

Sample: Tourism and events, Barcelona: report

Project: Sample: Tourism and events, Barcelona

Goal: Describe the project Sample: Tourism and events, Barcelona: run the analyses that tell the most about its data, draw every result, and write a cited report.

Run: 31472d20-05f3-4c85-8dd4-6c9178c5f64a (running, 11 agent run(s))

Generated: 2026-10-18T05:55:27Z, version 1

Model cost: USD 0.0000 over 0 model call(s)

Data used

Data	Kind	Rows	Time span	Summary	Source
Venues	vector, Point	40		40 point features; 'kind' has 8 values (top: beach 5, stadium 5, market 5); 'capacity' 176 to 8,097 (mean 1090); named by 'name' (e.g. Beach La Estacion, Stadium Los Olivos, Market El Mercado); extent 2.1381,41.3693 to 2.2029,41.4077. Point locations of Venues by kind.	[69]
Footfall counters	vector, Point	30		30 point features; 'installed_year' 2,025 to 2,025 (mean 2025); named by 'name' (e.g. Footfall counter FC01, Footfall counter FC02, Footfall counter FC03); extent 2.1471,41.3678 to 2.1956,41.4005. Point locations of Footfall counters.	[70]
Footfall by hour	table	5,040	2026-09-14 to 2026-09-20	Table of 5,040 rows and 3 columns without geometry; dated by 'timestamp' from 2026-09-14 to 2026-09-20; 'pedestrians' 9 to 8,318 (mean 766.5). A table of Footfall by hour without locations.	[2]
Visitor check-ins	vector, Point	1,787	2026-08-01 to 2026-09-30	1,787 point features; dated by 'checked_in_at' from 2026-08-01 to 2026-09-30; 'visitor_origin' has 4 values (top: Americas 497, Asia 464, domestic 424); 'category' has 4 values (top: food 460, event 452, sightseeing 440); 'group_size' 1 to 4 (mean 2.144); extent 2.1351,41.3650 to 2.2048,41.4092. Dated point events by visitor_origin: where and when Visitor check-ins happen.	[3]
Hotels	vector, Point	120		120 point features; 'stars' 2 to 5 (mean 3.408); 'rooms' 17 to 363 (mean 104.1); 'adr_eur' 71 to 510 (mean 173.1); extent 2.1363,41.3675 to 2.2041,41.4087. Point locations of Hotels.	[71]
Districts	vector, Polygon	10		10 polygon (area) features; 'residents' 13,872 to 162,538 (mean 6.674e+04); 'tourist_beds' 1,594 to 7,527 (mean 4832); named by 'name' (e.g. Valle Hondo, Puente Alto Sur, Las Torres); total area 25.97 km2; extent 2.1338,41.3642 to 2.2059,41.4098. Areas (Districts) with residents to compare and map.	[72]
Transit stations	vector, Point	25		25 point features; 'lines' 1 to 3 (mean 1.8); named by 'name' (e.g. Metro station La Fuente, Metro station Las Acacias, Metro station El Puerto Viejo); extent 2.1372,41.3652 to 2.2043,41.4051. Point locations of Transit stations.	[73]
Events	vector, Point	60	2026-06-02 to 2026-10-31	60 point features; dated by 'date' from 2026-06-02 to 2026-10-31; 'type' has 5 values (top: exhibition 16, concert 14, match 13); 'expected_attendance' 397 to 17,281 (mean 3696); extent 2.1476,41.3713 to 2.2029,41.4047. Dated point events by type: where and when Events happen.	[4]

Data	Kind	Rows	Time span	Summary	Source
Short-term rentals	vector, Point	359		359 point features; 'room_type' has 2 values (top: private room 196, entire home 163); 'licensed' has 2 values (top: True 198, False 161); 'nightly_eur' 44 to 363 (mean 125.7); extent 2.1359,41.3649 to 2.2041,41.4087. Point locations of Short-term rentals by room_type.	[74]
Hotel occupancy by district and month	table	120	2025-10-01 to 2026-09-01	Table of 120 rows and 5 columns without geometry; dated by 'month' from 2025-10-01 to 2026-09-01; 'area_code' has 10 values (top: DT01 12, DT02 12, DT03 12); 'occupancy_pct' 41 to 97.3 (mean 69.54); 'adr_eur' 99 to 219 (mean 152.6); 'beds' 809 to 8,983 (mean 4657). A table of Hotel occupancy by district and month without locations.	[5]
Walking routes	vector, LineString	7		7 line features; 'step_free' has 2 values (top: True 5, False 2); 'km' 0.92 to 4.93 (mean 3.107); named by 'name' (e.g. Walking route Gallery Bajo Rio to Market Los Pinos 2, Walking route Stadium La Loma to Market Los Sauces, Walking route Beach El Faro to Concert hall La Ribera); total length 21.75 km; extent 2.1350,41.3690 to 2.2026,41.4072. Lines (Walking routes) such as routes or networks.	[75]
Event mobility plan	document			1-page md document 'Event mobility plan: festival weekend 19 and 20 September'; language en; mentions 5 place(s): 41.37806, 2.17872 (1), Stadium Los Olivos (1), Stadium La Alameda (1), Footfall counter FC03 (1), Footfall (1). A document about 41.37806, 2.17872, Stadium Los Olivos, Stadium La Alameda.	[76]
Sample: Tourism and events, Barcelona	record				[77]
Events per 10,000 people by feature	layer, Polygon	10			[78]
Hotels per 10,000 people by feature	layer, Polygon	10			[79]
Hot spot analysis: Events	layer, Polygon	21			[80]
Hot spot analysis: Hotels	layer, Polygon	35			[81]
Emerging hot spots: Events	layer, Polygon	12			[82]
Emerging hot spots: Visitor check-ins	layer, Polygon	247			[83]
Calculate density: Events	layer, Polygon	105			[84]
Calculate density: Hotels	layer, Polygon	160			[85]
Transit stations per 10,000 people by feature	layer, Polygon	10			[86]
Hot spot analysis: Short-term rentals	layer, Polygon	120			[87]
Repeat and near repeat classification: Events	layer, Point	60			[88]
Calculate density: Transit stations	layer, Polygon	60			[89]

Timeline

Timeline: events per month by dataset

Per month: 13 months from 2025-10-01 to 2026-10-01; trend +185 per month; first half 60, second half 6,937 (+11461.7%)

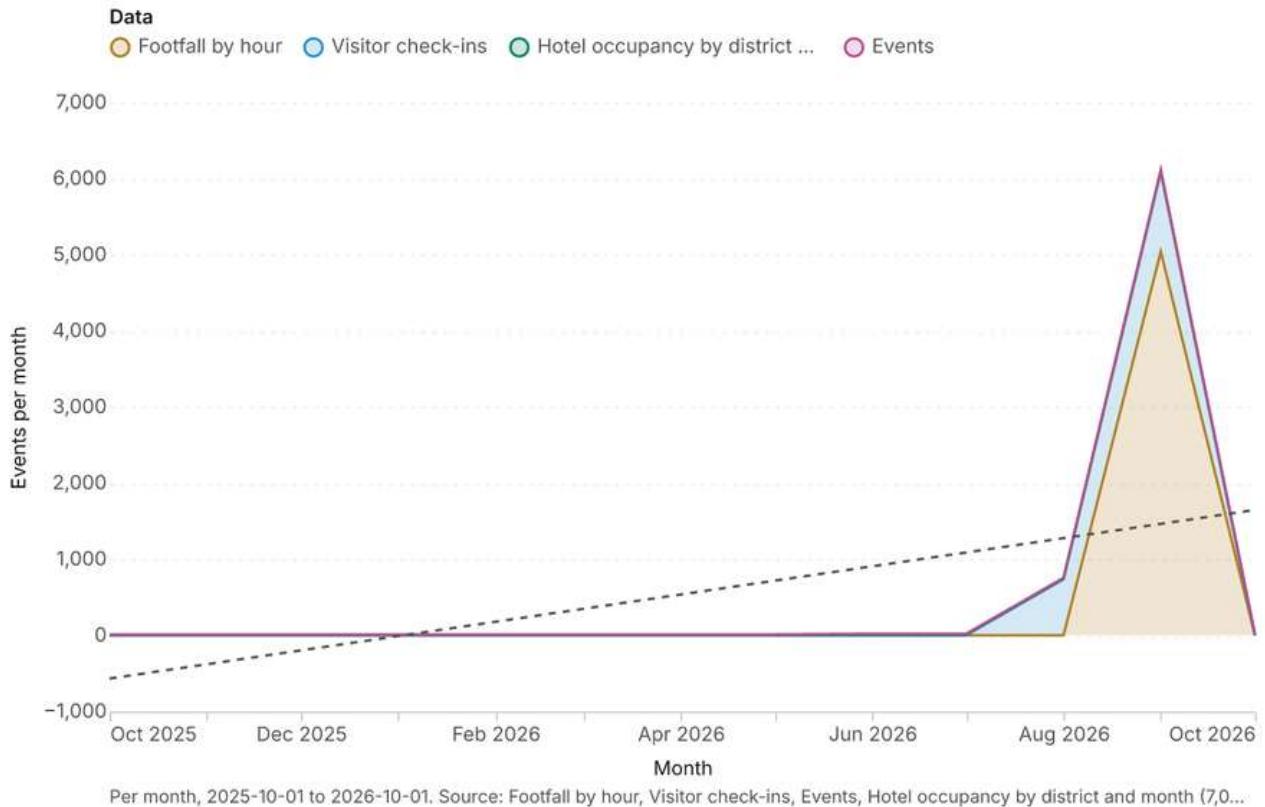


Figure 1. Timeline: events per month by dataset [1]. Per month, 2025-10-01 to 2026-10-01. Source: Footfall by hour, Visitor check-ins, Events, Hotel occupancy by district and month (7,007 features). The data is in the appendix.

The timeline counts 7,007 dated events in Footfall by hour, Visitor check-ins, Events and 1 more per month, from October 2025 to October 2026 [1][2][3][4][5]. By dataset: Footfall by hour 5,040; Visitor check-ins 1,787; Hotel occupancy by district and month 120; Events 60 [1]. The trend is +185 events per month; the second half of the months has 6,937 against 60 in the first (+11461.7%) [1].

Busiest months

- September 2026: 6,112 events [1]
- August 2026: 756 events [1]
- June 2026: 21 events [1]

Quietest months

- October 2025: 10 events [1]
- November 2025: 10 events [1]
- December 2025: 10 events [1]

Pipeline

What this analysis is. Pipeline: Run up to 20 GIS operations in one engine call; a step's params may use "\$id" (an earlier step's result) or "\$id.key", and layer references [6]. Every step's map outputs are saved as styled layers [6].

Why it was run on this data. Districts holds population in 'residents': Events per 10,000 people in each feature compares features of different size; mapped as a choropleth (natural breaks, sequential colors) [7].

What it found. Pipeline on Events, Districts: Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved [8][9][10]. It reported result, count 10; result, elapsed ms 0; billing, cost 0.0215; billing, list price 0.0215; billing, upstream cost 0; list price 0.0215 [8].

Result	Value
result, count	10
result, elapsed ms	0
billing, cost	0.0215
billing, list price	0.0215
billing, upstream cost	0
list price	0.0215

Findings

Evidenced: Pipeline on Events, Districts: Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved [8][9][10].

Evidenced: It reported result, count 10; result, elapsed ms 0; billing, cost 0.0215; billing, list price 0.0215; billing, upstream cost 0; list price 0.0215 [8].

Tool gp_pipeline; parameters {"save": "final", "steps": [{"id": "counts", "params": {"features": {"layer": "Events (48b188aa)"}, "polygons": {"layer": "Districts (2a6df822)"}}, {"operation": "summarize_within", {"id": "rate", "params": {"field": "rate_per_10k", "features": "\$counts", "expression": "count * 10000 / residents"}, {"operation": "calculate_field"}], "project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "output_name":

Pipeline

What this analysis is. Pipeline: Run up to 20 GIS operations in one engine call; a step's params may use "\$id" (an earlier step's result) or "\$id.key", and layer references [6]. Every step's map outputs are saved as styled layers [6].

Why it was run on this data. Districts holds population in 'residents': Events per 10,000 people in each feature compares features of different size; mapped as a choropleth (natural breaks, sequential colors) [7].

What it found. Pipeline on Hotels, Districts: Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved [10][11][12]. It reported result, count 10; result, elapsed ms 0; billing, cost 0.0227; billing, list price 0.0227; billing, upstream cost 0; list price 0.0227 [11].

Result	Value
result, count	10
result, elapsed ms	0
billing, cost	0.0227
billing, list price	0.0227
billing, upstream cost	0
list price	0.0227

Findings

Evidenced: Pipeline on Hotels, Districts: Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved [10][11][12].

Evidenced: It reported result, count 10; result, elapsed ms 0; billing, cost 0.0227; billing, list price 0.0227; billing, upstream cost 0; list price 0.0227 [11].

Tool gp_pipeline; parameters {"save": "final", "steps": [{"id": "counts", "params": {"features": {"layer": "Hotels (3e8f4b82)"}, "polygons": {"layer": "Districts (2a6df822)"}}, {"operation": "summarize_within", {"id": "rate", "params": {"field": "rate_per_10k", "features": "\$counts", "expression": "count * 10000 / residents"}, {"operation": "calculate_field"}], "project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "output_name":

Hot spots

What this analysis is. Hot spot analysis: Getis-Ord Gi* hot and cold spots with z-scores, p-values and confidence bins [13]. In ArcGIS it is Find Hot Spots or Hot Spot Analysis (Getis-Ord Gi*); in QGIS, qgis:hotspot (plugin) [13].

Why it was run on this data. 60 points: Getis-Ord Gi* tests whether the concentrations in Events are statistically significant [14].

What it found. The hot spot analysis was run using the Events input layer [9], resulting in 1 layer saved labeled hot spot analysis: Events

Result	Value
result, bins	21
result, count	21
result, elapsed ms	2
result, cell size m	1,000
result, incidents used	60
result, distance band m	1,000
billing, cost	0.0512
billing, list price	0.0512
billing, upstream cost	0

Findings

Evidenced: Hot spots on Events: Hot spot analysis: 1 layer saved: Hot spot analysis: Events (21 features) [9][15].

Evidenced: It reported result, bins 21; result, count 21; result, elapsed ms 2; result, cell size m 1,000; result, incidents used 60; result, distance band m 1,000 [15].

Tool gp_hot_spots; parameters {"project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Events (48b188aa)"}, "aggregation": "hexagon", "cell_size_m": 1000.0, "distance_band_m": 1000.0}

Hot spots

What this analysis is. Hot spot analysis: Getis-Ord Gi* hot and cold spots with z-scores, p-values and confidence bins [13]. In ArcGIS it is Find Hot Spots or Hot Spot Analysis (Getis-Ord Gi*); in QGIS, qgis:hotspot (plugin) [13].

Why it was run on this data. 120 points: Getis-Ord Gi* tests whether the concentrations in Hotels are statistically significant [16].

What it found. Hot spots on Hotels: Hot spot analysis: 1 layer saved: Hot spot analysis: Hotels (35 features) [12][17]. It reported result, bins 35; result, count 35; result, elapsed ms 3; result, cell size m 1,000; result, incidents used 120; result, distance band m 1,000 [17].

Result	Value
result, bins	35
result, count	35
result, elapsed ms	3
result, cell size m	1,000
result, incidents used	120
result, distance band m	1,000
billing, cost	0.0524
billing, list price	0.0524
billing, upstream cost	0

Findings

Evidenced: Hot spots on Hotels: Hot spot analysis: 1 layer saved: Hot spot analysis: Hotels (35 features) [12][17].

Evidenced: It reported result, bins 35; result, count 35; result, elapsed ms 3; result, cell size m 1,000; result, incidents used 120; result, distance band m 1,000 [17].

A model draft was discarded because a sentence did not cite a source of this section.

Tool gp_hot_spots; parameters {"project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Hotels (3e8f4b82)"}, "aggregation": "hexagon", "cell_size_m": 1000.0, "distance_band_m": 1000.0}

Space time hot spots

What this analysis is. Emerging hot spots: Where hot spots are new, consecutive, intensifying, persistent, diminishing, sporadic, oscillating or historical over time [18]. In ArcGIS it is Emerging Hot Spot Analysis or Create Space Time Cube [18].

Why it was run on this data. Events carry dates in 'date': emerging hot spot analysis finds new, intensifying and fading hot spots per week [19].

What it found. The analysis of events used a total of 60 features [20]. This process identified 12 emerging hot spots, which were saved into a layer called Emerging hot spots: Events [20]. Overall, the execution was efficient, taking only 2 elapsed milliseconds [20]. The cost calculated for this analysis was 0.103 [20].

Result	Value
result, count	12
result, elapsed ms	2
result, resolution	7
result, features used	60
result, time neighbors	0
billing, cost	0.103
billing, list price	0.103
billing, upstream cost	0

Findings

Evidenced: Space time hot spots on Events: Emerging hot spots: 1 layer saved: Emerging hot spots: Events (12 features) [9][20].

Evidenced: It reported result, count 12; result, elapsed ms 2; result, resolution 7; result, features used 60; result, time neighbors 0; billing, cost 0.103 [20].

Tool gp_space_time_hot_spots; parameters {"project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Events (48b188aa)"}, "interval": "week", "bin_shape": "h3", "resolution": 7, "time_field": "date"}

Space time hot spots

What this analysis is. Emerging hot spots: Where hot spots are new, consecutive, intensifying, persistent, diminishing, sporadic, oscillating or historical over time [18]. In ArcGIS it is Emerging Hot Spot Analysis or Create Space Time Cube [18].

Why it was run on this data. Visitor check-ins carry dates in 'checked_in_at': emerging hot spot analysis finds new, intensifying and fading hot spots per week [21].

What it found. The `gp\_space\_time\_hot\_spots` tool was run using the `Visitor check-ins` dataset [23].

Result	Value
result, count	247
result, elapsed ms	25
result, resolution	9
result, features used	1,787
result, time neighbors	0

Result	Value
billing, cost	0.1893
billing, list price	0.1893
billing, upstream cost	0

Findings

Evidenced: Space time hot spots on Visitor check-ins: Emerging hot spots: 1 layer saved: Emerging hot spots: Visitor check-ins (247 features) [22][23].

Evidenced: It reported result, count 247; result, elapsed ms 25; result, resolution 9; result, features used 1,787; result, time neighbors 0; billing, cost 0.1893 [22].

Tool gp_space_time_hot_spots; parameters {"project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Visitor check-ins (517cd234)"}, "interval": "week", "bin_shape": "h3", "resolution": 9, "time_field": "checked_in_at"}

Calculate density

What this analysis is. Calculate density: Kernel density per square kilometer on a grid [24]. In ArcGIS it is Calculate Density or Kernel Density; in QGIS, native:heatmapkerneldensityestimation [24].

Why it was run on this data. 60 points in Events: a density surface shows where they concentrate [25].

What it found. Calculate density on Events: Calculate density: 1 layer saved: Calculate density: Events (105 features) [9][26]. It reported result, count 105; result, elapsed ms 3; result, bandwidth m 1,000; result, cell size m 500; result, excluded null 0; result, max density per km2 13.52 [26].

Result	Value
result, count	105
result, elapsed ms	3
result, bandwidth m	1,000
result, cell size m	500
result, excluded null	0
result, max density per km2	13.52
billing, cost	0.0512
billing, list price	0.0512
billing, upstream cost	0

Findings

Evidenced: Calculate density on Events: Calculate density: 1 layer saved: Calculate density: Events (105 features) [9][26].

Evidenced: It reported result, count 105; result, elapsed ms 3; result, bandwidth m 1,000; result, cell size m 500; result, excluded null 0; result, max density per km2 13.52 [26].

