Independent Verification of Parking App Metrics Prepared by Strategy Analytics December 2021



Introduction: The Need for Accurate Parking Data

Automakers today are singularly obsessed with the future of the so-called **software-defined car** and the proliferation of **connected services**. The clear belief across the industry is that future sources of revenue will derive more from connected services than they will from the sales and services of vehicles.

• Connected services are nothing new to automakers. General Motors' **OnStar** service celebrated its 25th year of operation in 2021 and new innovative services continue to be brought to the new car marketplace each year.

One thing that has not changed over the years is consumer interest in three particular connected services: **traffic**, **weather**, and **parking**. Car owners and shoppers surveyed by Strategy Analytics across multiple geographies throughout the world have repeatedly identified these three services as the **most essential** and **frequently used** while driving.

Traffic and weather information has always been accessible in cars thanks to in-dash radios with local broadcasts regarding prevailing traffic and weather conditions. Parking information has been less easy to come by and has only arrived in dashboards within the past decade largely in the form of **parking apps** accessed on smartphones and, increasingly, integrated into infotainment systems.

What all three of these applications share in common is a need for **accurate**, **real-time** and **predictive** information. Everyone wants to know the weather forecast and drivers certainly want navigation routes calculated based on predictive traffic information models. Parking is the same. Drivers want to know real-time information regarding where parking lots are **located** as well as their **operating hours**, **payment methods**, and **accessibility**.

Automakers need accurate parking information to be readily available to car owners because the last thing an automaker wants to see is a customer that leaves his or her car at home for fear of a lack of parking. Second only to the range anxiety limiting the adoption of electric vehicles, **parking anxiety** is a phenomenon fuelling the rise of ride hailing operators. For these reasons, parking apps have proliferated and the integration of this information in cars is becoming close to universal.

However, not all sources of parking data are created equal. Consumers around the world can get parking information from suppliers such as **Parkopedia**, **INRIX**, and **Google**, but the accuracy and completeness of the information vary widely.

While any inaccurate information in a driving-related application can be **annoying to users**, large volumes of incorrect or missing information can be potentially **devastating** for carmakers concerned with building and preserving **brand equity**.

In this ground truth study conducted on behalf of **Parkopedia** by **Strategy Analytics**, we found significant differences in the accuracy and completeness of information available from the three service providers mentioned above.

Getting parking "right" means getting the static data correct **every time**. As is the case of most connected applications, one or two failures can be fatal to future use, and for any carmaker a **brand promise** rides on every data request.

• Getting the static data correct will become even more important as the parking industry transitions to **electronic payments** and the wider use of **reservations**. Current parking app deployments are merely a rehearsal, a dry run, leading to digitized, touchless consumer experiences which will depend on trust and end-to-end data integration.

This study reveals that only **Parkopedia** is even coming close to fulfilling customer expectations. As the industry moves towards next-generation solutions that will integrate **payments** as well as information regarding **charging station availability**, serving all of these challenges will require attention to detail and high levels of **data integrity** and **trust**. Only Parkopedia appears to be prepared to deliver on these value propositions.



Introduction: Report Objectives





As Strategy Analytics' <u>research</u> has found, accurate parking information is non-negotiable to consumers. But the industry has been plagued by the need to build solutions around probabilities, despite unreliability brought about by the COVID-19 pandemic. As the world slowly recovers post-pandemic, there is a large emphasis on accurate data around parking. While small variances will be forgiven, credibility gaps in this space will be fatal to the service provider.

Parkopedia is a leading connected car services provider. The Parkopedia mobile app and in-car services are used to help drivers find and pay for parking in 15,000 cities across 89 countries. Parkopedia is used by millions of drivers and organisations, including Apple, Audi, BMW, Ford, Garmin, GM, Jaguar Land Rover, Mercedes-Benz, Peugeot, TomTom, Toyota, Volkswagen and many others. Parkopedia also offers services in EV charging, fuelling and tolls.

