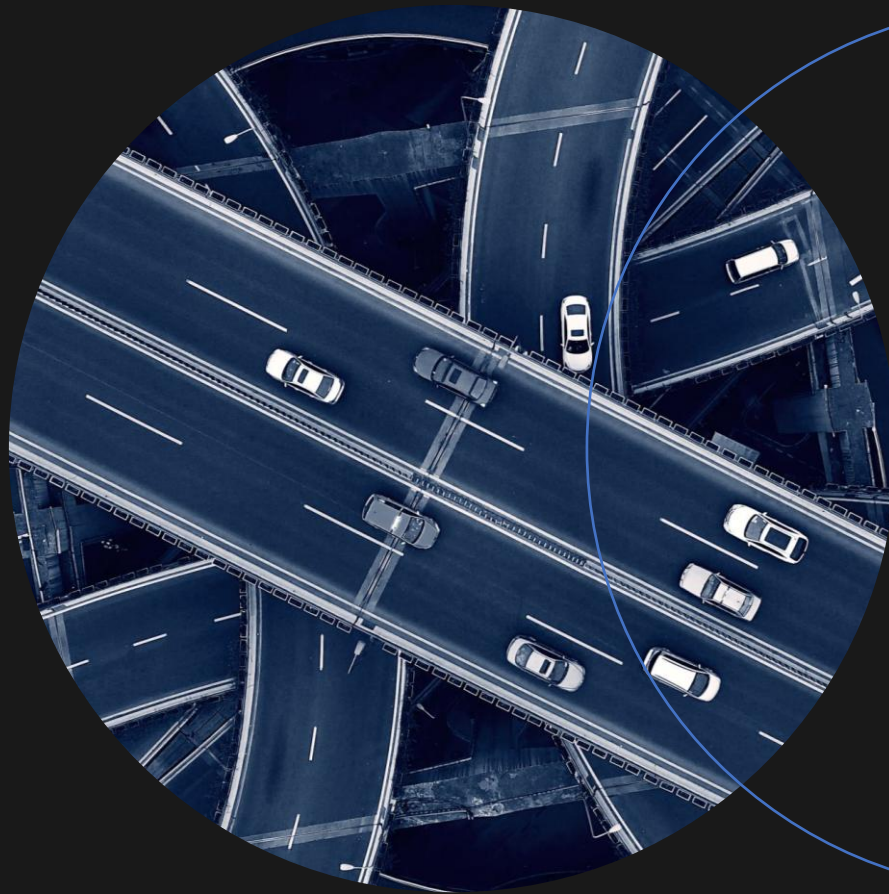




Geographic Insights

Leverage powerful geo-based granular spend insights to improve analytics & decision making across multiple industries

GLOBAL | JAN 2024



Agenda

1 Geo Insights

2 Case Studies

3 Backup



Geo Insights leverages unparalleled amount of most granular purchase data for Mastercard cards



2.5+ Bn
cards



73+ Bn
transactions
per year



47+ Mn
merchant
locations

Powerful Location Intelligence at any geographical level



Geo Insights – data parameters

Metrics, industries, segments



Spend Metrics

Indexes:

- Total Spend
- Total Transactions
- Total Accounts (Cards)
- Spend per Account
- Spend per Transaction (Ticket size)
- Transactions per Account

YoY % change variables:

- Change for Total Spend, YoY %
- Change for Total Transactions, YoY %

History available from 2018

Time aggregation options:

Monthly, Weekly or Daily average

Consumer Segments

- **Overall** spend for all segments
- **Domestic** – only cards of the same country of origin as the merchant
- **International** – foreign cards only

Merchant Industries

Quad* zoom level up to 150m x 150m

- Total Retail
(macro spend – all industries)
- Eating Places
- Apparel

Quad* zoom level up to 1.2km x 1.2km

- Grocery & Food stores
- Bars/Taverns/Nightclubs
- Accommodations
- Art, Entertainment & Recreation
- Automotive Fuel
- Motor Vehicles (excl. Fuel)
- Consumer Electronics
- Cosmetics & Beauty Services
- Home Furnishings/Furniture
- Jewelry & Giftware
- Professional Services
- Department & General Merch



* Metrics time aggregation options: Monthly average, Weekly average, Daily average

Geo Insights – data parameters

Coverage and spatial boundaries

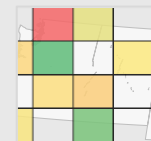


Geographic coverage and spatial boundaries

Coverage **up to the full country** territory. Each row of data contains metrics for a given **spatial boundary at the lowest zoom level**. Three options exist:

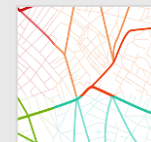
1. Quad

- Country area is divided into small quadrants, **most granular data** available for Geo Insights
- The higher the zoom level, the smaller the area of the quad (zoom 18 is ~150m x 150m, zoom 15 is ~1.2km x 1.2m)



2. Administrative boundary

- Official area boundaries (region, city, zip code etc.)
- Vary by country, defined by country government
- Mastercard owns a library of boundaries for select countries



3. Custom boundaries

1. Any other boundary not available to Mastercard, usually provided by client
2. Metric availability to be assessed for each shape



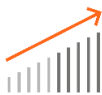
Geo Insights expands limited market data and helps businesses answer strategic questions

APPLICATIONS



Marketing

- Which areas represent the highest growth opportunities?
- How have recent marketing efforts impacted spend patterns from key surrounding areas?
- What areas are majority of customers coming from?