Tool gp_calculate_density; parameters {"kernel": "quartic", "project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Events (48b188aa)"}, "bandwidth_m": 1000.0, "cell_size_m": 500.0}

Calculate density

What this analysis is. Calculate density: Kernel density per square kilometer on a grid [24]. In ArcGIS it is Calculate Density or Kernel Density; in QGIS, native:heatmapkerneldensityestimation [24].

Why it was run on this data. 120 points in Hotels: a density surface shows where they concentrate [27].

What it found. Calculate density on Hotels: Calculate density: 1 layer saved: Calculate density: Hotels (160 features) [12][28]. It reported result, count 160; result, elapsed ms 5; result, bandwidth m 1,000; result, cell size m 500; result, excluded null 0; result, max density per km2 19.04 [28].

Result	Value
result, count	160
result, elapsed ms	5
result, bandwidth m	1,000
result, cell size m	500
result, excluded null	0
result, max density per km2	19.04
billing, cost	0.0524
billing, list price	0.0524
billing, upstream cost	0

Findings

Evidenced: Calculate density on Hotels: Calculate density: 1 layer saved: Calculate density: Hotels (160 features) [12][28].

Evidenced: It reported result, count 160; result, elapsed ms 5; result, bandwidth m 1,000; result, cell size m 500; result, excluded null 0; result, max density per km2 19.04 [28].

Tool gp_calculate_density; parameters {"kernel": "quartic", "project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Hotels (3e8f4b82)"}, "bandwidth_m": 1000.0, "cell_size_m": 500.0}

Pipeline

What this analysis is. Pipeline: Run up to 20 GIS operations in one engine call; a step's params may use "\$id" (an earlier step's result) or "\$id.key", and layer references [6]. Every step's map outputs are saved as styled layers [6].

Why it was run on this data. Districts holds population in 'residents': Transit stations per 10,000 people in each feature compares features of different size; mapped as a choropleth (natural breaks, sequential colors) [29].

What it found. Pipeline on Transit stations, Districts: Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved [10][30][31]. It reported result, count 10; result, elapsed ms 0; billing, cost 0.0208; billing, list price 0.0208; billing, upstream cost 0; list price 0.0208 [30].

Result	Value
result, count	10
result, elapsed ms	0
billing, cost	0.0208
billing, list price	0.0208
billing, upstream cost	0
list price	0.0208

Findings

Evidenced: Pipeline on Transit stations, Districts: Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved [10][30][31].

Evidenced: It reported result, count 10; result, elapsed ms 0; billing, cost 0.0208; billing, list price 0.0208; billing, upstream cost 0; list price 0.0208 [30].

Tool gp_pipeline; parameters {"save": "final", "steps": [{"id": "counts", "params": {"features": {"layer": "Transit stations (05c69c10)"}, "polygons": {"layer": "Districts (2a6df822)"}, "operation": "summarize_within", "id": "rate", "params": {"field": "rate_per_10k", "features": "\$counts", "expression": "count * 10000 / residents"}, "operation": "calculate_field"}], "project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "outp

Hot spots

What this analysis is. Hot spot analysis: Getis-Ord Gi* hot and cold spots with z-scores, p-values and confidence bins [13]. In ArcGIS it is Find Hot Spots or Hot Spot Analysis (Getis-Ord Gi*); in QGIS, qgis:hotspot (plugin) [13].

Why it was run on this data. 359 points: Getis-Ord Gi* tests whether the concentrations in Short-term rentals are statistically significant [32].

What it found. Hot spots on Short-term rentals: Hot spot analysis: 1 layer saved: Hot spot analysis: Short-term rentals (120 features) [33][34]. It reported result, bins 120; result, count 120; result, elapsed ms 6; result, cell size m 500; result, incidents used 359; result, distance band m 500 [33].

Result	Value
result, bins	120
result, count	120
result, elapsed ms	6
result, cell size m	500
result, incidents used	359
result, distance band m	500
billing, cost	0.05718
billing, list price	0.05718
billing, upstream cost	0

Findings

Evidenced: Hot spots on Short-term rentals: Hot spot analysis: 1 layer saved: Hot spot analysis: Short-term rentals (120 features) [33][34].

Evidenced: It reported result, bins 120; result, count 120; result, elapsed ms 6; result, cell size m 500; result, incidents used 359; result, distance band m 500 [33].

Tool gp_hot_spots; parameters {"project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Short-term rentals (cfe7bd58)"}, "aggregation": "hexagon", "cell_size_m": 500.0, "distance_band_m": 500.0}

Near repeat

What this analysis is. Repeat and near repeat classification: Classify incidents as originators, repeats (same place) or near repeats within a distance and time window, with a Knox test table [35]. In ArcGIS it is Repeat and Near Repeat Classification or Near Repeat Calculator [35].

Why it was run on this data. Near repeat analysis tests whether Events close in space also follow each other within 15 days [36].

What it found. Near repeat on Events: Repeat and near repeat classification: 1 layer saved: Repeat and near repeat classification: Events (60 features) [9][37]. It reported result, days 15; result, count 60; result, chains 12; result, distance m 500; result, elapsed ms 4; result, pairs linked 27 [37].

Result	Value
result, days	15
result, count	60
result, chains	12
result, distance m	500
result, elapsed ms	4
result, pairs linked	27
billing, cost	0.0518
billing, list price	0.0518
billing, upstream cost	0

Findings

Evidenced: Near repeat on Events: Repeat and near repeat classification: 1 layer saved: Repeat and near repeat classification: Events (60 features) [9][37].

Evidenced: It reported result, days 15; result, count 60; result, chains 12; result, distance m 500; result, elapsed ms 4; result, pairs linked 27 [37].

Tool gp_near_repeat; parameters {"days": 15, "project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Events (48b188aa)"}, "distance_m": 500.0, "time_field": "date"}

Calculate density

What this analysis is. Calculate density: Kernel density per square kilometer on a grid [24]. In ArcGIS it is Calculate Density or Kernel Density; in QGIS, native:heatmapkerneldensityestimation [24].

Why it was run on this data. 25 points in Transit stations: a density surface shows where they concentrate [38].

What it found. The density calculation was run on the Transit stations input [39]. This process resulted in a count of 60 features, an elapsed time of 2 ms, and a bandwidth of 2,000 m [39]. The analysis reported a maximum density per km2 of 1.239 [39]. The operational cost for the density calculation was 0.0505 [39].

Result	Value
result, count	60
result, elapsed ms	2
result, bandwidth m	2,000
result, cell size m	1,000
result, excluded null	0
result, max density per km2	1.239
billing, cost	0.0505
billing, list price	0.0505
billing, upstream cost	0

Findings

Evidenced: Calculate density on Transit stations: Calculate density: 1 layer saved: Calculate density: Transit stations (60 features) [31][39].

Evidenced: It reported result, count 60; result, elapsed ms 2; result, bandwidth m 2,000; result, cell size m 1,000; result, excluded null 0; result, max density per km2 1.239 [39].

Tool gp_calculate_density; parameters {"kernel": "quartic", "project": "7e086c07-eb20-44ad-b602-c5958e8ee13e", "features": {"layer": "Transit stations (05c69c10)"}, "bandwidth_m": 2000.0, "cell_size_m": 1000.0}

Maps and charts

The run also made 12 map image(s) [40][41][42][43][44][45][46][47][48][49][50][51] and 17 chart(s) [52][53][54][55][56][57][58][59][60][61][62][63][64][65][66][67][68].

Events per 10,000 people by feature



Figure 2. Events per 10,000 people by feature [40]

Hotels per 10,000 people by feature



Figure 3. Hotels per 10,000 people by feature [41]

Hot spot analysis: Events

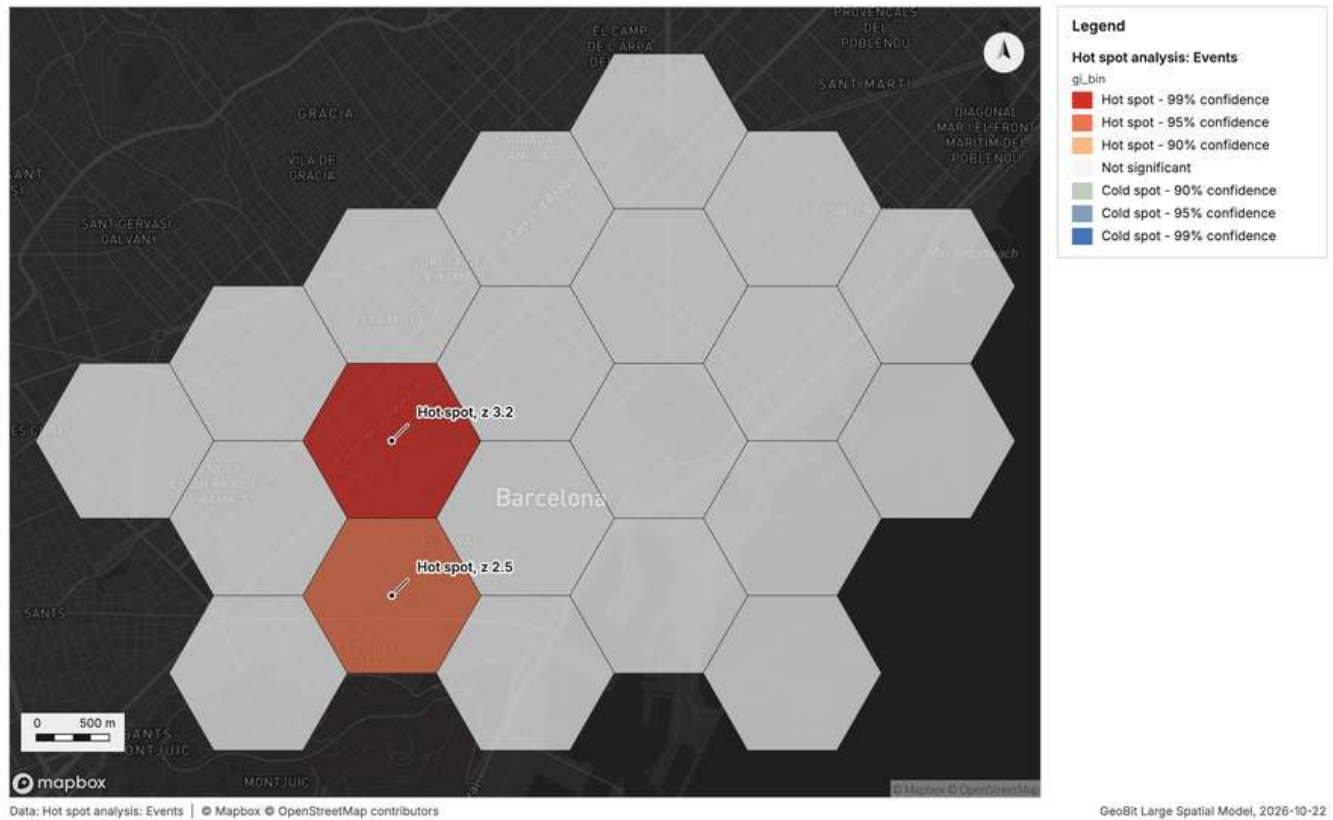


Figure 4. Hot spot analysis: Events [42]

Hot spot analysis: Hotels

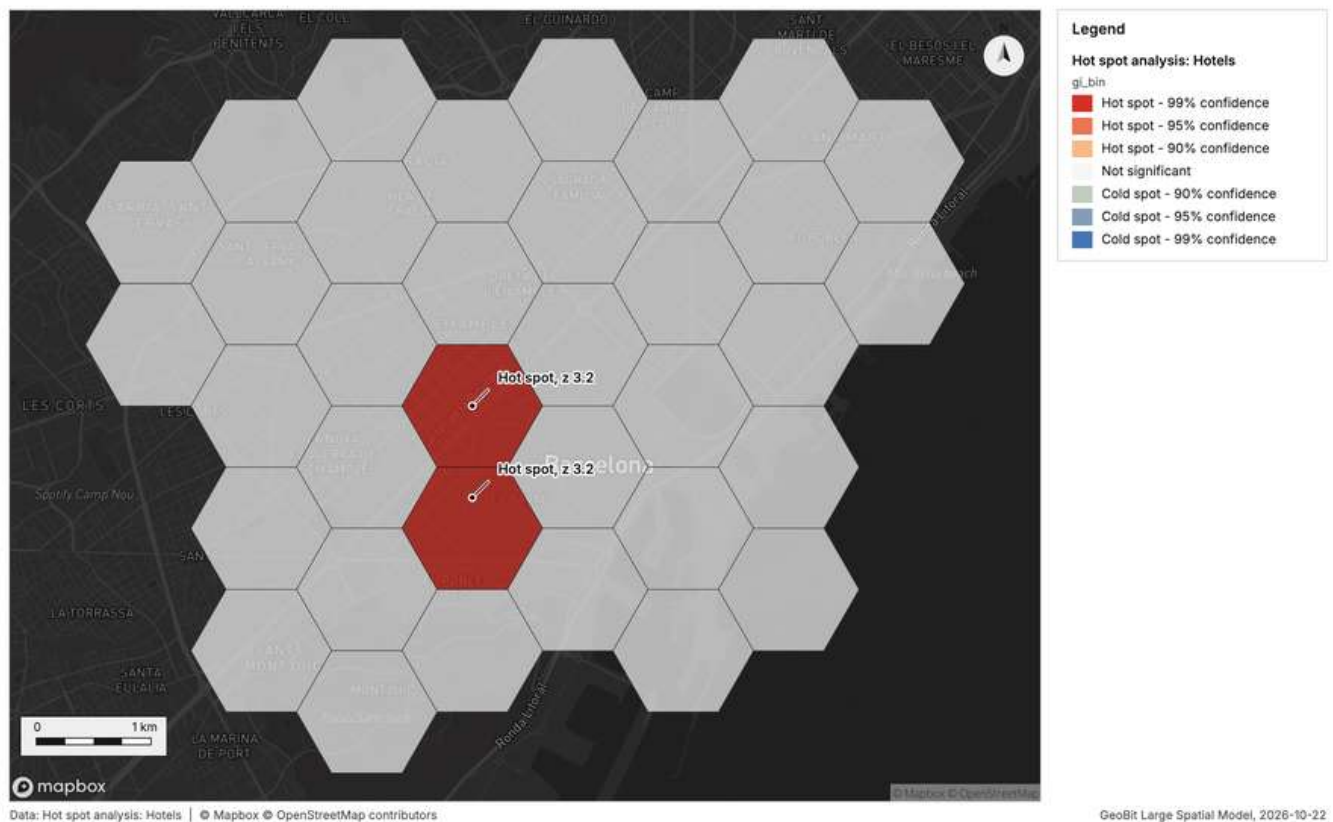


Figure 5. Hot spot analysis: Hotels [43]

Emerging hot spots: Events

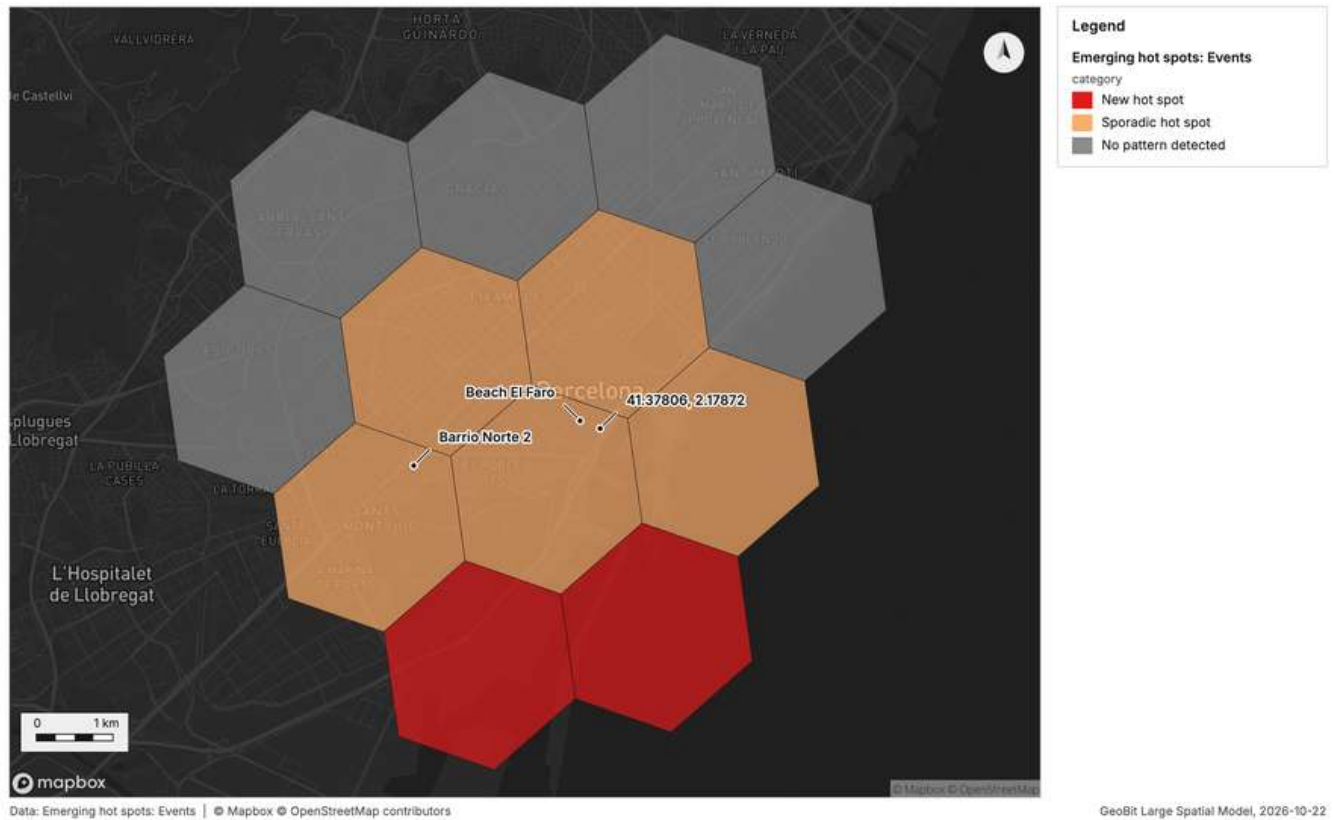


Figure 6. Emerging hot spots: Events [44]

Emerging hot spots: Visitor check-ins



Figure 7. Emerging hot spots: Visitor check-ins [45]