Recognising the critical need to provide accurate parking information to automakers, **Parkopedia** sought to verify the **completeness and accuracy of coverage and detail** of its parking app in direct comparison to two competitors, <u>Inrix</u> and <u>Google</u>. In November 2021, to support these objectives, **Parkopedia** commissioned **Strategy Analytics** to undertake independent validation activities in 10 major US cities and further, develop and execute a process for validating these metrics.

This report presents the methodologies developed, the calculations applied and the findings of this investigation.

Ground Truth Testing Methodology

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Methodology – Data Collection



To verify the completeness and accuracy of coverage and detail of Parkopedia's parking app in direct comparison to Inrix and Google, Strategy Analytics undertook 'Ground Truth Testing' (GTT) in 10 major US cities.

- Cities: Charlotte, NC, Chicago, IL, Dallas, TX, Houston, TX, Las Vegas, NV, Los Angeles, CA, New York, NY, Phoenix, AZ, San Diego, CA and Washington, DC.
- These cities were chosen based on size (all above 0.5m inhabitants) and geographical diversity (to ensure balanced representation of all US regions).



25 parking **locations** were identified within the central area of each city.

• The boundaries of each GTT zone are presented in the appendix of this report.

To ensure consistency across cities and providers and to maximize access of ground truth assessors to parking locations, only **off-street** Parking Lots/Garages which are **publicly accessible** and offer **short-term parking** were included in this assessment.



At each location, ground agents captured **pictures** of the lot/garage **entrance**, **structure type**, **rate boards**, **payment machines** etc. Each image was geocoded and time stamped to ensure consistency of location and record the exact time taken.

• Note: where taking pictures was prohibited or no rate board was posted, ground agents collected data directly from an employee at the location.

The data collected were compared with **screenshots** of the information on each location displayed within the publicly available consumer apps distributed by the three providers.

Methodology – Data Analysis

Strategy Analytics compared the ground truth data collected, with the data presented within each parking provider's app. The **completeness** and **accuracy** of the data was assessed on two metrics: **coverage** and **location details**.

These metrics are defined as:

Metric	Definition
Coverage	How complete and accurate is the list of parking locations within each GTT zone in the provider's database?
Details	 How complete and accurate are the following details for each of the locations listed? Address; Name; Operator; Paid Hours; Prices; Surface Type; Height; Payments Accepted; Parking Restrictions

These assessment criteria were selected for the following reasons:

- In the opinion of Strategy Analytics, these metrics represent the **key criteria that consumers use** to determine the quality of information provided within a parking app.
- These metrics are **comparable** across all providers.
- These metrics can be **independently verified** on the ground.

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Methodology – Calculations

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Coverage Accuracy (weighted as 50% of overall score) was calculated as follows:

Note: Individual city calculations and the overall calculation were arrived at using the same methodology

Metric 1: Coverage Accuracy	Item	Definition
(weighted as 50% of overall score)	Number of Actual Locations	Actual Number of Locations within Area Boundary (i.e. within GTT)
(Number of Correctly Identified Locations – (Number of Missing	Number of Correctly Identified Locations	Number of locations listed within provider database
Locations + Number of Locations Listed in Error))	Number of Missing Locations	Number of valid locations that were missing from provider database
Number of Actual Locations	Number of Invalid Locations	Number of invalid locations listed within provider database (e.g. locations that have closed down)

Details Accuracy (weighted as 50% of overall score) was calculated as follows:

	Step 1	Step 2		Step 3
Information each of the evidenc assessme	n displayed within each provider's app for nine attributes assessed is scored against se obtained directly from ground truth ent. Each data point is scored as follows:	For each of the nine attributes assessed, an "Accuracy Score" was calculated as follows:	Accuracy Scores for the (equal weighting) to de for Details Accu	e nine attributes were aver termine a final "Overall So uracy for each provider
Score = 1	Data in provider database fully accurate	Sum of Field Scores for All Valid Locations within GTT	Overall	Address Score; Name Sco Operator Score; Paid Hou
Score = 0.5	Data in provider database partially accurate	Total Number of Observations	Details Accuracy	Score; Prices Score; Surfa Type Score; Height Score
Score = 0	Data missing from provider database		Score	Parking Restrictions Sco
Score = -1	Data in provider database inaccurate			

Note: In the case of some attributes, **negative scores** are reported for some providers. This occurs when a provider has more inaccurate data than accurate data in its database for that attribute.