Benchmarking

- Is business performance being driven by broader retail trends or by our own initiatives?
- How are my locations performing relative to the market?



Network Strategy

- Which locations should be prioritized for new store openings?
- Which stores are underperforming in their regions, and are candidates for closing?
- How can item assortments be localized to cater to different demographics?



Economic Impact and Planning

- How is spend impacted during major planned and unplanned events?
- How do we measure the impact of investments in the community?

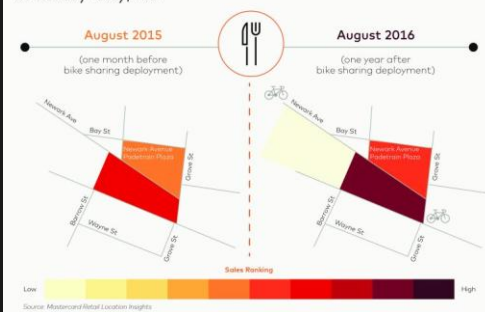




Urban change impact assessment

Client Profile:
NYU's Center for Urban Science

Bike sharing's impact on restaurants near Grove Street in Jersey City, NJ



Problem: analyze the economic impact of bike-sharing and Wi-Fi hotspots

Approach:

- NYU CUSP researchers had hypotheses that bike-sharing stations and free Wi-Fi kiosks can have measurable impact on the nearby economic activity and worth scaling further
- They used **Geo Insights data** to understand overall **spend behavior on the food industry near bike-sharing stations** and estimate related growth of commercial activity (people dropping off a bike might also drop in for a bite to eat)
- Also, they measured any **changes in commercial activity** in seven Brooklyn neighborhoods by comparing a nearby "control" neighborhood **to their target areas (with free Wi-Fi kiosks)**, as well as comparing sales the immediate year prior to the test



Result:

- Neighborhoods in Brooklyn saw **a bump of 0.2 to 0.5 percent improvement in food retail volumes** in the years following the addition of bike-sharing stations, compared to a slight decrease or steady levels in nearby ZIP codes that didn't have stations. A deeper analysis in Jersey City showed a bump in sales growth closer to 4 percent versus a control neighborhood
- Similarly, within six months after a free **Wi-Fi kiosk** was installed, retailers in the immediate area saw an **overall bump in sales of two to three percent**



Data elements for Geo Insights data feed

Index data is refreshed on a weekly basis with an estimated 2-week lag



Field Name	Description	Type	Available Options / Examples
Txn_date	Date of analysis with time period based on time slice.	Date, 'yyyy-mm-dd'	Daily YYYY-MM-DD, Weekly 1-52, Monthly 1-12
Industry	Categorical variable indicating the industry of the merchants	String	Total Retail
Segment	Segment by card origin	String	Overall, Domestic, International
Geo_type	The comparison boundary (benchmark) used to generate the index	String	Country, State/Province/Region or Metro
Geo_name	The name of the relevant comparison boundary (Geo_type name)	String	United States
Quad_id	The Quadtree identification number (quadkey/ID) for each quad	String	031313131112233110
Latitude	The full precision latitude coordinate of the quad centroid	String	51.5151524790064
Longitude	The full precision longitude coordinate of the quad centroid	String	-0.133895874
Bounding_box	Contains the geometry of the Quad ID in WKT format.	Tuple list, WKT	POLYGON ((-0.133209228515625 51.51472517425701, -0.133209228515625 51.51557978375592, -0.1345825195311 51.51557978375592, -0.1345825195311 51.51472517425701, -0.133209228515625 51.51472517425701))
Txn_amt	-Index measuring total spend Calc: Quad total transaction amount / Geo_name total transaction amount for anchor period	Float	Index 1-9999 Average 100
Txn_cnt	-Index measuring total number of transactions Calc: Quad total transaction count / Geo_name average transaction count for anchor period	Float	Index 1-9999 Average 100
Acct_cnt	-Account Count index measuring total number of distinct card numbers -Quad total # of accounts / Geo_name average # of accounts for anchor period	Float	Index 1-9999 Average 100
Avg_ticket	-Average Ticket index measuring average spend per transaction -Quad average ticket size / Geo_name average ticket size for anchor period	Float	Index 1-9999 Average 100
Avg_frequency	-Index measuring average number of transactions per card Calc: Quad average transaction frequency / Geo_name average transaction frequency for anchor period	Float	Index 1-9999 Average 100
Avg_spend_amt	-Index measuring average spend per card Calc: Quad average spend amount / Geo_name average spend amount for anchor period	Float	Index 1-9999 Average 100
YoY Spend	Year on year % change in spend - Optional on request	Float	% value (not an index)
YoY Transactions	Year on year % change in transaction count - Optional on request	Float	% value (not an index)



Thank you!

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