Calculate density: Events

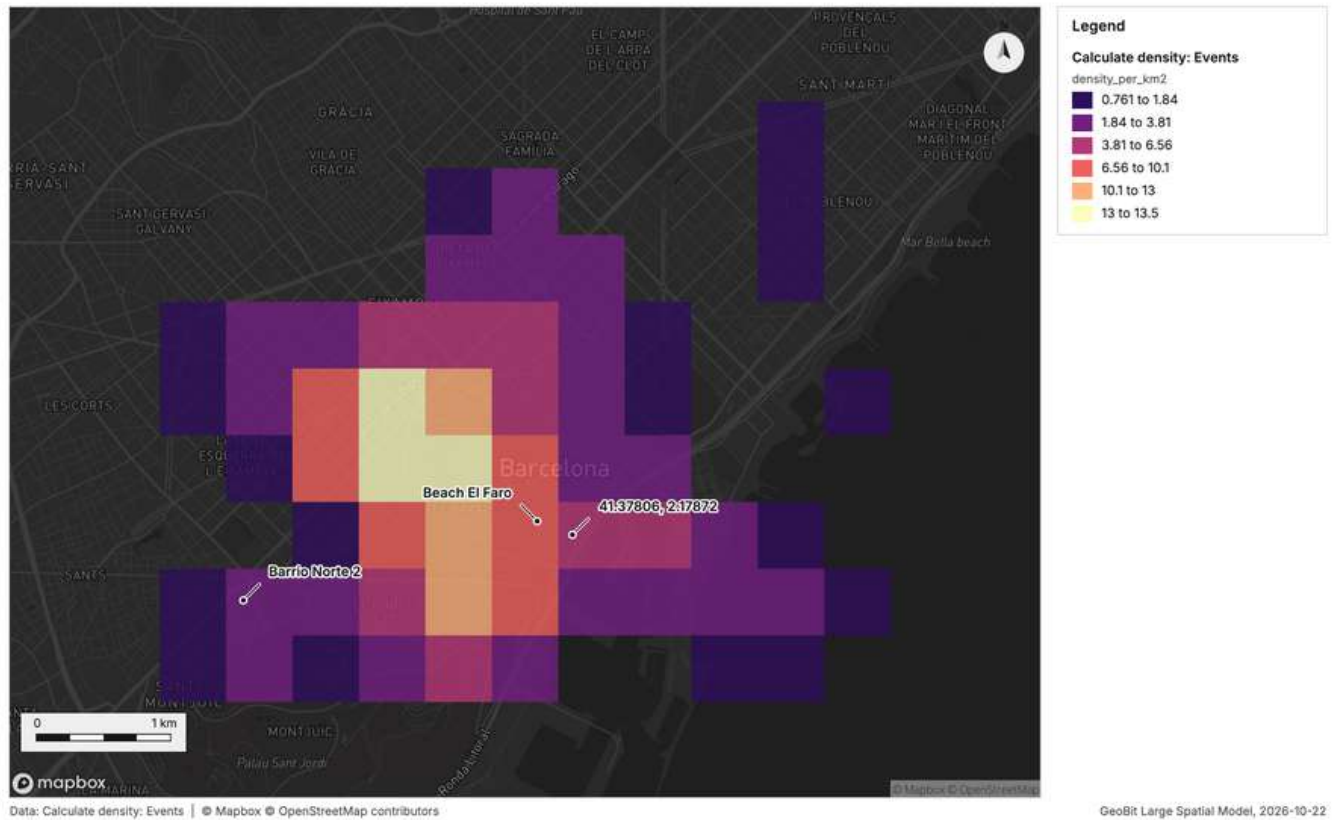


Figure 8. Calculate density: Events [46]

Calculate density: Hotels

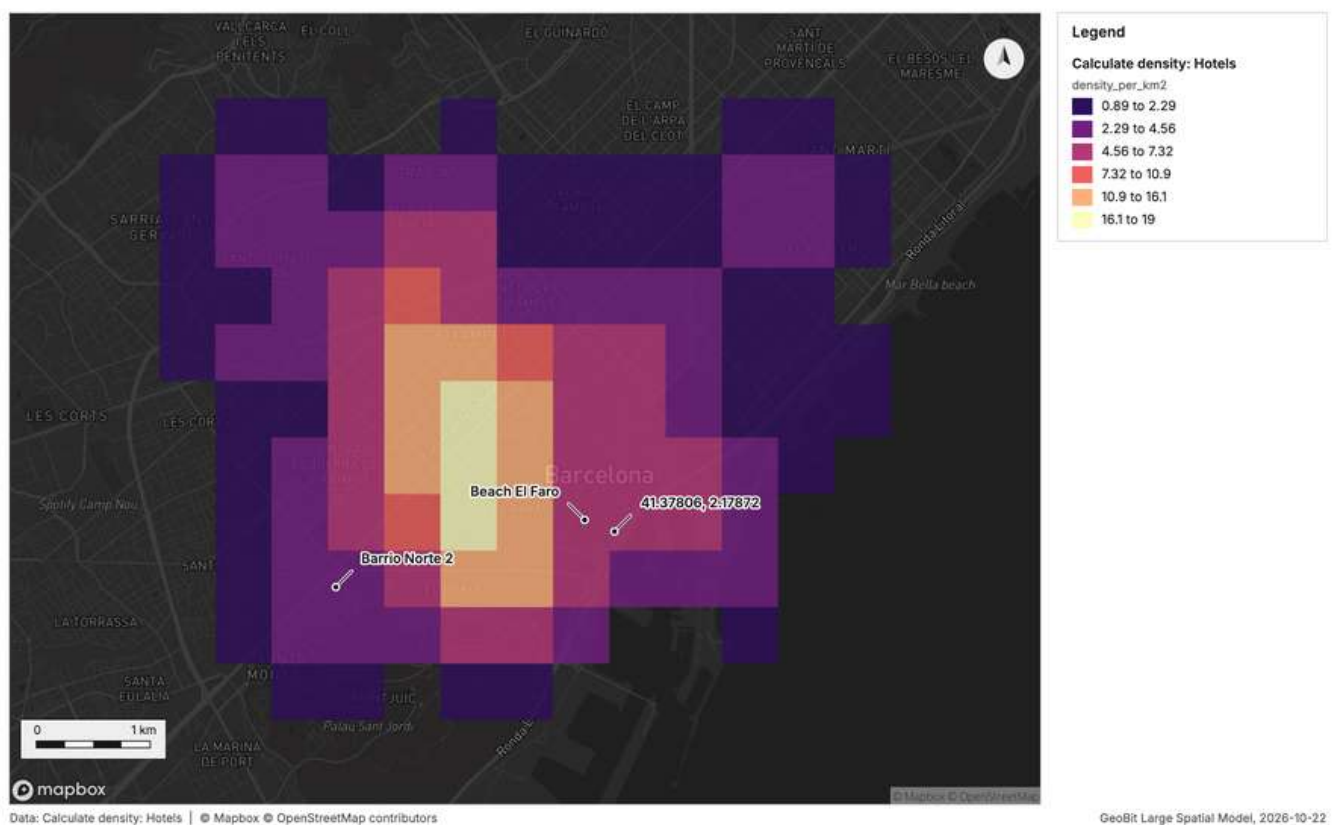


Figure 9. Calculate density: Hotels [47]

Transit stations per 10,000 people by feature

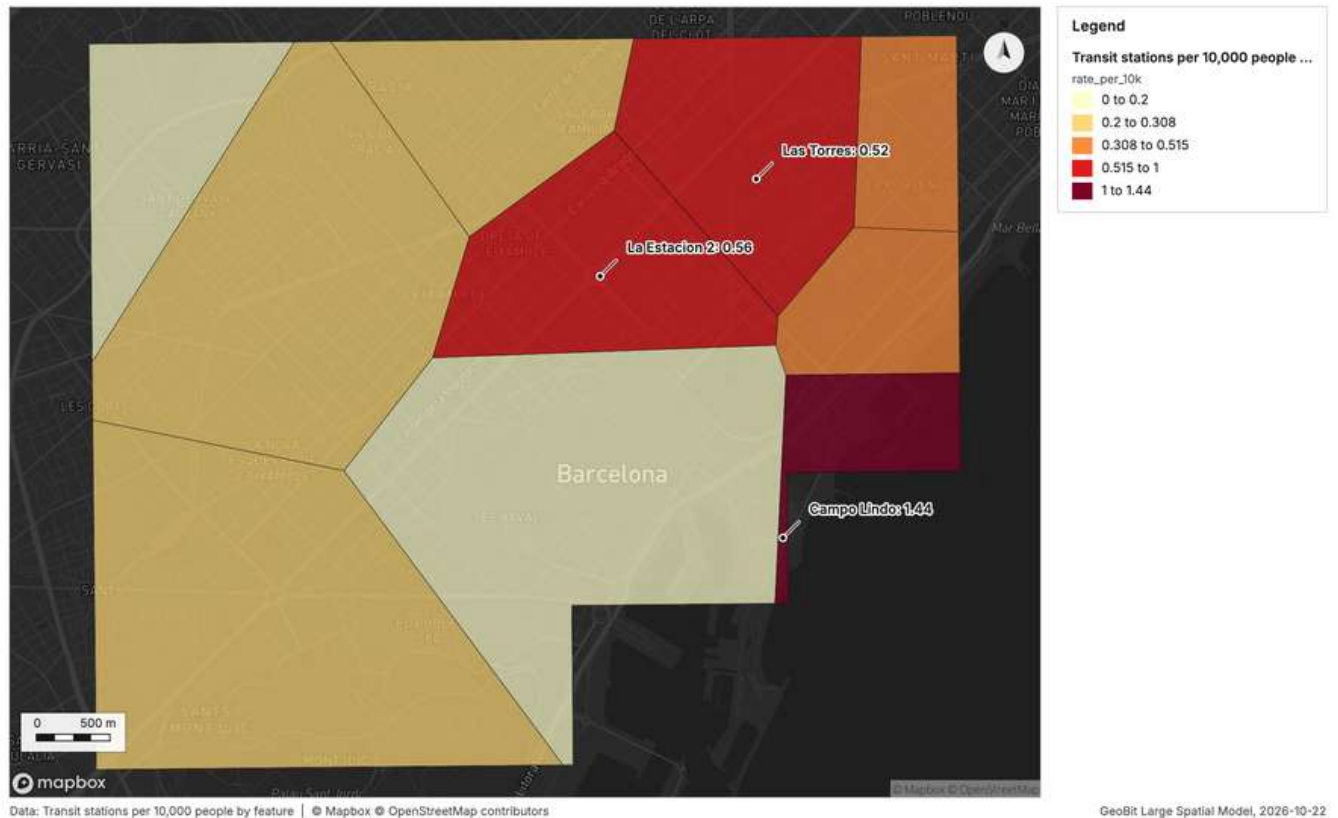


Figure 10. Transit stations per 10,000 people by feature [48]

Hot spot analysis: Short-term rentals

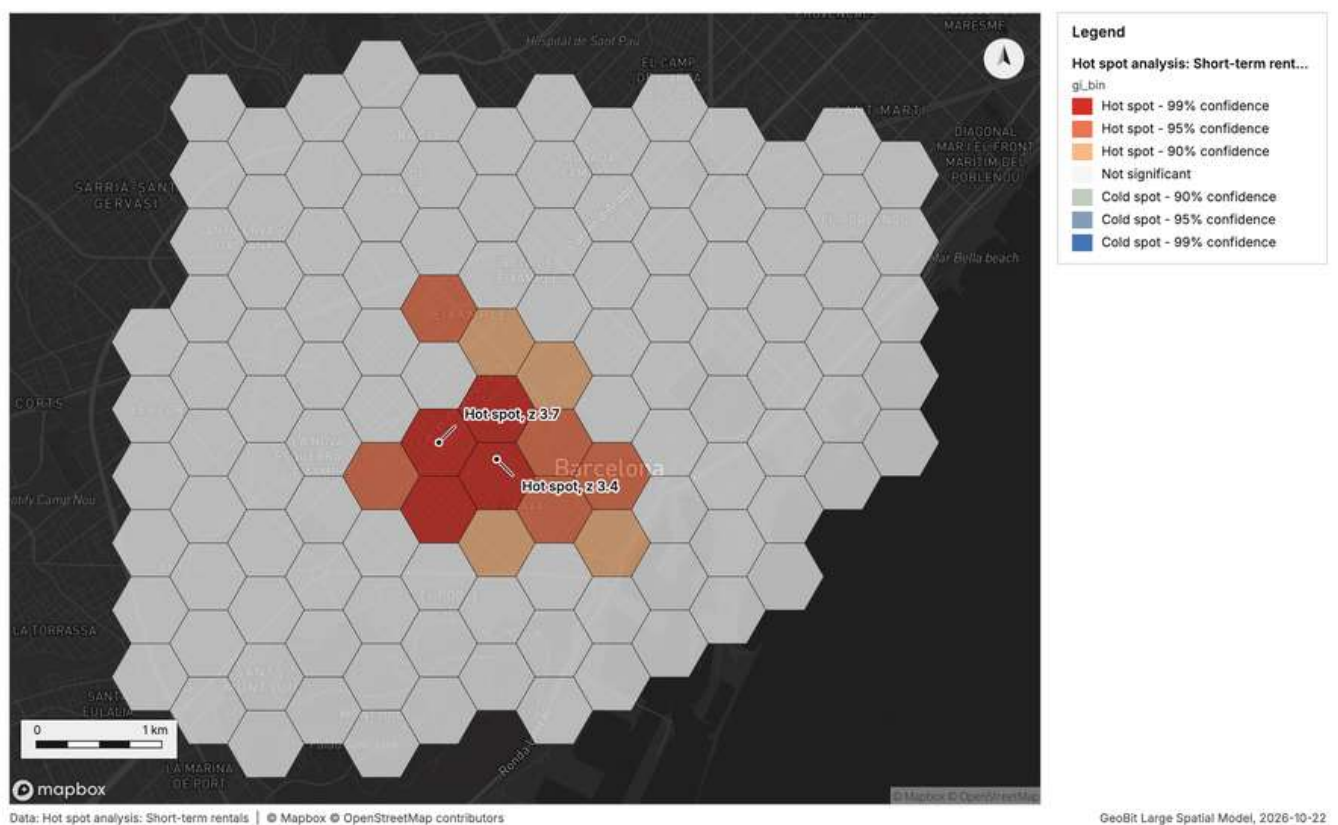


Figure 11. Hot spot analysis: Short-term rentals [49]

Repeat and near repeat classification: Events

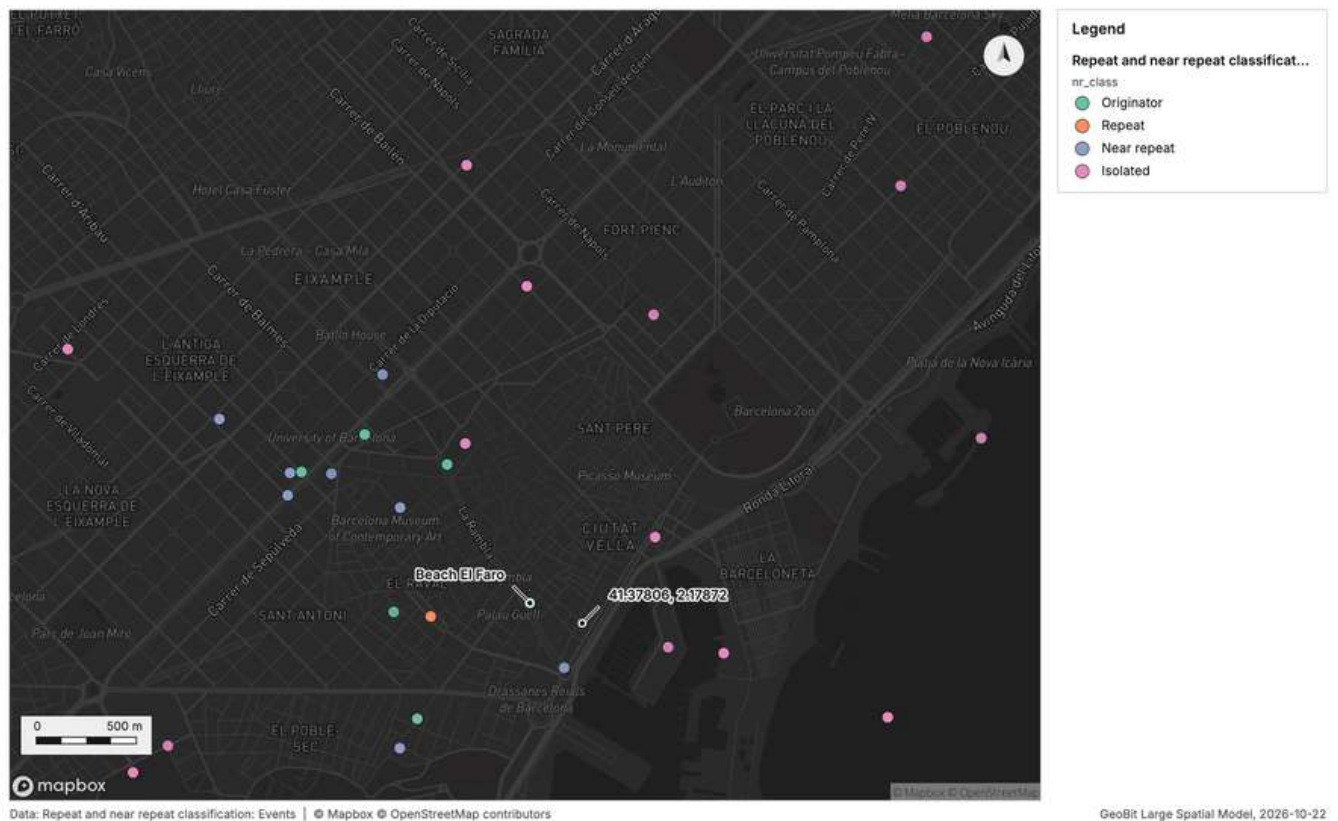


Figure 12. Repeat and near repeat classification: Events [50]