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Ground Truth Testing Results

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Results – Overall Summary (10 cities)



Coverage Results

Total Number of Actual Locations	250	250	250
Number of Correctly Identified Locations	249	239	191
Number of Missing Locations	1	11	59
Number of Locations Listed in Error	15	21	6
Total Net Valid Locations	234	218	185
Metric 1: Overall Coverage Accuracy	94%	87%	74%

Address	98%	87%	58%
Name	99%	59%	32%
Operator	94%	73%	10%
Paid Hours	88%	48%	18%
Prices	85%	9%	0%
Surface Type	98%	67%	64%
Height	91%	75%	0%
Payments Accepted	72%	-25%	0%
Parking Restrictions	94%	12%	0%
Metric 2: Overall Details Accuracy	91%	45%	20%

- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall.
- Parkopedia scored **92%** in this assessment, compared to **66%** for Inrix and **47%** for Google.
- Parkopedia ranked #1 for **coverage**. Out of 250 actual locations, Parkopedia listed 249, versus 239 for Inrix and 191 for Google.
 - Parkopedia also listed 15 invalid locations, versus 21 for Inrix and 6 for Google.
- Parkopedia also ranked #1 for details. Parkopedia scored higher than Inrix and Google for all nine detail metrics, scoring an average of 91%, versus 45% for Inrix and 20% for Google.
 - Parkopedia scored significantly higher than competitors on key metrics such as prices, payments accepted and parking restrictions.
 - In fact, Inrix was found to present more inaccurate information than no information at all for payments accepted (-25%), inevitably a high source of frustration for any user.
- Further details of these results broken down by city are included on the following slides.

Results – Charlotte, NC

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City: Charlotte, NC	Parkopedia	Inrix	Google
Overall Score	94%	74%	55%
Coverage Results			
Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	25	21
Number of Missing Locations	0	0	4
Number of Locations Listed in Error	0	0	1
Net Valid Locations	25	25	20
Metric 1: Coverage Accuracy	100%	100%	80%

Address	92%	84%	81%
Name	86%	55%	61%
Operator	96%	80%	24%
Paid Hours	92%	80%	14%
Prices	86%	48%	0%
Surface Type	100%	28%	62%
Height	100%	76%	0%
Payments Accepted	44%	-68%	0%
Parking Restrictions			
Metric 2: Details Accuracy	87 %	48 %	30%



- **Charlotte** is the third-fastest-growing major city in the US. It is noted for its significantly busy streets and high demand for parking.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Charlotte, NC, scoring 94%.
- Specifically, Parkopedia also ranked **#1 for details** in Charlotte. Scoring 87%, this was almost three times the score of Google (30%).
- While Inrix reported significantly more inaccurate information relating to payments accepted, than none at all (-68%), Google was missing data for 3/8 features included in the analysis for this GTT.

Results – Chicago, IL

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City: Chicago, IL	Parkopedia	Inrix	Google
Overall Score	87%	65%	57%

Coverage Results

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	24	23	23
Number of Missing Locations	1	2	2
Number of Locations Listed in Error	2	4	3
Net Valid Locations	22	19	20
Metric 1: Coverage Accuracy	88%	76%	80%

Address	100%	100%	83%
Name	100%	90%	33%
Operator	100%	100%	30%
Paid Hours	100%	100%	78%
Prices	50%	-35%	0%
Surface Type	92%	13%	83%
Height	88%	74%	0%
Payments Accepted	75%	-30%	0%
Parking Restrictions	67%	67%	0%
Metric 2: Details Accuracy	86 %	53%	34%