Calculate density: Transit stations

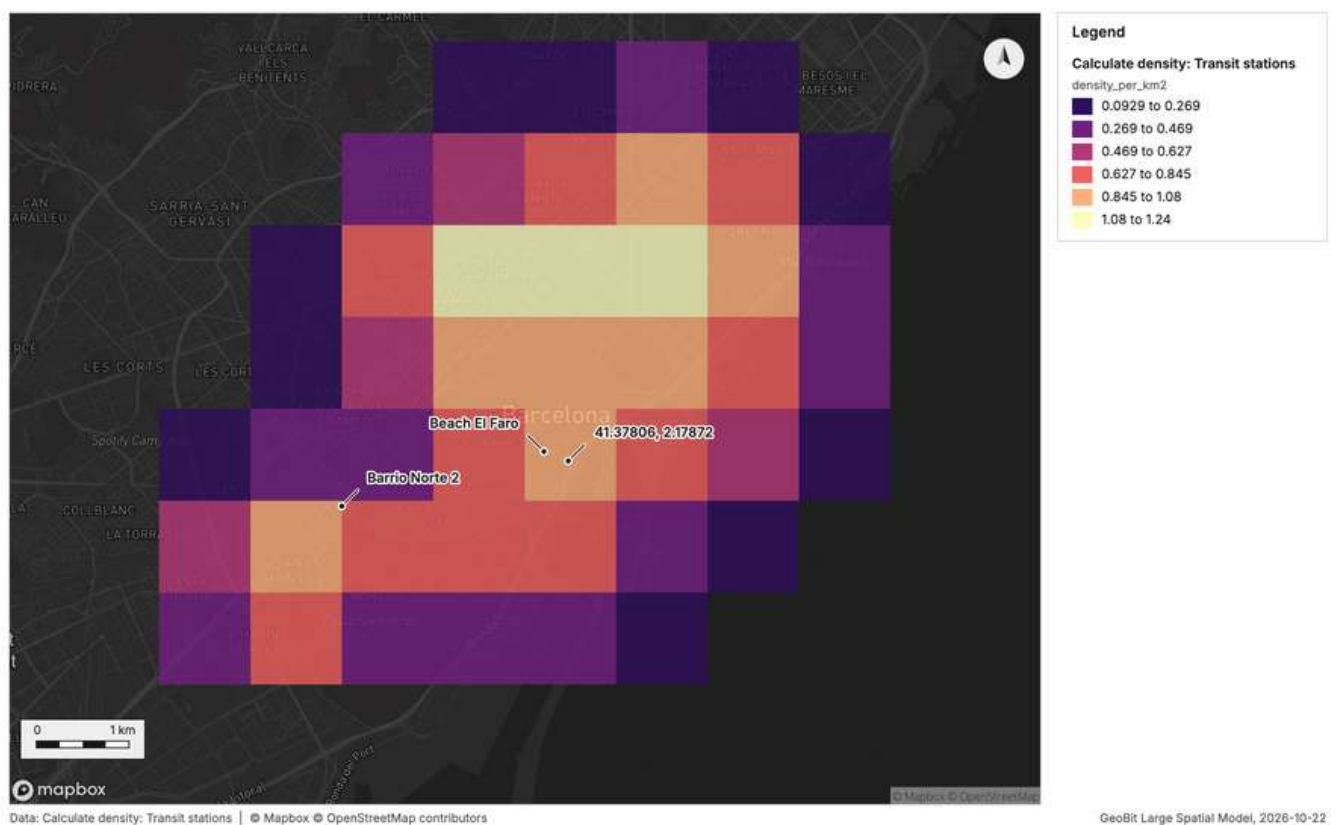


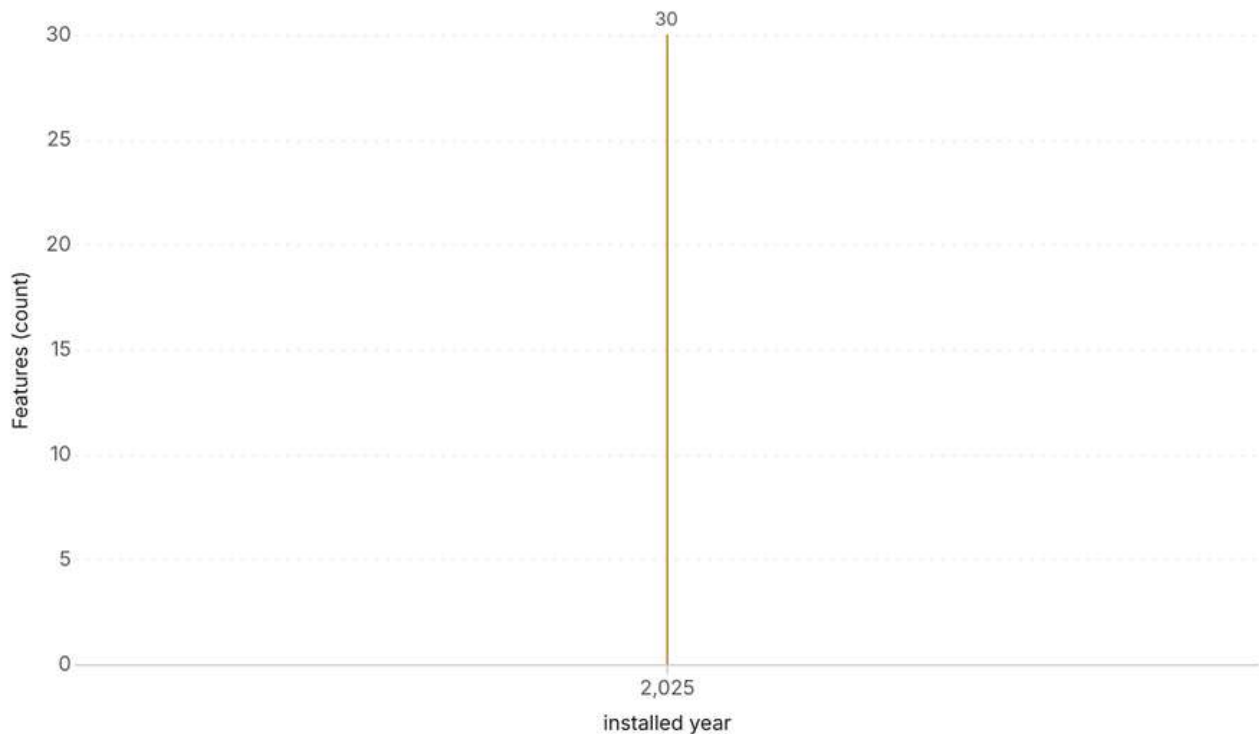
Figure 13. Calculate density: Transit stations [51]

What the map shows. The map displays a [42]

Inferred: read from the image by gemma4:e4b, not evidence.

Distribution of installed_year

30 values in 1 bins

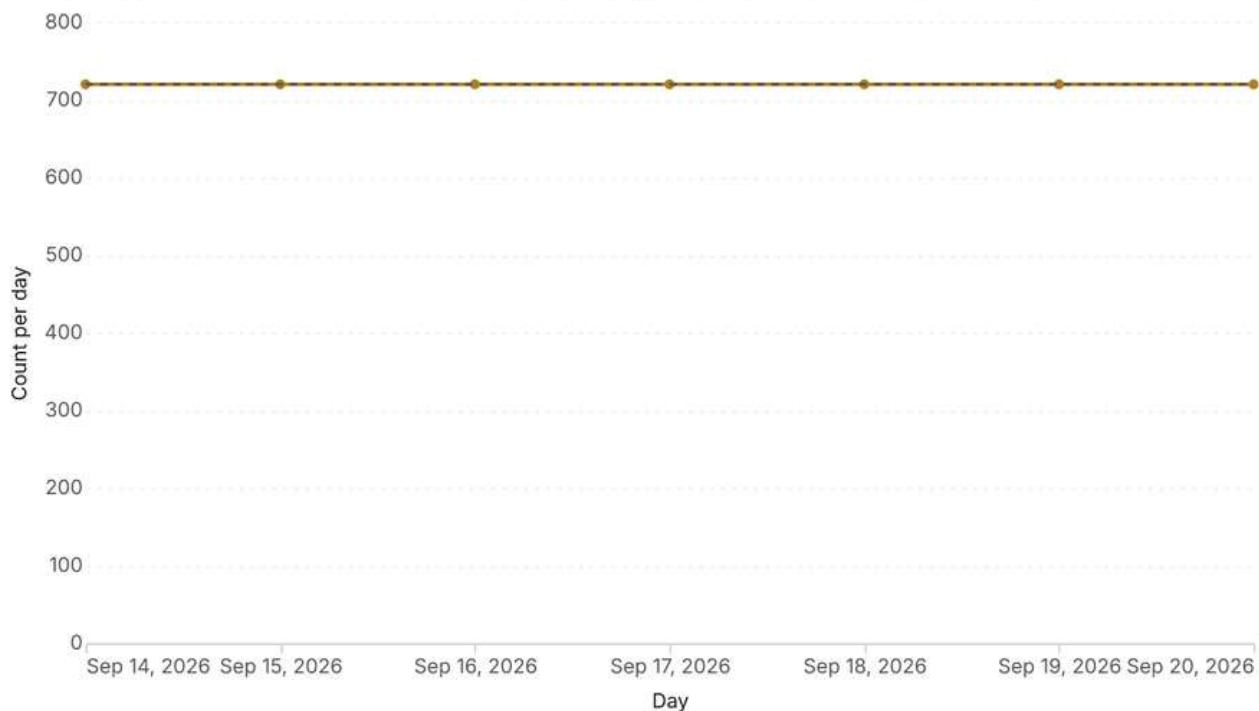


Source: Footfall counters (30 features).

Figure 14. Footfall counters over time (installed_year) [52]. Source: Footfall counters (30 features). The data is in the appendix.

Count per day by timestamp

Per day: 7 days from 2026-09-14 to 2026-09-20; trend +0 per day; first half 2,160, second half 2,160 (+0.0%)



Per day, 2026-09-14 to 2026-09-20. Source: Footfall by hour (5,040 features).

Figure 15. Footfall by hour over time (timestamp) [53]. Per day, 2026-09-14 to 2026-09-20. Source: Footfall by hour (5,040 features). The data is in the appendix.

Count per week by date and type

Per week: 22 weeks from 2026-06-01 to 2026-10-26; trend +0.0497 per week; first half 27, second half 33 (+22.2%)

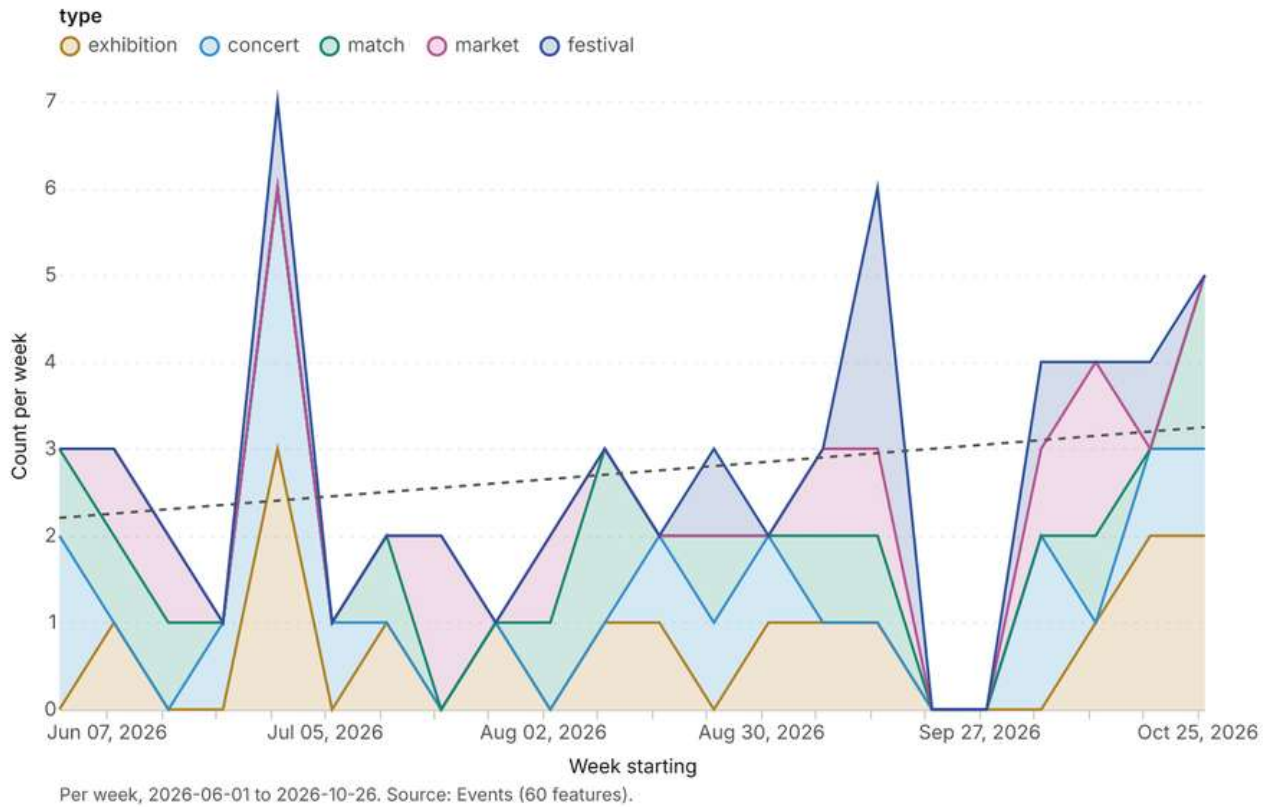


Figure 16. Events over time (date) [54]. Per week, 2026-06-01 to 2026-10-26. Source: Events (60 features). The data is in the appendix.

Sum of beds per week by month and area_code

Per week: 49 weeks from 2025-09-29 to 2026-08-31; trend +43.6 per week; first half 2.758e+05, second half 2.829e+05 (+2.6%)

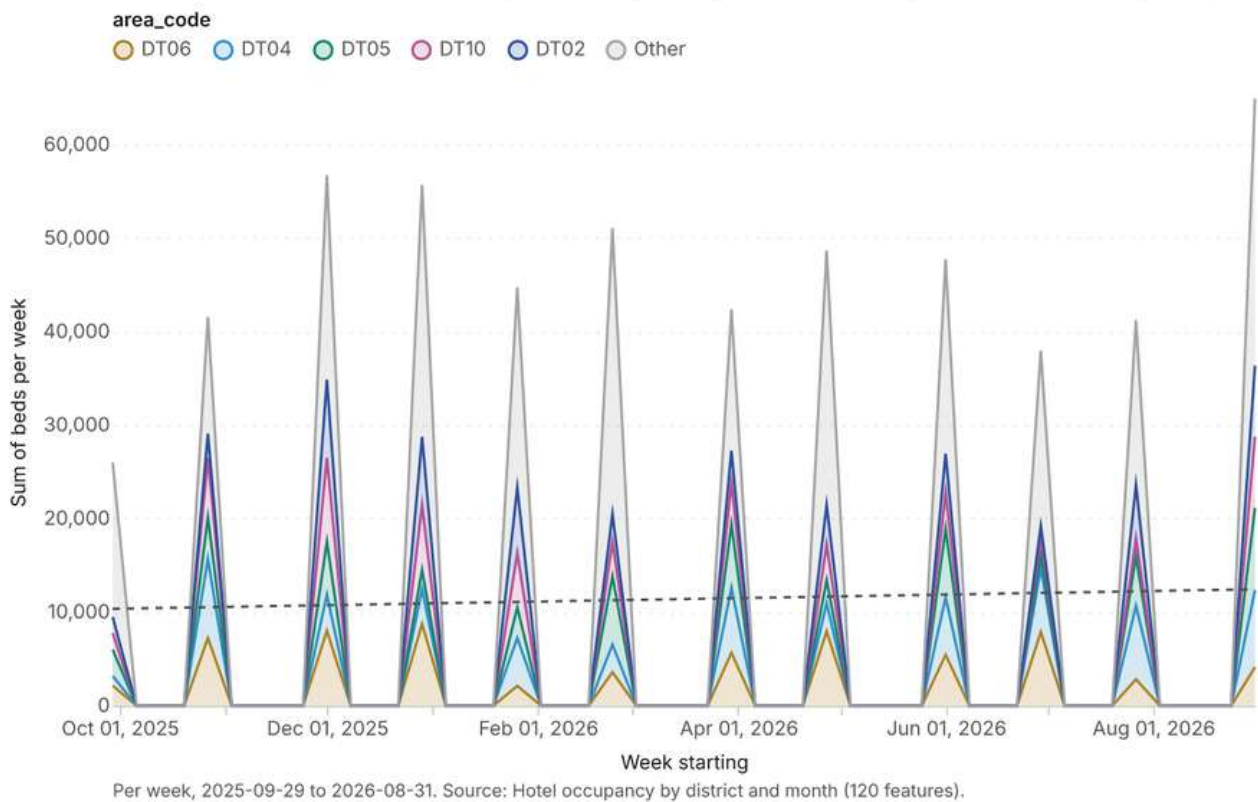
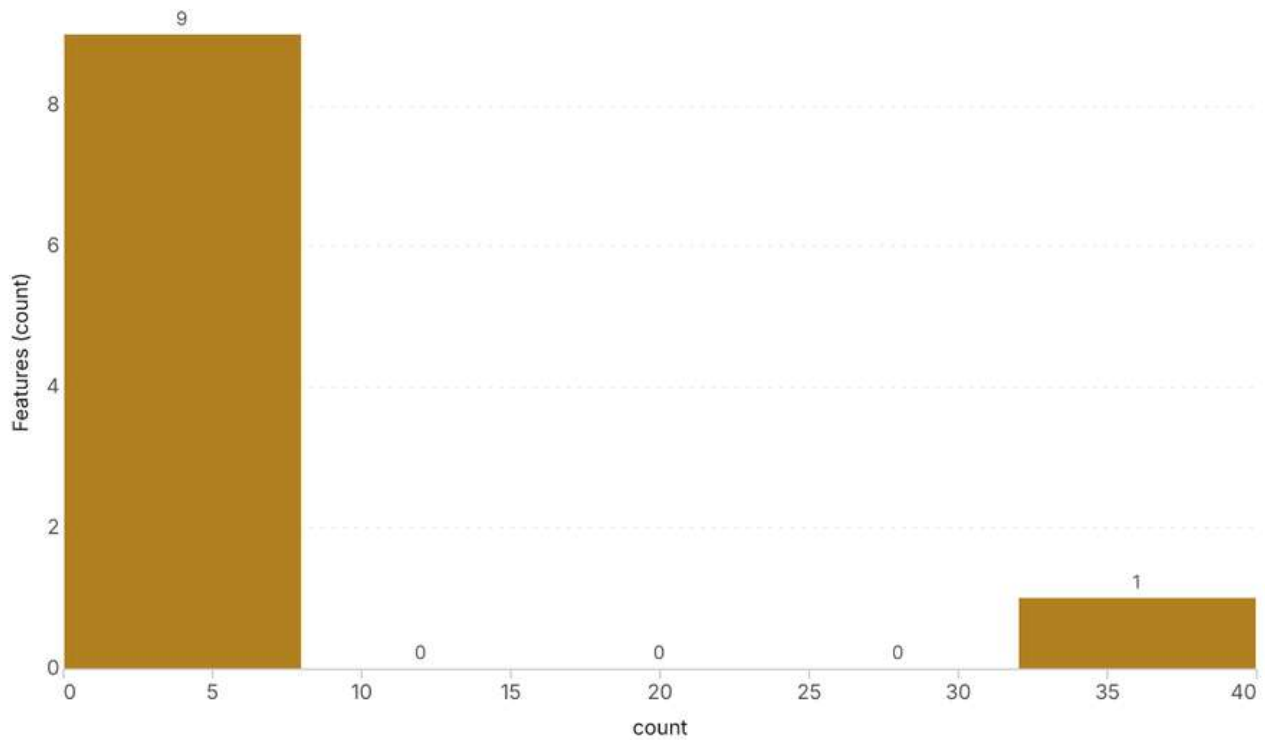


Figure 17. Hotel occupancy by district and month over time (month) [55]. Per week, 2025-09-29 to 2026-08-31. Source: Hotel occupancy by district and month (120 features). The data is in the appendix.

Distribution of count

10 values in 5 bins

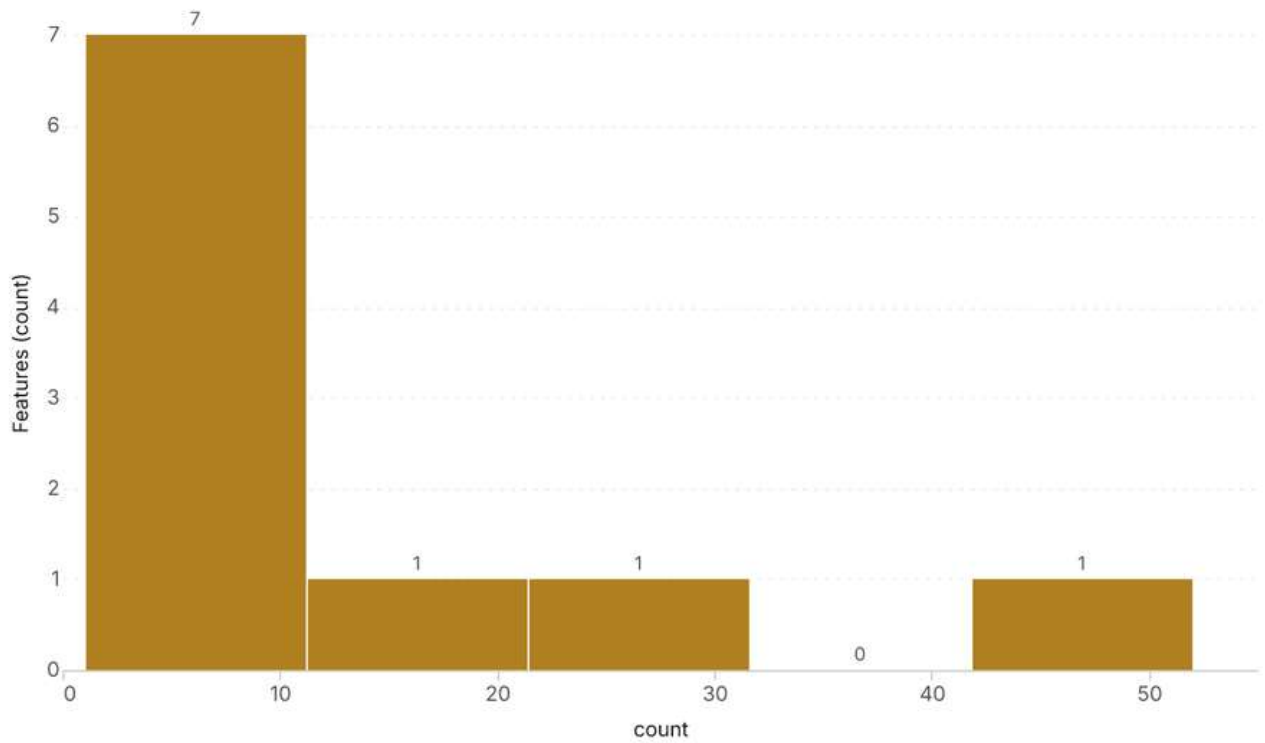


Source: Events per 10,000 people by feature (10 features).

Figure 18. Events per 10,000 people by feature [56]. Source: Events per 10,000 people by feature (10 features). The data is in the appendix.

Distribution of count

10 values in 5 bins



Source: Hotels per 10,000 people by feature (10 features).

Figure 19. Hotels per 10,000 people by feature [57]. Source: Hotels per 10,000 people by feature (10 features). The data is in the appendix.

Gi* z-score distribution

21 features: 2 hot and 0 cold at 90% confidence or more

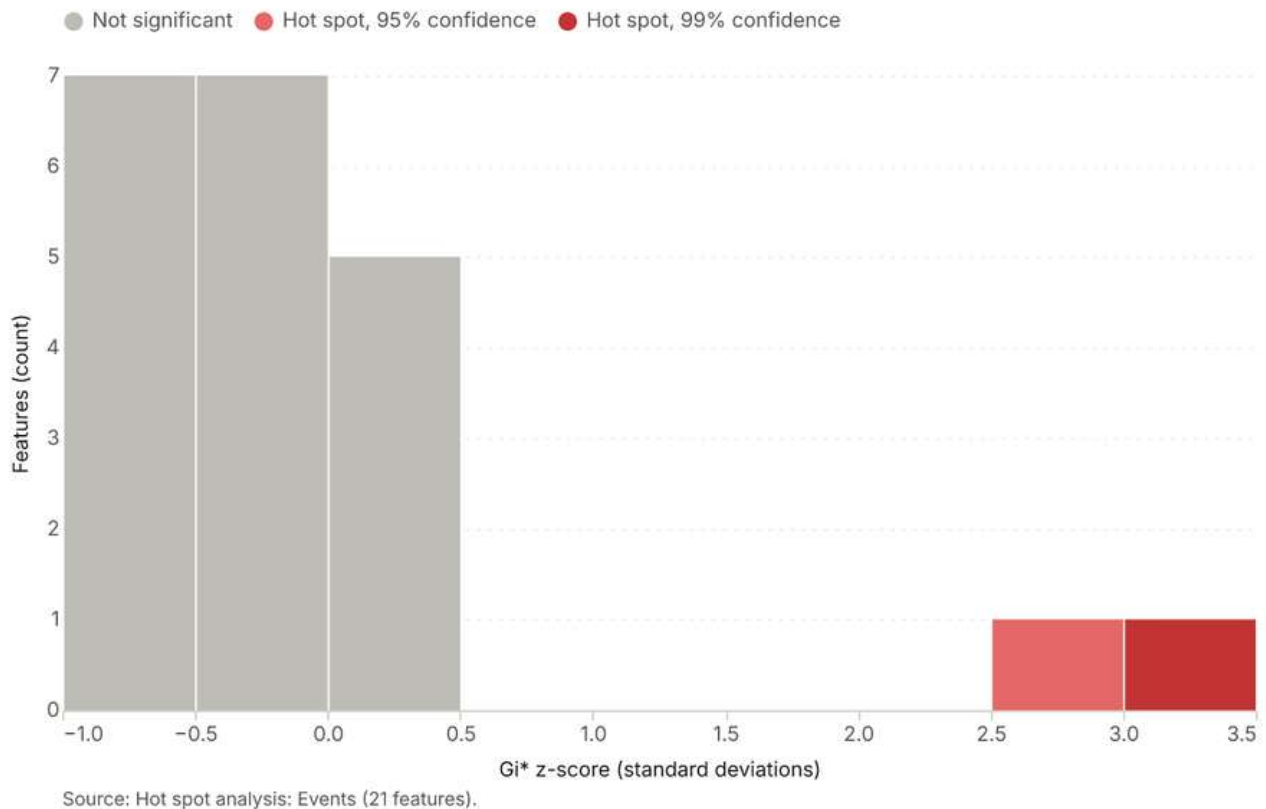


Figure 20. Hot spot analysis: Events [58]. Source: Hot spot analysis: Events (21 features). The data is in the appendix.

Gi* z-score distribution

35 features: 2 hot and 0 cold at 90% confidence or more

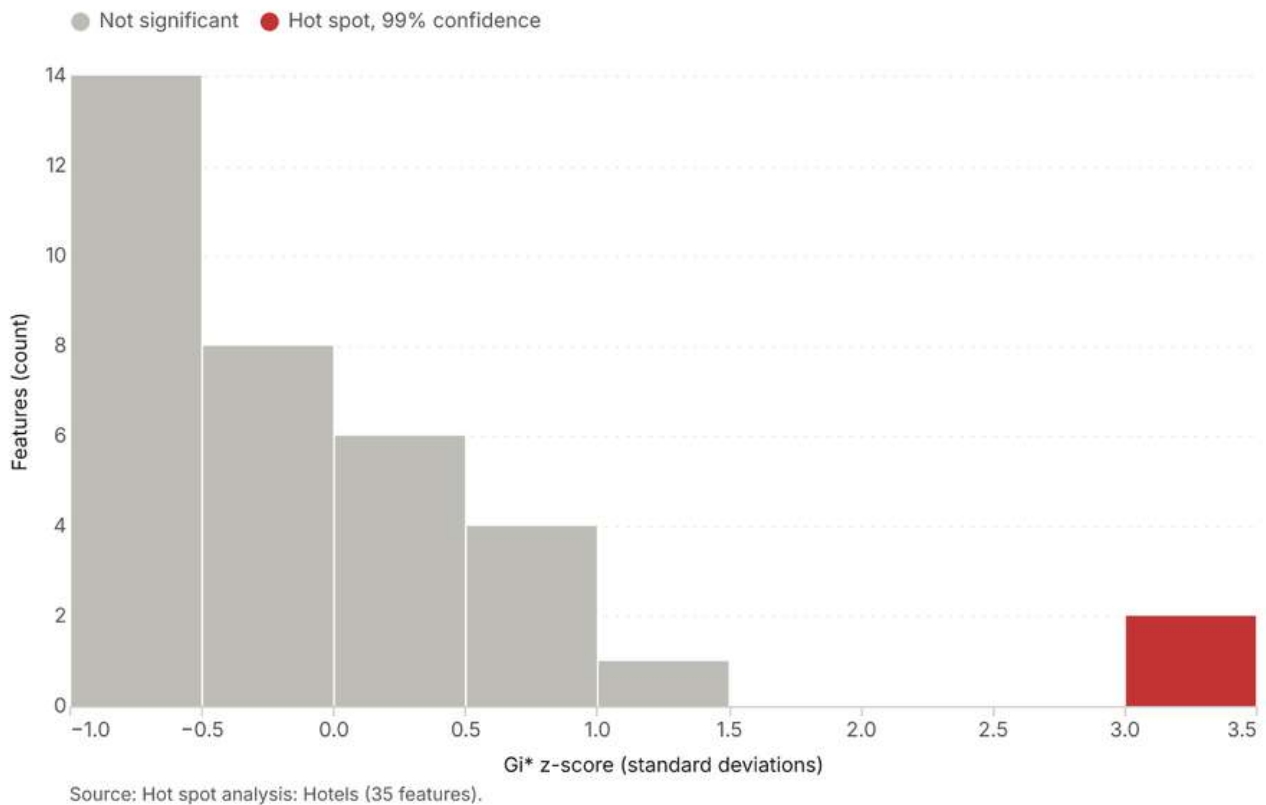
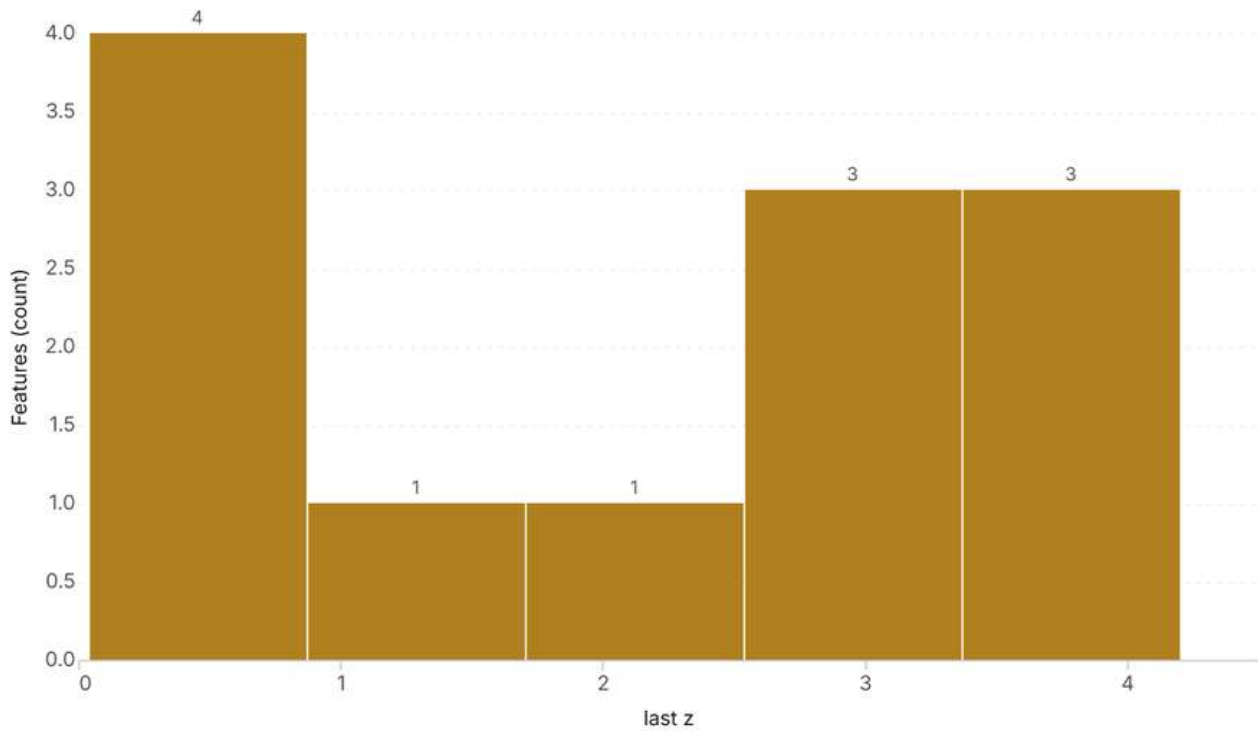


Figure 21. Hot spot analysis: Hotels [59]. Source: Hot spot analysis: Hotels (35 features). The data is in the appendix.

Distribution of last_z

12 values in 5 bins

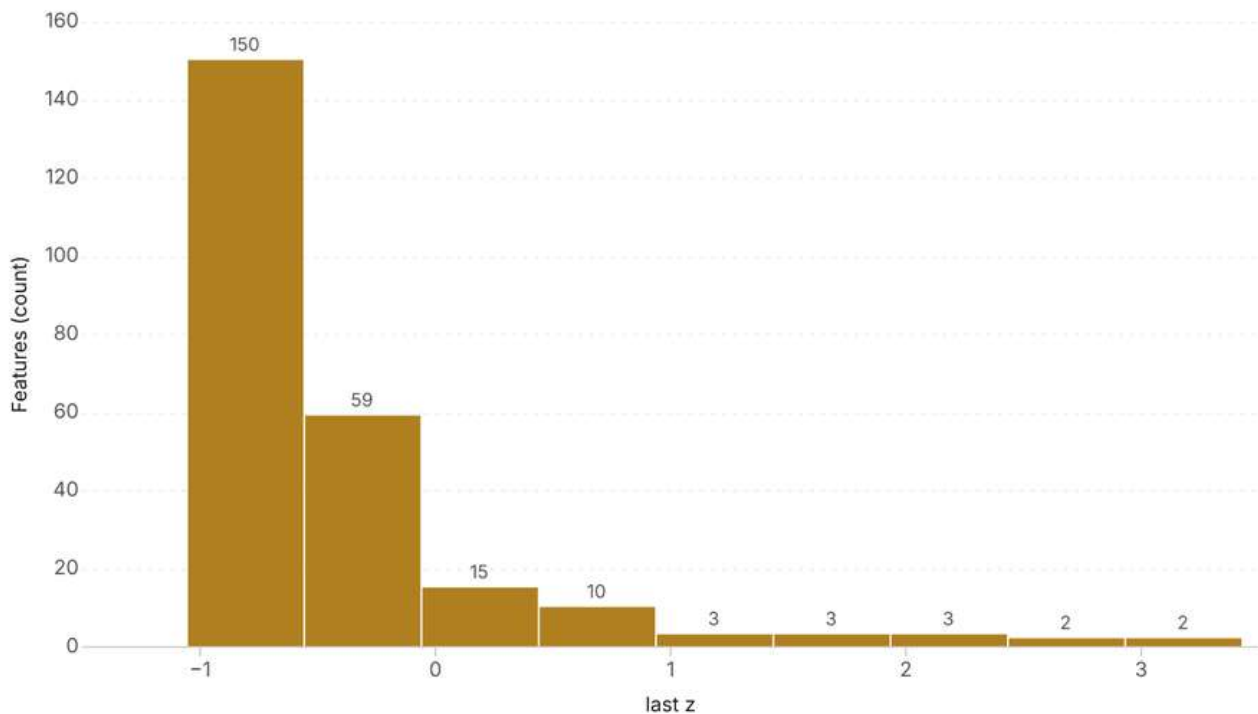


Source: Emerging hot spots: Events (12 features).

Figure 22. Emerging hot spots: Events [60]. Source: Emerging hot spots: Events (12 features). The data is in the appendix.

Distribution of last_z

247 values in 9 bins

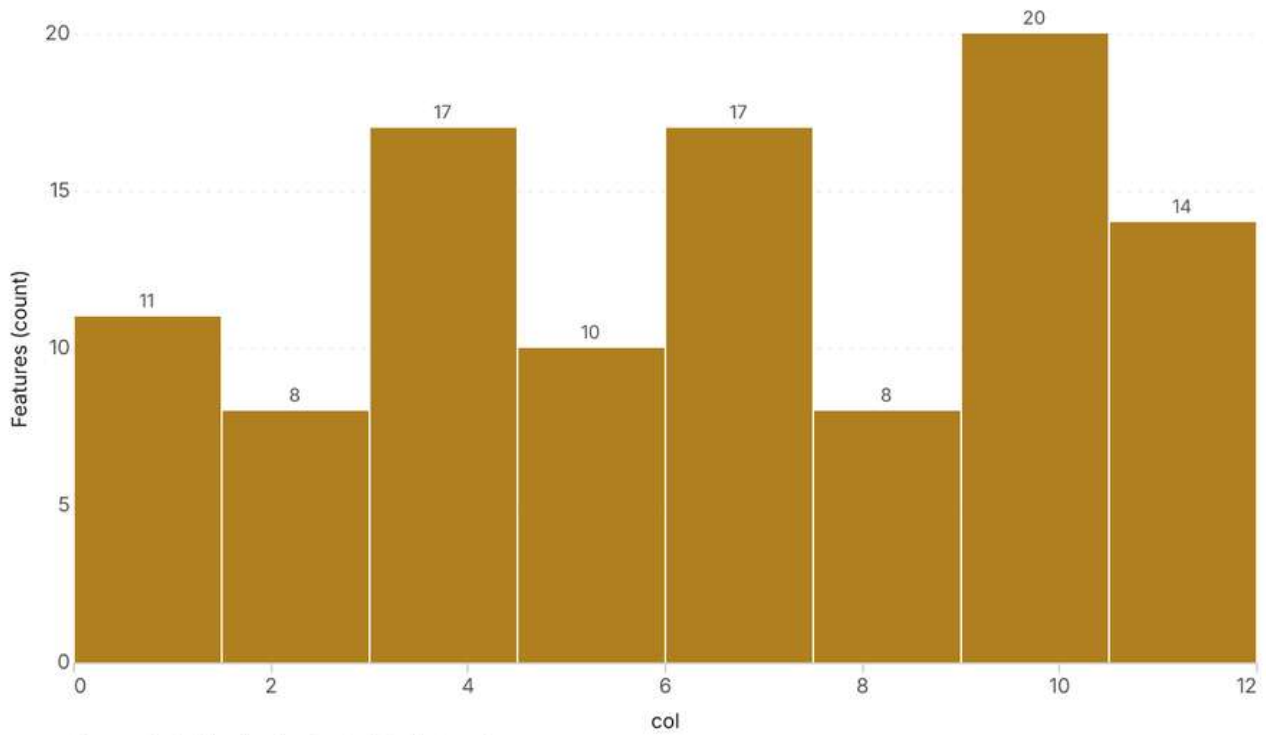


Source: Emerging hot spots: Visitor check-ins (247 features).

Figure 23. Emerging hot spots: Visitor check-ins [61]. Source: Emerging hot spots: Visitor check-ins (247 features). The data is in the appendix.

Distribution of col

105 values in 8 bins

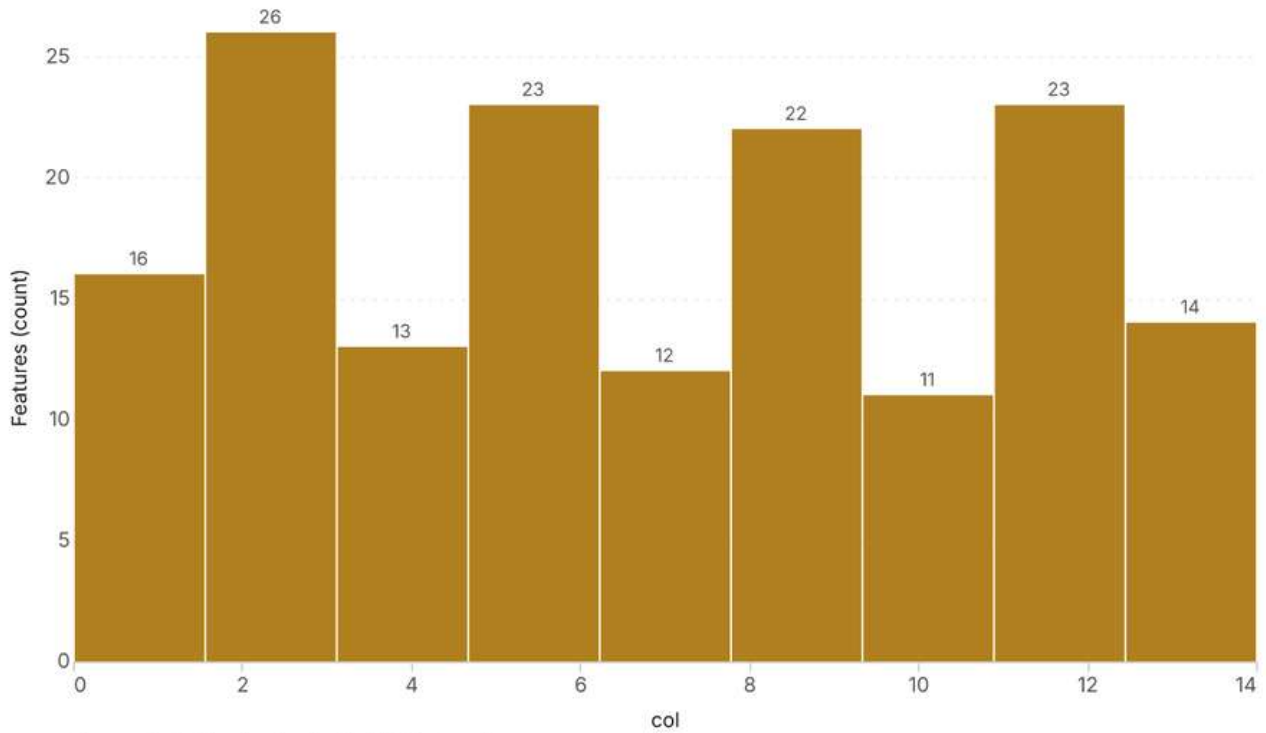


Source: Calculate density: Events (105 features).