- **Chicago** is the third most populous city in the United States and is consequently a very dense city where parking is expensive.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Chicago, IL, scoring 87%.
- Parkopedia ranked **#1 for both coverage** and **details** in Chicago.
- Parkopedia scored 86% overall for the accuracy of detailed information provided, more than twice the score of Google in this category.
- Parkopedia scored significantly higher than competitors for prices and payments accepted, key parking metrics. In fact Inrix provided more inaccurate information for both these features than no information at all.
- Google completely missed data for 4/9 features listed.

Results – Dallas, TX

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City: Dallas, TX	Parkopedia	Inrix	Google
Overall Score	90%	70%	31%

Coverage Results

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	23	10
Number of Missing Locations	0	2	15
Number of Locations Listed in Error	3	2	0
Net Valid Locations	22	21	10
Metric 1: Coverage Accuracy	88%	84%	40%

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92%	100%	60%	
100%	45%	0%	
100%	96%	20%	•
100%	78%	20%	
100%	24%	0%	
100%	83%	90%	•
100%	100%	0%	•
44%	-30%	0%	
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- **Dallas** is the third largest city in Texas. It has an extensive and established tourist industry. Parking is expensive and in high-demand.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Dallas, TX, scoring 90%.
- Parkopedia ranked **#1 for both coverage** and **details** in Dallas.
- Parkopedia provided 100% accurate information for 7/9 parking features, including name, operator, paid hours, prices, surface type, height and parking restrictions. However Inrix was rated more accurate than Parkopedia for address.
- Inrix provided more inaccurate information for payments accepted (-30%) ٠ than no information at all, while Google was missing data for 5/9 features listed.

Results – Houston, TX

City: Houston, TX	Parkopedia	Inrix	Google
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Overall Score	92%	69%	59%
Coverage Results			

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	24	22
Number of Missing Locations	0	1	3
Number of Locations Listed in Error	2	3	0
Net Valid Locations	23	21	22
Metric 1: Coverage Accuracy	92%	84%	88%

Summary Details Results

Address	92%	83%	73%
Name	100%	95%	78%
Operator	84%	83%	23%
Paid Hours	92%	38%	9%
Prices	90%	31%	0%
Surface Type	100%	58%	59%
Height	92%	83%	0%
Payments Accepted	92%	-33%	0%
Parking Restrictions			
Metric 2: Details Accuracy	93%	55%	30%



- **Houston** is the largest city in the state of Texas. It has more than 100,000 parking spaces downtown, the vast majority of which are surface parking lot and garage spaces.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Houston, TX, scoring 92%.
- Parkopedia ranked **#1 for both coverage** and **details** in Houston.
- Parkopedia was found to be most accurate for name and surface type, and significantly more accurate than competitors for prices and paid hours. Neither Inrix nor Google scored 100% accuracy for any one feature in Houston.
- Inrix provided more inaccurate information for payments accepted (-30%) than no information at all.

Results – Las Vegas, NV

City: Las Vegas, NV	Parkopedia	Inrix	Google
Overall Score	93%	70%	37%

Coverage Results

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	25	14
Number of Missing Locations	0	0	11
Number of Locations Listed in Error	3	2	0
Net Valid Locations	22	23	14
Metric 1: Coverage Accuracy	88%	92%	56%

Address	100%	68%	14%
Name	100%	91%	69%
Operator	96%	88%	-21%
Paid Hours	100%	92%	21%
Prices	100%	14%	0%
Surface Type	100%	76%	71%
Height	96%	80%	0%
Payments Accepted	96%	-71%	0%
Parking Restrictions	100%	0%	0%
Metric 2: Details Accuracy	99%	49%	17%



- Las Vegas, is an internationally renowned major resort city.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Las Vegas, NV, scoring 93%.
- Parkopedia ranked **#1 for details** in Las Vegas.
- Parkopedia scored 100% accuracy for 6/9 features and 96% accuracy for the remaining 3 (operator, height and payments accepted). Neither Inrix nor Google scored 100% accuracy for any one parking feature.
- In fact, Inrix provided significantly more inaccurate information for payments accepted (-71%) than no information at all, while Google provided more inaccurate information for operator (-21%), than none at all.