Figure 24. Calculate density: Events [62]. Source: Calculate density: Events (105 features). The data is in the appendix.

Distribution of col

160 values in 9 bins

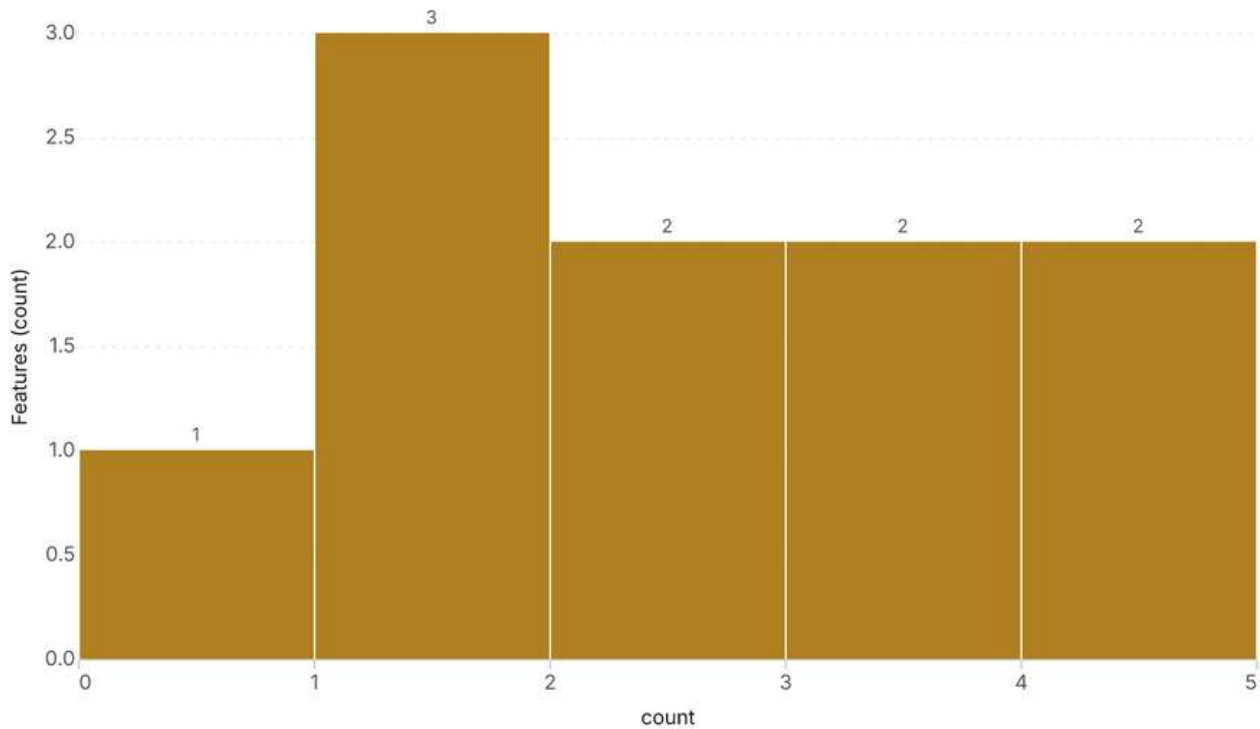


Source: Calculate density: Hotels (160 features).

Figure 25. Calculate density: Hotels [63]. Source: Calculate density: Hotels (160 features). The data is in the appendix.

Distribution of count

10 values in 5 bins

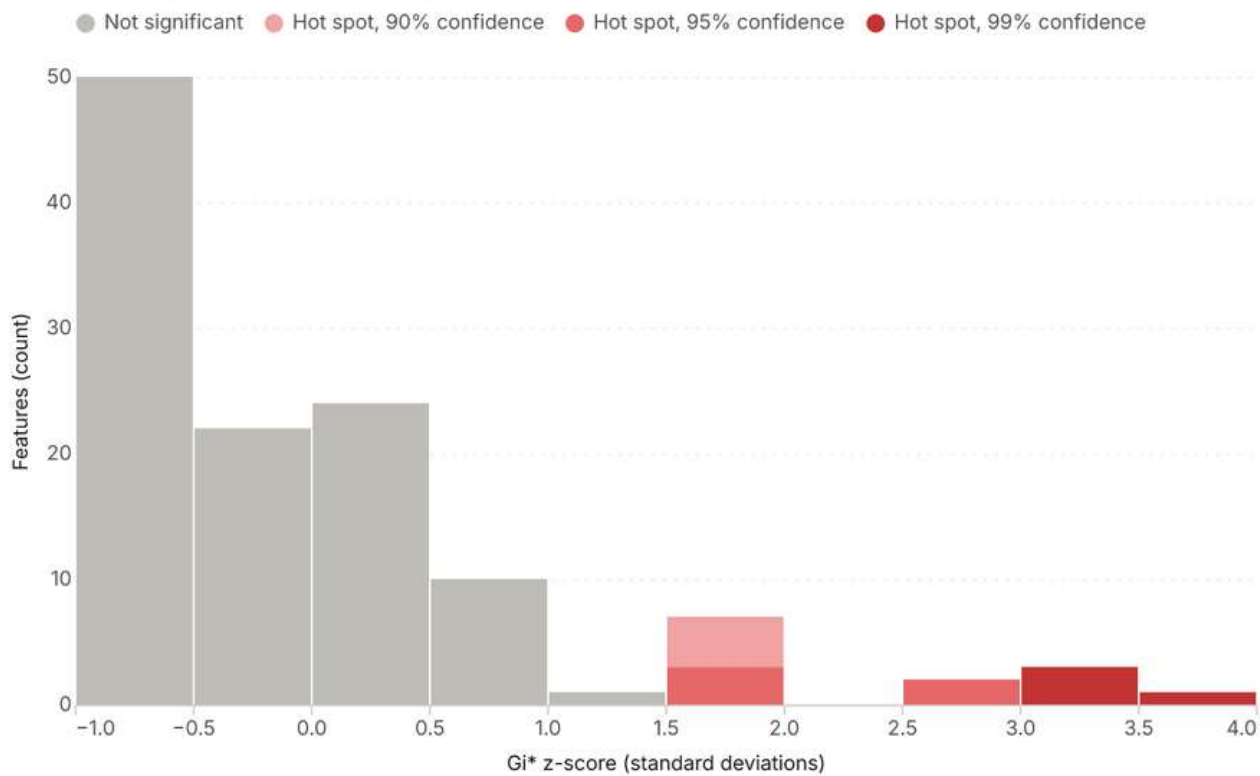


Source: Transit stations per 10,000 people by feature (10 features).

Figure 26. Transit stations per 10,000 people by feature [64]. Source: Transit stations per 10,000 people by feature (10 features). The data is in the appendix.

Gi* z-score distribution

120 features: 13 hot and 0 cold at 90% confidence or more



Source: Hot spot analysis: Short-term rentals (120 features).

Figure 27. Hot spot analysis: Short-term rentals [65]. Source: Hot spot analysis: Short-term rentals (120 features). The data is in the appendix.

Count per week by date and type

Per week: 22 weeks from 2026-06-01 to 2026-10-26; trend +0.0497 per week; first half 27, second half 33 (+22.2%)

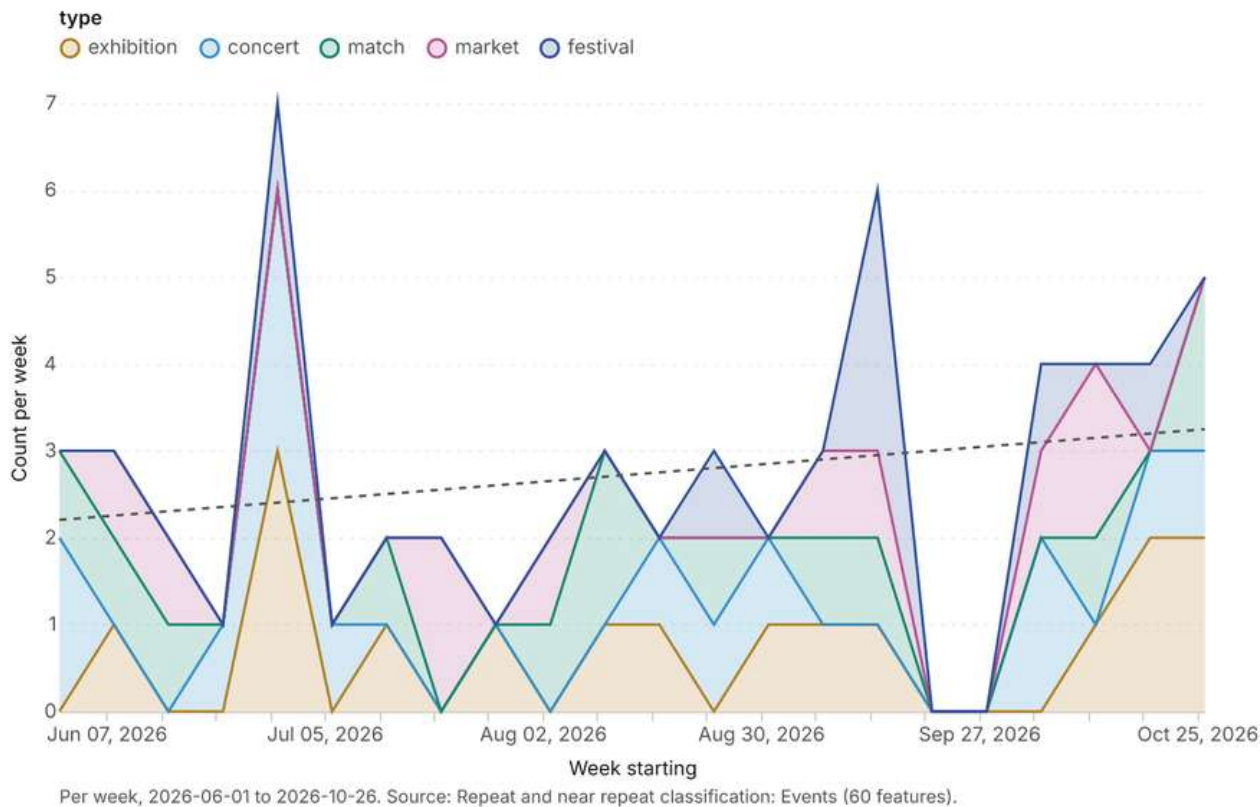


Figure 28. Repeat and near repeat classification: Events [66]. Per week, 2026-06-01 to 2026-10-26. Source: Repeat and near repeat classification: Events (60 features). The data is in the appendix.

Distribution of density_per_km2

60 values in 7 bins

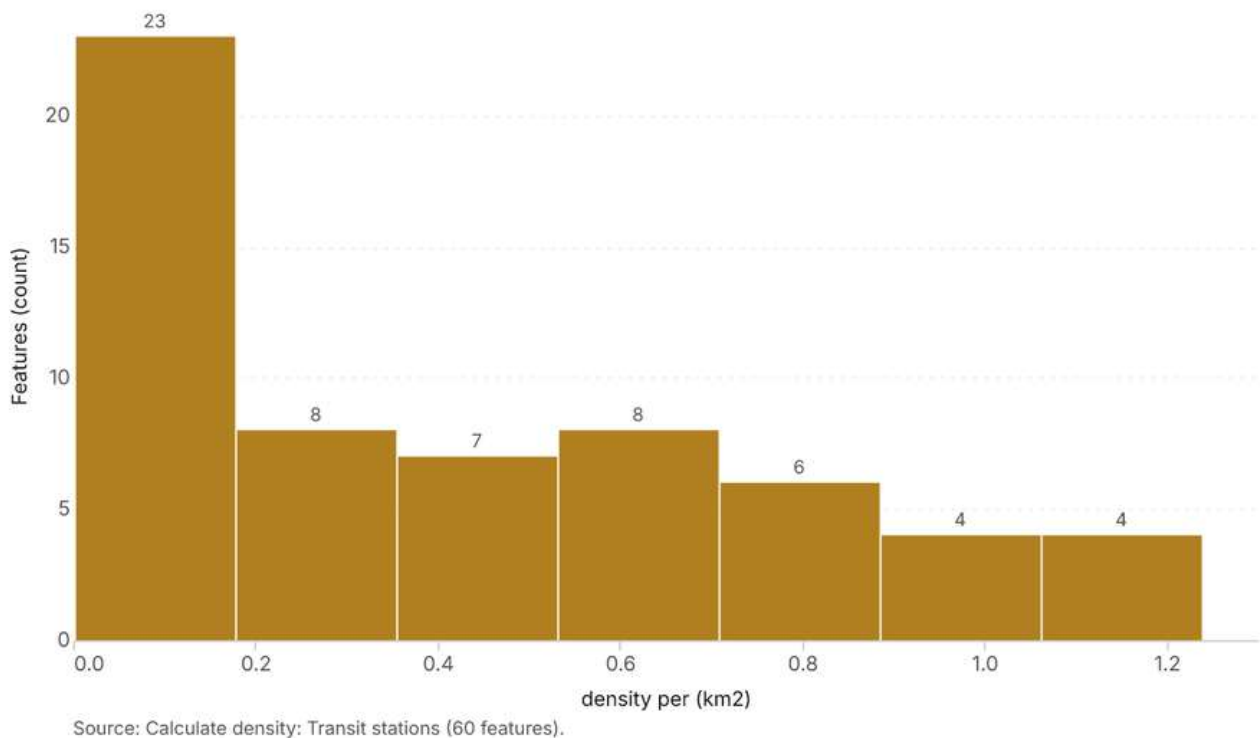


Figure 29. Calculate density: Transit stations [67]. Source: Calculate density: Transit stations (60 features). The data is in the appendix.

Count per week by date and type

Per week: 22 weeks from 2026-06-01 to 2026-10-26; trend +0.0497 per week; first half 27, second half 33 (+22.2%)

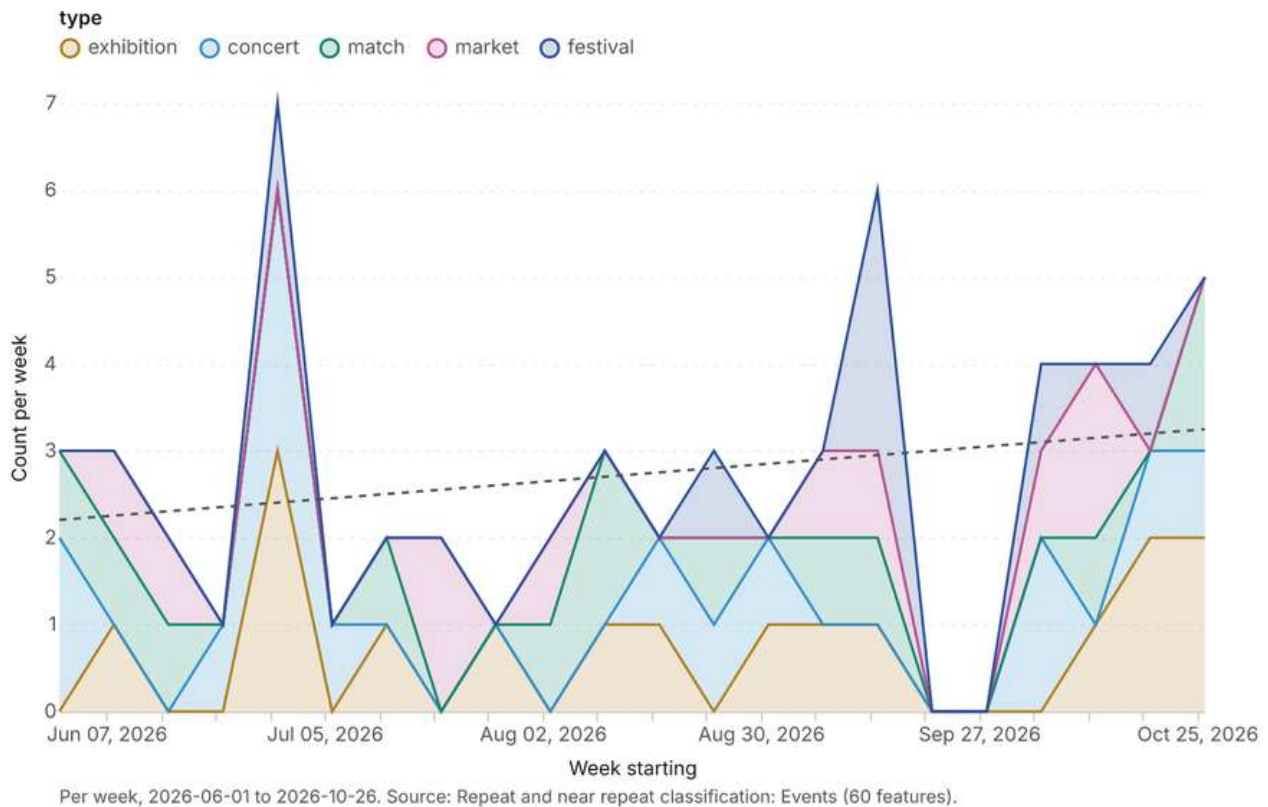


Figure 30. Repeat and near repeat classification: Events over time [68]. Per week, 2026-06-01 to 2026-10-26. Source: Repeat and near repeat classification: Events (60 features). The data is in the appendix.

Changes since the last run

This is the first report of this project.

Sources

- [1] Rendering: Chart: Timeline: events per month by dataset. 52 rows (id c28dd5e4-8e5d-4f58-bf01-ecf5bafa059e)
- [2] Dataset: Footfall by hour. table, 5040 rows (id 14c3f63e-f77c-42c5-915f-d9c05adec323)
- [3] Dataset: Visitor check-ins. vector, 1787 rows (id c5304978-960d-40ec-bdc4-acd2ea178039)
- [4] Dataset: Events. vector, 60 rows (id 19eebb1c-a097-45a3-b65f-454a721735ff)
- [5] Dataset: Hotel occupancy by district and month. table, 120 rows (id ddefeb0f-7855-4d3a-bdbc-830daaef4145)
- [6] Catalog: Pipeline (tool description, gp_pipeline). Run up to 20 GIS operations in one engine call; a step's params may use "\$id" (an earlier step's result) or "\$id.key", and layer references. Every step's map outputs are saved as styled layers. Never calls Mapbox. (id gp_pipeline)
- [7] Plan: Events per 10,000 people per feature of Districts (the Start plan's candidate c_fc66f1dd9ab5). Districts holds population in 'residents': Events per 10,000 people in each feature compares features of different size; mapped as a choropleth (natural breaks, sequential colors). (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_fc66f1dd9ab5)
- [8] Tool result: gp_pipeline, step 0. Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved. (id 6f508d4a-8ac6-43c5-a648-3a317b80b725:0)
- [9] Layer: Events. 60 features (id 48b188aa-e96c-47fa-8a28-11e7d0d1265b)
- [10] Layer: Districts. 10 features (id 2a6df822-dc6d-48ab-bb94-b4a34b363160)
- [11] Tool result: gp_pipeline, step 1. Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved. (id 6f508d4a-8ac6-43c5-a648-3a317b80b725:1)
- [12] Layer: Hotels. 120 features (id 3e8f4b82-1559-4b63-821d-9911e2fb57de)
- [13] Catalog: Hot spot analysis (operation catalog, gp_hot_spots). Getis-Ord Gi* hot and cold spots with z-scores, p-values and confidence bins. ArcGIS: Find Hot Spots, Hot Spot Analysis (Getis-Ord Gi*). QGIS: qgis:hotspot (plugin). (id gp_hot_spots)

- [14] Plan: Hot spots of Events (the Start plan's candidate c_7a715b334a74). 60 points: Getis-Ord Gi* tests whether the concentrations in Events are statistically significant. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_7a715b334a74)
- [15] Tool result: gp_hot_spots, step 0. Hot spot analysis: 1 layer saved: Hot spot analysis: Events (21 features). (id 84b08bee-0a26-46a8-aa31-3ab02a56479b:0)
- [16] Plan: Hot spots of Hotels (the Start plan's candidate c_79873e91203b). 120 points: Getis-Ord Gi* tests whether the concentrations in Hotels are statistically significant. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_79873e91203b)
- [17] Tool result: gp_hot_spots, step 1. Hot spot analysis: 1 layer saved: Hot spot analysis: Hotels (35 features). (id 84b08bee-0a26-46a8-aa31-3ab02a56479b:1)
- [18] Catalog: Emerging hot spots (operation catalog, gp_space_time_hot_spots). Where hot spots are new, consecutive, intensifying, persistent, diminishing, sporadic, oscillating or historical over time. ArcGIS: Emerging Hot Spot Analysis, Create Space Time Cube. (id gp_space_time_hot_spots)
- [19] Plan: Space time hot spots of Events (the Start plan's candidate c_8f286e9af1c8). Events carry dates in 'date': emerging hot spot analysis finds new, intensifying and fading hot spots per week. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_8f286e9af1c8)
- [20] Tool result: gp_space_time_hot_spots, step 0. Emerging hot spots: 1 layer saved: Emerging hot spots: Events (12 features). (id eb49d63a-8c38-41f3-ab9c-5e8f86d9baac:0)
- [21] Plan: Space time hot spots of Visitor check-ins (the Start plan's candidate c_20af318bcde6). Visitor check-ins carry dates in 'checked_in_at': emerging hot spot analysis finds new, intensifying and fading hot spots per week. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_20af318bcde6)
- [22] Tool result: gp_space_time_hot_spots, step 1. Emerging hot spots: 1 layer saved: Emerging hot spots: Visitor check-ins (247 features). (id eb49d63a-8c38-41f3-ab9c-5e8f86d9baac:1)
- [23] Layer: Visitor check-ins. 1,787 features (id 517cd234-4309-4e40-a7fe-bfcb513649a0)
- [24] Catalog: Calculate density (operation catalog, gp_calculate_density). Kernel density per square kilometer on a grid. ArcGIS: Calculate Density, Kernel Density. QGIS: native:heatmapkerneldensityestimation. (id gp_calculate_density)
- [25] Plan: Kernel density of Events (the Start plan's candidate c_cf6f233cf11a). 60 points in Events: a density surface shows where they concentrate. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_cf6f233cf11a)
- [26] Tool result: gp_calculate_density, step 0. Calculate density: 1 layer saved: Calculate density: Events (105 features). (id ffcce236-4ccf-4454-afd4-62fde6826f22:0)
- [27] Plan: Kernel density of Hotels (the Start plan's candidate c_f2a0da30a906). 120 points in Hotels: a density surface shows where they concentrate. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_f2a0da30a906)
- [28] Tool result: gp_calculate_density, step 1. Calculate density: 1 layer saved: Calculate density: Hotels (160 features). (id ffcce236-4ccf-4454-afd4-62fde6826f22:1)
- [29] Plan: Transit stations per 10,000 people per feature of Districts (the Start plan's candidate c_058536b42c97). Districts holds population in 'residents': Transit stations per 10,000 people in each feature compares features of different size; mapped as a choropleth (natural breaks, sequential colors). (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_058536b42c97)
- [30] Tool result: gp_pipeline, step 0. Pipeline of 2 steps (summarize_within > calculate_field): 1 layer saved. (id dd7063d1-b363-4d94-9eb7-b0637b02bd44:0)
- [31] Layer: Transit stations. 25 features (id 05c69c10-6b81-4264-aa80-dccc82f1a9c9)
- [32] Plan: Hot spots of Short-term rentals (the Start plan's candidate c_c8350b01ed0d). 359 points: Getis-Ord Gi* tests whether the concentrations in Short-term rentals are statistically significant. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_c8350b01ed0d)
- [33] Tool result: gp_hot_spots, step 0. Hot spot analysis: 1 layer saved: Hot spot analysis: Short-term rentals (120 features). (id 90ed7ab8-143b-43f0-876d-def245599177:0)
- [34] Layer: Short-term rentals. 359 features (id cfe7bd58-22ce-4b7e-9b85-2abc3992354a)
- [35] Catalog: Repeat and near repeat classification (operation catalog, gp_near_repeat). Classify incidents as originators, repeats (same place) or near repeats within a distance and time window, with a Knox test table. ArcGIS: Repeat and Near Repeat Classification, Near Repeat Calculator. (id gp_near_repeat)
- [36] Plan: Near repeat of Events (the Start plan's candidate c_f620f1a254d2). Near repeat analysis tests whether Events close in space also follow each other within 15 days. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_f620f1a254d2)
- [37] Tool result: gp_near_repeat, step 0. Repeat and near repeat classification: 1 layer saved: Repeat and near repeat classification: Events (60 features). (id 70382b8c-45cd-4cea-8ff2-7b23d4ff890a:0)
- [38] Plan: Kernel density of Transit stations (the Start plan's candidate c_f08aaf8201f4). 25 points in Transit stations: a density surface shows where they concentrate. (id 0b51cb1d-362e-46b9-bce1-ee8d0334d0d1:c_f08aaf8201f4)
- [39] Tool result: gp_calculate_density, step 0. Calculate density: 1 layer saved: Calculate density: Transit stations (60 features). (id 2052a837-292a-4b03-bff0-c4b2801afc2e:0)
- [40] Rendering: Map: Events per 10,000 people by feature (id eec57722-0ad2-4980-8930-376540984ea4)
- [41] Rendering: Map: Hotels per 10,000 people by feature (id 63d6732e-910d-4395-a217-5bcea906df8f)

[42] Rendering: Map: Hot spot analysis: Events (id 54872c4e-d24c-440f-8d17-ea1b17fedf7a)

[43] Rendering: Map: Hot spot analysis: Hotels (id 0332ec77-f165-48dd-8f8b-f78eca70bd2e)

[44] Rendering: Map: Emerging hot spots: Events (id a797e3a3-c203-46a0-adee-6ae0c49df6f7)

[45] Rendering: Map: Emerging hot spots: Visitor check-ins (id c742998e-376d-4428-9cd8-ee43aff334d8)

[46] Rendering: Map: Calculate density: Events (id c4858508-5b9c-4244-9da4-22c00b167e7d)

[47] Rendering: Map: Calculate density: Hotels (id f95cc319-e8fc-4b4d-b94c-0f32f5d881ba)

[48] Rendering: Map: Transit stations per 10,000 people by feature (id 490f3ebb-c4cf-4df7-a6b0-8a2608c0ce37)

[49] Rendering: Map: Hot spot analysis: Short-term rentals (id 5f63f0eb-e874-46e7-9c16-5195d066b68e)

[50] Rendering: Map: Repeat and near repeat classification: Events (id 6ead692c-c1bf-41c9-b506-1b85a1e7c4e7)

[51] Rendering: Map: Calculate density: Transit stations (id 9c9b72cd-660b-4431-a878-d8ce46aa23b5)

[52] Rendering: Chart: Footfall counters over time (installed_year). 1 rows (id c57481bf-4a67-476a-8f46-50e95ee01d34)

[53] Rendering: Chart: Footfall by hour over time (timestamp). 7 rows (id 68fde6c5-f7cb-4519-beb5-fda2f50b9446)

[54] Rendering: Chart: Events over time (date). 110 rows (id 7d7c5e9a-3392-4fe8-abd9-3e23dce93372)

[55] Rendering: Chart: Hotel occupancy by district and month over time (month). 294 rows (id 16057d40-3ace-4329-a918-0640eb5a26c4)

[56] Rendering: Chart: Events per 10,000 people by feature. 5 rows (id 4b2b3fe6-a4cc-4a5a-8f99-df4cfc48d3db)

[57] Rendering: Chart: Hotels per 10,000 people by feature. 5 rows (id a4fb08df-9753-4dfe-ae78-a53901591524)

[58] Rendering: Chart: Hot spot analysis: Events. 5 rows (id df76ff7e-00ff-4fc6-b41d-5534968aa408)

[59] Rendering: Chart: Hot spot analysis: Hotels. 6 rows (id 49c30dd2-4afd-47ce-9cab-fd5b09afd3e2)

[60] Rendering: Chart: Emerging hot spots: Events. 5 rows (id b15107ab-80aa-4641-95b1-be5375aa81e8)

[61] Rendering: Chart: Emerging hot spots: Visitor check-ins. 9 rows (id c4087574-f496-4825-92c9-f13d8ca99c72)

[62] Rendering: Chart: Calculate density: Events. 8 rows (id cd478e87-79f0-4685-a84f-ef9250389ac5)

[63] Rendering: Chart: Calculate density: Hotels. 9 rows (id 01e6882d-fc1c-41fe-b9f0-d4c083f8ce50)

[64] Rendering: Chart: Transit stations per 10,000 people by feature. 5 rows (id 4bfb9c9c-df18-4c54-a1e1-dc5127040af0)

[65] Rendering: Chart: Hot spot analysis: Short-term rentals. 10 rows (id c2f2f8d1-b71f-40d0-96d6-7cd46f9331df)

[66] Rendering: Chart: Repeat and near repeat classification: Events. 110 rows (id ae906476-4bb5-48f7-b8ac-00ca31455f0b)

[67] Rendering: Chart: Calculate density: Transit stations. 7 rows (id d67b5707-4e19-4aa1-9943-011622237776)

[68] Rendering: Chart: Repeat and near repeat classification: Events over time. 110 rows (id 2885d2a0-a6c2-4e19-8f57-418823738ddf)

[69] Dataset: Venues. vector, 40 rows (id fc2cd39e-1054-4c59-b6b6-a2f324d6bb3e)

[70] Dataset: Footfall counters. vector, 30 rows (id e0df87f0-4ea0-4648-bcf4-e339d9dd7a09)

[71] Dataset: Hotels. vector, 120 rows (id 9b34f752-20f9-4be7-a9c5-ca3e89bf6438)

[72] Dataset: Districts. vector, 10 rows (id 3113aeda-04c2-4be2-9eb4-1141e74fcf1d)

[73] Dataset: Transit stations. vector, 25 rows (id a1a99e8d-74be-4d47-b8fc-3d2bc032a85e)

[74] Dataset: Short-term rentals. vector, 359 rows (id bc26f941-1554-4b84-858e-db36a81426a5)

[75] Dataset: Walking routes. vector, 7 rows (id 9c7a2aa2-432b-4ee7-8b1e-0b0bddcece5a)

[76] Dataset: Event mobility plan. document, ? rows (id 552eef78-c8b9-412e-9863-a10cdae4c8c)

[77] Record: Sample: Tourism and events, Barcelona (id 7e086c07-eb20-44ad-b602-c5958e8ee13e)

[78] Layer: Events per 10,000 people by feature. 10 features (id 405dd996-09a6-48ed-ba23-86c7253d6c5c)

[79] Layer: Hotels per 10,000 people by feature. 10 features (id dafbe175-7ed5-414a-a851-63ce5848851d)

[80] Layer: Hot spot analysis: Events. 21 features (id a5378e74-77ee-4f8e-af6b-f25d1bd7f814)

[81] Layer: Hot spot analysis: Hotels. 35 features (id 5d3f8200-70e1-4127-b473-2986b030c3dc)

[82] Layer: Emerging hot spots: Events. 12 features (id 4ef1cdee-955e-4bd5-8945-dcb53b0bb3b3)

[83] Layer: Emerging hot spots: Visitor check-ins. 247 features (id 0550d911-8aec-447f-ad8b-d74332094159)

[84] Layer: Calculate density: Events. 105 features (id db4f4d27-3ab9-4f41-8da9-01e00e1e05fd)

[85] Layer: Calculate density: Hotels. 160 features (id 6a74aae2-e4d7-44bb-bae5-af7907cd724b)

[86] Layer: Transit stations per 10,000 people by feature. 10 features (id dc9ada02-031c-44ad-aa58-f2cbb1ad1c06)

[87] Layer: Hot spot analysis: Short-term rentals. 120 features (id 4e76223c-ab8d-4217-a68c-42960cd0306d)

[88] Layer: Repeat and near repeat classification: Events. 60 features (id 095f2dfc-b0b5-4811-be3f-338320ff4791)

[89] Layer: Calculate density: Transit stations. 60 features (id 68427dd3-936e-41d3-93aa-54b77e01fe32)

Appendix: the data behind the charts

Figure 1. Timeline: events per month by dataset [1]

period	series	value
2025-10-01	Footfall by hour	0
2025-10-01	Visitor check-ins	0
2025-10-01	Hotel occupancy by district and month	10
2025-10-01	Events	0
2025-11-01	Footfall by hour	0
2025-11-01	Visitor check-ins	0
2025-11-01	Hotel occupancy by district and month	10
2025-11-01	Events	0
2025-12-01	Footfall by hour	0
2025-12-01	Visitor check-ins	0
2025-12-01	Hotel occupancy by district and month	10
2025-12-01	Events	0
2026-01-01	Footfall by hour	0
2026-01-01	Visitor check-ins	0
2026-01-01	Hotel occupancy by district and month	10
2026-01-01	Events	0
2026-02-01	Footfall by hour	0
2026-02-01	Visitor check-ins	0
2026-02-01	Hotel occupancy by district and month	10
2026-02-01	Events	0
2026-03-01	Footfall by hour	0
2026-03-01	Visitor check-ins	0
2026-03-01	Hotel occupancy by district and month	10
2026-03-01	Events	0
2026-04-01	Footfall by hour	0
2026-04-01	Visitor check-ins	0
2026-04-01	Hotel occupancy by district and month	10
2026-04-01	Events	0
2026-05-01	Footfall by hour	0
2026-05-01	Visitor check-ins	0
2026-05-01	Hotel occupancy by district and month	10
2026-05-01	Events	0
2026-06-01	Footfall by hour	0
2026-06-01	Visitor check-ins	0
2026-06-01	Hotel occupancy by district and month	10
2026-06-01	Events	11
2026-07-01	Footfall by hour	0
2026-07-01	Visitor check-ins	0

period	series	value
2026-07-01	Hotel occupancy by district and month	10
2026-07-01	Events	11
2026-08-01	Footfall by hour	0
2026-08-01	Visitor check-ins	736
2026-08-01	Hotel occupancy by district and month	10
2026-08-01	Events	10
2026-09-01	Footfall by hour	5,040
2026-09-01	Visitor check-ins	1,051
2026-09-01	Hotel occupancy by district and month	10
2026-09-01	Events	11
2026-10-01	Footfall by hour	0
2026-10-01	Visitor check-ins	0
2026-10-01	Hotel occupancy by district and month	0
2026-10-01	Events	17

Figure 14. Footfall counters over time (installed_year) [52]

bin_start	bin_end	count
2,025	2,025	30

Figure 15. Footfall by hour over time (timestamp) [53]

period	value
2026-09-14	720
2026-09-15	720
2026-09-16	720
2026-09-17	720
2026-09-18	720
2026-09-19	720
2026-09-20	720

Figure 16. Events over time (date) [54]

period	series	value
2026-06-01	exhibition	0
2026-06-01	concert	2
2026-06-01	match	1
2026-06-01	market	0
2026-06-01	festival	0
2026-06-08	exhibition	1
2026-06-08	concert	0
2026-06-08	match	1
2026-06-08	market	1
2026-06-08	festival	0
2026-06-15	exhibition	0
2026-06-15	concert	0
2026-06-15	match	1
2026-06-15	market	1

period	series	value
2026-06-15	festival	0
2026-06-22	exhibition	0
2026-06-22	concert	1
2026-06-22	match	0
2026-06-22	market	0
2026-06-22	festival	0
2026-06-29	exhibition	3
2026-06-29	concert	3
2026-06-29	match	0
2026-06-29	market	0
2026-06-29	festival	1
2026-07-06	exhibition	0
2026-07-06	concert	1
2026-07-06	match	0
2026-07-06	market	0
2026-07-06	festival	0
2026-07-13	exhibition	1
2026-07-13	concert	0
2026-07-13	match	1
2026-07-13	market	0
2026-07-13	festival	0
2026-07-20	exhibition	0
2026-07-20	concert	0
2026-07-20	match	0
2026-07-20	market	2
2026-07-20	festival	0
2026-07-27	exhibition	1
2026-07-27	concert	0
2026-07-27	match	0
2026-07-27	market	0
2026-07-27	festival	0
2026-08-03	exhibition	0
2026-08-03	concert	0
2026-08-03	match	1
2026-08-03	market	1
2026-08-03	festival	0
2026-08-10	exhibition	1
2026-08-10	concert	0
2026-08-10	match	2
2026-08-10	market	0
2026-08-10	festival	0
2026-08-17	exhibition	1
2026-08-17	concert	1

period	series	value
2026-08-17	match	0
2026-08-17	market	0
2026-08-17	festival	0
2026-08-24	exhibition	0
2026-08-24	concert	1
2026-08-24	match	1
2026-08-24	market	0
2026-08-24	festival	1
2026-08-31	exhibition	1
2026-08-31	concert	1
2026-08-31	match	0
2026-08-31	market	0
2026-08-31	festival	0
2026-09-07	exhibition	1
2026-09-07	concert	0
2026-09-07	match	1
2026-09-07	market	1
2026-09-07	festival	0
2026-09-14	exhibition	1
2026-09-14	concert	0
2026-09-14	match	1
2026-09-14	market	1
2026-09-14	festival	3
2026-09-21	exhibition	0
2026-09-21	concert	0
2026-09-21	match	0
2026-09-21	market	0
2026-09-21	festival	0
2026-09-28	exhibition	0
2026-09-28	concert	0
2026-09-28	match	0
2026-09-28	market	0
2026-09-28	festival	0
2026-10-05	exhibition	0
2026-10-05	concert	2
2026-10-05	match	0
2026-10-05	market	1
2026-10-05	festival	1
2026-10-12	exhibition	1
2026-10-12	concert	0
2026-10-12	match	1
2026-10-12	market	2
2026-10-12	festival	0

period	series	value
2026-10-19	exhibition	2
2026-10-19	concert	1
2026-10-19	match	0
2026-10-19	market	0
2026-10-19	festival	1
2026-10-26	exhibition	2
2026-10-26	concert	1
2026-10-26	match	2
2026-10-26	market	0
2026-10-26	festival	0