Results – Los Angeles, CA

City: Los Angeles, CA	Parkopedia	Inrix	Google
Overall Score	98%	55%	39%

Coverage Results

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	22	19
Number of Missing Locations	0	3	6
Number of Locations Listed in Error	1	6	1
Net Valid Locations	24	16	18
Metric 1: Coverage Accuracy	96%	64%	72%

Summary Details Results

Address	100%	73%	32%
Name	100%	61%	10%
Operator	96%	45%	-11%
Paid Hours	96%	-2%	-11%
Prices	100%	25%	0%
Surface Type	100%	91%	37%
Height	100%	100%	0%
Payments Accepted	100%	27%	0%
Parking Restrictions	100%	0%	0%
Metric 2: Details Accuracy	99%	47%	6%



- Los Angeles is the largest city in California and second largest city in the United States. The city has a high vehicle density.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Los Angeles, scoring 98%.
- Parkopedia ranked **#1 for both coverage** and **details** in Los Angeles. Scoring 96% and 99% respectively, this was the highest score for any app included in the analysis.
- Parkopedia scored 100% accuracy for 7/9 features and 96% accuracy for the remaining two (operator and paid hours).
- Google's accuracy for all features was particularly low its highest accuracy score was 37% for surface type. Furthermore, for paid hours, both Inrix and Google supplied more inaccurate information than none at all.

Results – New York, NY

City: New York, NY	Parkopedia	Inrix	Google
Overall Score	87%	62%	59%

Coverage Results

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	25	24
Number of Missing Locations	0	0	1
Number of Locations Listed in Error	0	2	0
Net Valid Locations	25	23	24
Metric 1: Coverage Accuracy	100%	92%	96%

Summary Details Results

Address	100%	100%	58%
Name	100%	-44%	0%
Operator	92%	36%	13%
Paid Hours	52%	20%	21%
Prices	30%	-32%	0%
Surface Type	100%	60%	100%
Height	56%	24%	0%
Payments Accepted	52%	36%	0%
Parking Restrictions	84%	88%	0%
Metric 2: Details Accuracy	74%	32%	21%



- **New York** is the most densely populated city in the United States.
- Parkopedia ranked #1 of the parking apps assessed for **accuracy and completeness overall**, for GTT in New York, NY. Scoring 87% overall, this is a significant result for one of the most dynamically changing parking landscapes globally.
- Parkopedia ranked **#1 for both coverage** and **details** in New York.
- Parkopedia scored 74% overall for the accuracy of detailed information provided, more than twice the score of Inrix and three times the score of Google in this category.
- Inrix provided more inaccurate information for name (-44%) and prices (-32%) than none at all, while Google was missing information completely for 5/9 features.

Results – Phoenix, AZ

City: Phoenix, AZ	Parkopedia	Inrix	Google
Overall Score	9 5%	69%	51%

Coverage Results

Actual # Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	24	21
Number of Missing Locations	0	1	4
Number of Locations Listed in Error	1	1	0
Net Valid Locations	24	23	21
Metric 1: Coverage Accuracy	96%	92%	84%

Summary Details Results

Address	100%	92%	81%
Name	100%	67%	27%
Operator	88%	79%	-5%
Paid Hours	96%	54%	14%
Prices	100%	-4%	5%
Surface Type	92%	83%	33%
Height	92%	83%	0%
Payments Accepted	84%	-38%	0%
Parking Restrictions	100%	-11%	0%
Metric 2: Details Accuracy	95%	45%	17%



- **Phoenix** is the fifth-most populous city in the United States and the only state capital with a population of more than one million residents.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Phoenix, AZ, scoring 95%.
- Parkopedia ranked **#1 for both coverage** and **details** in Phoenix.
- Parkopedia scored 84% or more for the accuracy of each feature listed and 100% accuracy for 4/9 features listed.
- Variations in accuracy were particularly noticeable for prices, payments accepted and parking restrictions, with Parkopedia scoring significantly higher than its competitors. In fact, Inrix provided more inaccurate information for these three features than none at all.
- Google provided more inaccurate information for operator and missed information for 3/9 features.