Figure 17. Hotel occupancy by district and month over time (month) [55]

period	series	value
2025-09-29	DT06	2,138
2025-09-29	DT04	1,034
2025-09-29	DT05	2,817
2025-09-29	DT10	1,781
2025-09-29	DT02	1,728
2025-09-29	Other	1.651e+04
2025-10-06	DT06	0
2025-10-06	DT04	0
2025-10-06	DT05	0
2025-10-06	DT10	0
2025-10-06	DT02	0
2025-10-06	Other	0
2025-10-13	DT06	0
2025-10-13	DT04	0
2025-10-13	DT05	0
2025-10-13	DT10	0
2025-10-13	DT02	0
2025-10-13	Other	0
2025-10-20	DT06	0
2025-10-20	DT04	0
2025-10-20	DT05	0
2025-10-20	DT10	0
2025-10-20	DT02	0
2025-10-20	Other	0
2025-10-27	DT06	7,226
2025-10-27	DT04	8,472
2025-10-27	DT05	4,464
2025-10-27	DT10	6,345
2025-10-27	DT02	2,589
2025-10-27	Other	1.248e+04
2025-11-03	DT06	0

period	series	value
2025-11-03	DT04	0
2025-11-03	DT05	0
2025-11-03	DT10	0
2025-11-03	DT02	0
2025-11-03	Other	0
2025-11-10	DT06	0
2025-11-10	DT04	0
2025-11-10	DT05	0
2025-11-10	DT10	0
2025-11-10	DT02	0
2025-11-10	Other	0
2025-11-17	DT06	0
2025-11-17	DT04	0
2025-11-17	DT05	0
2025-11-17	DT10	0
2025-11-17	DT02	0
2025-11-17	Other	0
2025-11-24	DT06	0
2025-11-24	DT04	0
2025-11-24	DT05	0
2025-11-24	DT10	0
2025-11-24	DT02	0
2025-11-24	Other	0
2025-12-01	DT06	8,013
2025-12-01	DT04	3,856
2025-12-01	DT05	5,653
2025-12-01	DT10	8,983
2025-12-01	DT02	8,363
2025-12-01	Other	2.188e+04
2025-12-08	DT06	0
2025-12-08	DT04	0
2025-12-08	DT05	0
2025-12-08	DT10	0
2025-12-08	DT02	0
2025-12-08	Other	0
2025-12-15	DT06	0
2025-12-15	DT04	0
2025-12-15	DT05	0
2025-12-15	DT10	0
2025-12-15	DT02	0
2025-12-15	Other	0
2025-12-22	DT06	0
2025-12-22	DT04	0

period	series	value
2025-12-22	DT05	0
2025-12-22	DT10	0
2025-12-22	DT02	0
2025-12-22	Other	0
2025-12-29	DT06	8,732
2025-12-29	DT04	3,728
2025-12-29	DT05	2,054
2025-12-29	DT10	6,927
2025-12-29	DT02	7,321
2025-12-29	Other	2.694e+04
2026-01-05	DT06	0
2026-01-05	DT04	0
2026-01-05	DT05	0
2026-01-05	DT10	0
2026-01-05	DT02	0
2026-01-05	Other	0
2026-01-12	DT06	0
2026-01-12	DT04	0
2026-01-12	DT05	0
2026-01-12	DT10	0
2026-01-12	DT02	0
2026-01-12	Other	0
2026-01-19	DT06	0
2026-01-19	DT04	0
2026-01-19	DT05	0
2026-01-19	DT10	0
2026-01-19	DT02	0
2026-01-19	Other	0
2026-01-26	DT06	2,115
2026-01-26	DT04	5,118
2026-01-26	DT05	3,277
2026-01-26	DT10	5,816
2026-01-26	DT02	7,018
2026-01-26	Other	2.137e+04
2026-02-02	DT06	0
2026-02-02	DT04	0
2026-02-02	DT05	0
2026-02-02	DT10	0
2026-02-02	DT02	0
2026-02-02	Other	0
2026-02-09	DT06	0
2026-02-09	DT04	0
2026-02-09	DT05	0

period	series	value
2026-02-09	DT10	0
2026-02-09	DT02	0
2026-02-09	Other	0
2026-02-16	DT06	0
2026-02-16	DT04	0
2026-02-16	DT05	0
2026-02-16	DT10	0
2026-02-16	DT02	0
2026-02-16	Other	0
2026-02-23	DT06	3,579
2026-02-23	DT04	2,962
2026-02-23	DT05	7,288
2026-02-23	DT10	3,713
2026-02-23	DT02	2,970
2026-02-23	Other	3.058e+04
2026-03-02	DT06	0
2026-03-02	DT04	0
2026-03-02	DT05	0
2026-03-02	DT10	0
2026-03-02	DT02	0
2026-03-02	Other	0
2026-03-09	DT06	0
2026-03-09	DT04	0
2026-03-09	DT05	0
2026-03-09	DT10	0
2026-03-09	DT02	0
2026-03-09	Other	0
2026-03-16	DT06	0
2026-03-16	DT04	0
2026-03-16	DT05	0
2026-03-16	DT10	0
2026-03-16	DT02	0
2026-03-16	Other	0
2026-03-23	DT06	0
2026-03-23	DT04	0
2026-03-23	DT05	0
2026-03-23	DT10	0
2026-03-23	DT02	0
2026-03-23	Other	0
2026-03-30	DT06	5,650
2026-03-30	DT04	6,950
2026-03-30	DT05	6,796
2026-03-30	DT10	4,404

period	series	value
2026-03-30	DT02	3,479
2026-03-30	Other	1.511e+04
2026-04-06	DT06	0
2026-04-06	DT04	0
2026-04-06	DT05	0
2026-04-06	DT10	0
2026-04-06	DT02	0
2026-04-06	Other	0
2026-04-13	DT06	0
2026-04-13	DT04	0
2026-04-13	DT05	0
2026-04-13	DT10	0
2026-04-13	DT02	0
2026-04-13	Other	0
2026-04-20	DT06	0
2026-04-20	DT04	0
2026-04-20	DT05	0
2026-04-20	DT10	0
2026-04-20	DT02	0
2026-04-20	Other	0
2026-04-27	DT06	7,955
2026-04-27	DT04	2,998
2026-04-27	DT05	2,479
2026-04-27	DT10	3,806
2026-04-27	DT02	4,230
2026-04-27	Other	2.721e+04
2026-05-04	DT06	0
2026-05-04	DT04	0
2026-05-04	DT05	0
2026-05-04	DT10	0
2026-05-04	DT02	0
2026-05-04	Other	0
2026-05-11	DT06	0
2026-05-11	DT04	0
2026-05-11	DT05	0
2026-05-11	DT10	0
2026-05-11	DT02	0
2026-05-11	Other	0
2026-05-18	DT06	0
2026-05-18	DT04	0
2026-05-18	DT05	0
2026-05-18	DT10	0
2026-05-18	DT02	0

period	series	value
2026-05-18	Other	0
2026-05-25	DT06	0
2026-05-25	DT04	0
2026-05-25	DT05	0
2026-05-25	DT10	0
2026-05-25	DT02	0
2026-05-25	Other	0
2026-06-01	DT06	5,440
2026-06-01	DT04	6,136
2026-06-01	DT05	7,347
2026-06-01	DT10	3,873
2026-06-01	DT02	4,157
2026-06-01	Other	2.078e+04
2026-06-08	DT06	0
2026-06-08	DT04	0
2026-06-08	DT05	0
2026-06-08	DT10	0
2026-06-08	DT02	0
2026-06-08	Other	0
2026-06-15	DT06	0
2026-06-15	DT04	0
2026-06-15	DT05	0
2026-06-15	DT10	0
2026-06-15	DT02	0
2026-06-15	Other	0
2026-06-22	DT06	0
2026-06-22	DT04	0
2026-06-22	DT05	0
2026-06-22	DT10	0
2026-06-22	DT02	0
2026-06-22	Other	0
2026-06-29	DT06	7,881
2026-06-29	DT04	6,851
2026-06-29	DT05	1,454
2026-06-29	DT10	1,762
2026-06-29	DT02	1,279
2026-06-29	Other	1.875e+04
2026-07-06	DT06	0
2026-07-06	DT04	0
2026-07-06	DT05	0
2026-07-06	DT10	0
2026-07-06	DT02	0
2026-07-06	Other	0

period	series	value
2026-07-13	DT06	0
2026-07-13	DT04	0
2026-07-13	DT05	0
2026-07-13	DT10	0
2026-07-13	DT02	0
2026-07-13	Other	0
2026-07-20	DT06	0
2026-07-20	DT04	0
2026-07-20	DT05	0
2026-07-20	DT10	0
2026-07-20	DT02	0
2026-07-20	Other	0
2026-07-27	DT06	2,819
2026-07-27	DT04	7,853
2026-07-27	DT05	5,302
2026-07-27	DT10	1,915
2026-07-27	DT02	5,724
2026-07-27	Other	1.762e+04
2026-08-03	DT06	0
2026-08-03	DT04	0
2026-08-03	DT05	0
2026-08-03	DT10	0
2026-08-03	DT02	0
2026-08-03	Other	0
2026-08-10	DT06	0
2026-08-10	DT04	0
2026-08-10	DT05	0
2026-08-10	DT10	0
2026-08-10	DT02	0
2026-08-10	Other	0
2026-08-17	DT06	0
2026-08-17	DT04	0
2026-08-17	DT05	0
2026-08-17	DT10	0
2026-08-17	DT02	0
2026-08-17	Other	0
2026-08-24	DT06	0
2026-08-24	DT04	0
2026-08-24	DT05	0
2026-08-24	DT10	0
2026-08-24	DT02	0
2026-08-24	Other	0
2026-08-31	DT06	4,125

period	series	value
2026-08-31	DT04	8,231
2026-08-31	DT05	8,813
2026-08-31	DT10	7,608
2026-08-31	DT02	7,592
2026-08-31	Other	2.857e+04

Figure 18. Events per 10,000 people by feature [56]

bin_start	bin_end	count
0	8	9
8	16	0
16	24	0
24	32	0
32	40	1

Figure 19. Hotels per 10,000 people by feature [57]

bin_start	bin_end	count
1	11.2	7
11.2	21.4	1
21.4	31.6	1
31.6	41.8	0
41.8	52	1

Figure 20. Hot spot analysis: Events [58]

bin_start	bin_end	band	band_label	count
-1	-0.5	not_significant	Not significant	7
-0.5	0	not_significant	Not significant	7
0	0.5	not_significant	Not significant	5
2.5	3	hot_95	Hot spot, 95% confidence	1
3	3.5	hot_99	Hot spot, 99% confidence	1

Figure 21. Hot spot analysis: Hotels [59]

bin_start	bin_end	band	band_label	count
-1	-0.5	not_significant	Not significant	14
-0.5	0	not_significant	Not significant	8
0	0.5	not_significant	Not significant	6
0.5	1	not_significant	Not significant	4
1	1.5	not_significant	Not significant	1
3	3.5	hot_99	Hot spot, 99% confidence	2

Figure 22. Emerging hot spots: Events [60]

bin_start	bin_end	count
0.038	0.871	4
0.871	1.704	1
1.704	2.537	1

bin_start	bin_end	count
2.537	3.37	3
3.37	4.203	3

Figure 23. Emerging hot spots: Visitor check-ins [61]

bin_start	bin_end	count
-1.056	-0.5576	150
-0.5576	-0.05911	59
-0.05911	0.4393	15
0.4393	0.9378	10
0.9378	1.436	3
1.436	1.935	3
1.935	2.433	3
2.433	2.932	2
2.932	3.43	2

Figure 24. Calculate density: Events [62]

bin_start	bin_end	count
0	1.5	11
1.5	3	8
3	4.5	17
4.5	6	10
6	7.5	17
7.5	9	8
9	10.5	20
10.5	12	14

Figure 25. Calculate density: Hotels [63]

bin_start	bin_end	count
0	1.556	16
1.556	3.111	26
3.111	4.667	13
4.667	6.222	23
6.222	7.778	12
7.778	9.333	22
9.333	10.89	11
10.89	12.44	23
12.44	14	14

Figure 26. Transit stations per 10,000 people by feature [64]

bin_start	bin_end	count
0	1	1
1	2	3
2	3	2
3	4	2
4	5	2

Figure 27. Hot spot analysis: Short-term rentals [65]

bin_start	bin_end	band	band_label	count
-1	-0.5	not_significant	Not significant	50
-0.5	0	not_significant	Not significant	22
0	0.5	not_significant	Not significant	24
0.5	1	not_significant	Not significant	10
1	1.5	not_significant	Not significant	1
1.5	2	hot_90	Hot spot, 90% confidence	4
1.5	2	hot_95	Hot spot, 95% confidence	3
2.5	3	hot_95	Hot spot, 95% confidence	2
3	3.5	hot_99	Hot spot, 99% confidence	3
3.5	4	hot_99	Hot spot, 99% confidence	1

Figure 28. Repeat and near repeat classification: Events [66]

period	series	value
2026-06-01	exhibition	0
2026-06-01	concert	2
2026-06-01	match	1
2026-06-01	market	0
2026-06-01	festival	0
2026-06-08	exhibition	1
2026-06-08	concert	0
2026-06-08	match	1
2026-06-08	market	1
2026-06-08	festival	0
2026-06-15	exhibition	0
2026-06-15	concert	0
2026-06-15	match	1
2026-06-15	market	1
2026-06-15	festival	0
2026-06-22	exhibition	0
2026-06-22	concert	1
2026-06-22	match	0
2026-06-22	market	0
2026-06-22	festival	0
2026-06-29	exhibition	3
2026-06-29	concert	3
2026-06-29	match	0
2026-06-29	market	0
2026-06-29	festival	1
2026-07-06	exhibition	0
2026-07-06	concert	1

period	series	value
2026-07-06	match	0
2026-07-06	market	0
2026-07-06	festival	0
2026-07-13	exhibition	1
2026-07-13	concert	0
2026-07-13	match	1
2026-07-13	market	0
2026-07-13	festival	0
2026-07-20	exhibition	0
2026-07-20	concert	0
2026-07-20	match	0
2026-07-20	market	2
2026-07-20	festival	0
2026-07-27	exhibition	1
2026-07-27	concert	0
2026-07-27	match	0
2026-07-27	market	0
2026-07-27	festival	0
2026-08-03	exhibition	0
2026-08-03	concert	0
2026-08-03	match	1
2026-08-03	market	1
2026-08-03	festival	0
2026-08-10	exhibition	1
2026-08-10	concert	0
2026-08-10	match	2
2026-08-10	market	0
2026-08-10	festival	0
2026-08-17	exhibition	1
2026-08-17	concert	1
2026-08-17	match	0
2026-08-17	market	0
2026-08-17	festival	0
2026-08-24	exhibition	0
2026-08-24	concert	1
2026-08-24	match	1
2026-08-24	market	0
2026-08-24	festival	1
2026-08-31	exhibition	1
2026-08-31	concert	1
2026-08-31	match	0
2026-08-31	market	0
2026-08-31	festival	0

period	series	value
2026-09-07	exhibition	1
2026-09-07	concert	0
2026-09-07	match	1
2026-09-07	market	1
2026-09-07	festival	0
2026-09-14	exhibition	1
2026-09-14	concert	0
2026-09-14	match	1
2026-09-14	market	1
2026-09-14	festival	3
2026-09-21	exhibition	0
2026-09-21	concert	0
2026-09-21	match	0
2026-09-21	market	0
2026-09-21	festival	0
2026-09-28	exhibition	0
2026-09-28	concert	0
2026-09-28	match	0
2026-09-28	market	0
2026-09-28	festival	0
2026-10-05	exhibition	0
2026-10-05	concert	2
2026-10-05	match	0
2026-10-05	market	1
2026-10-05	festival	1
2026-10-12	exhibition	1
2026-10-12	concert	0
2026-10-12	match	1
2026-10-12	market	2
2026-10-12	festival	0
2026-10-19	exhibition	2
2026-10-19	concert	1
2026-10-19	match	0
2026-10-19	market	0
2026-10-19	festival	1
2026-10-26	exhibition	2
2026-10-26	concert	1
2026-10-26	match	2
2026-10-26	market	0
2026-10-26	festival	0

Figure 29. Calculate density: Transit stations [67]

bin_start	bin_end	count
0.001178	0.178	23

bin_start	bin_end	count
0.178	0.3547	8
0.3547	0.5315	7
0.5315	0.7083	8
0.7083	0.8851	6
0.8851	1.062	4
1.062	1.239	4

Figure 30. Repeat and near repeat classification: Events over time [68]

period	series	value
2026-06-01	exhibition	0
2026-06-01	concert	2
2026-06-01	match	1
2026-06-01	market	0
2026-06-01	festival	0
2026-06-08	exhibition	1
2026-06-08	concert	0
2026-06-08	match	1
2026-06-08	market	1
2026-06-08	festival	0
2026-06-15	exhibition	0
2026-06-15	concert	0
2026-06-15	match	1
2026-06-15	market	1
2026-06-15	festival	0
2026-06-22	exhibition	0
2026-06-22	concert	1
2026-06-22	match	0
2026-06-22	market	0
2026-06-22	festival	0
2026-06-29	exhibition	3
2026-06-29	concert	3
2026-06-29	match	0
2026-06-29	market	0
2026-06-29	festival	1
2026-07-06	exhibition	0
2026-07-06	concert	1
2026-07-06	match	0
2026-07-06	market	0
2026-07-06	festival	0
2026-07-13	exhibition	1
2026-07-13	concert	0
2026-07-13	match	1
2026-07-13	market	0
2026-07-13	festival	0

period	series	value
2026-07-20	exhibition	0
2026-07-20	concert	0
2026-07-20	match	0
2026-07-20	market	2
2026-07-20	festival	0
2026-07-27	exhibition	1
2026-07-27	concert	0
2026-07-27	match	0
2026-07-27	market	0
2026-07-27	festival	0
2026-08-03	exhibition	0
2026-08-03	concert	0
2026-08-03	match	1
2026-08-03	market	1
2026-08-03	festival	0
2026-08-10	exhibition	1
2026-08-10	concert	0
2026-08-10	match	2
2026-08-10	market	0
2026-08-10	festival	0
2026-08-17	exhibition	1
2026-08-17	concert	1
2026-08-17	match	0
2026-08-17	market	0
2026-08-17	festival	0
2026-08-24	exhibition	0
2026-08-24	concert	1
2026-08-24	match	1
2026-08-24	market	0
2026-08-24	festival	1
2026-08-31	exhibition	1
2026-08-31	concert	1
2026-08-31	match	0
2026-08-31	market	0
2026-08-31	festival	0
2026-09-07	exhibition	1
2026-09-07	concert	0
2026-09-07	match	1
2026-09-07	market	1
2026-09-07	festival	0
2026-09-14	exhibition	1
2026-09-14	concert	0
2026-09-14	match	1

period	series	value
2026-09-14	market	1
2026-09-14	festival	3
2026-09-21	exhibition	0
2026-09-21	concert	0
2026-09-21	match	0
2026-09-21	market	0
2026-09-21	festival	0
2026-09-28	exhibition	0
2026-09-28	concert	0
2026-09-28	match	0
2026-09-28	market	0
2026-09-28	festival	0
2026-10-05	exhibition	0
2026-10-05	concert	2
2026-10-05	match	0
2026-10-05	market	1
2026-10-05	festival	1
2026-10-12	exhibition	1
2026-10-12	concert	0
2026-10-12	match	1
2026-10-12	market	2
2026-10-12	festival	0
2026-10-19	exhibition	2
2026-10-19	concert	1
2026-10-19	match	0
2026-10-19	market	0
2026-10-19	festival	1
2026-10-26	exhibition	2
2026-10-26	concert	1
2026-10-26	match	2
2026-10-26	market	0
2026-10-26	festival	0