Results – San Diego, CA

City: San Diego, CA	Parkopedia	Inrix	Google
	02%	6594	420/
Overall Score	93%	65%	42%

Coverage Results

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	24	18
Number of Missing Locations	0	1	7
Number of Locations Listed in Error	3	1	0
Net Valid Locations	22	23	18
Metric 1: Coverage Accuracy	88%	92%	72%

Summary Details Results

Address	100%	75%	33%
Name	100%	65%	6%
Operator	100%	71%	22%
Paid Hours	100%	75%	17%
Prices	100%	-38%	0%
Surface Type	92%	75%	39%
Height	92%	77%	0%
Payments Accepted	100%	-17%	0%
Parking Restrictions	100%	-50%	0%
Metric 2: Details Accuracy	98%	37%	13%



- **San Diego** is the second most populous in California, but does not suffer the same traffic problems that are typical of big cities.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in San Diego, CA, scoring 93%.
- Parkopedia ranked **#1 details** in San Diego.
- Parkopedia scored 100% accuracy for 7/9 features listed and 92% for the remaining two (surface type and height).
- Variations in accuracy were particularly noticeable for prices, payments accepted and parking restrictions, with Parkopedia scoring significantly higher than its competitors. In fact, Inrix provided more inaccurate information for these three features than none at all.
- Google missed information completely, for 4/9 features.

\$10



Results – Washington, DC

City: Washington, DC	Parkopedia	Inrix	Google
Overall Score	92%	67%	46%

Coverage Results

Actual #Locations within Boundary	25	25	25
Number of Correctly Identified Locations	25	24	19
Number of Missing Locations	0	1	6
Number of Locations Listed in Error	0	0	1
Net Valid Locations	25	24	18
Metric 1: Coverage Accuracy	100%	96%	72%

Summary Details Results

Address	100%	92%	68%
Name	100%	67%	38%
Operator	84%	50%	5%
Paid Hours	56%	-50%	-5%
Prices	90%	58%	0%
Surface Type	100%	100%	68%
Height	92%	50%	0%
Payments Accepted	36%	-25%	0%
Parking Restrictions	100%	0%	0%
Metric 2: Details Accuracy	84%	38%	19%



- Washington DC is the capital city of the US and home to some of the most prominent government buildings. It is a busy city attracting around 22 million visitors a year in addition to its own inhabitants.
- Parkopedia ranked #1 of the parking apps assessed for accuracy and completeness overall, for GTT in Washington DC, scoring 92%.
- Parkopedia ranked **#1 for both coverage** and **details** in Washington.
- Parkopedia was found to be most accurate for address, name, surface type and parking restrictions, and significantly more accurate than competitors for paid hours and payments accepted. Google's highest score for accuracy for any one feature was 68% (address and surface type).
- Inrix provided more inaccurate information for paid hours (-50%) and payments accepted (-25%) than no information at all. Google provided more inaccurate information for paid hours and missed information for 4/9 features.



Ground Truth Testing Concluding Insights

Concluding Insights





This report is designed as an independent evaluation of the accuracy and availability of the parking details for three apps: Parkopedia, Inrix and Google.

To support these activities, Strategy Analytics undertook an independent assessment of three apps based on analysis of data gained via ground truth testing. After completing this assessment, Strategy Analytics has independently verified the following statements:

Parkopedia offers the most complete, detailed and accurate parking information when compared to equivalent parking apps from Inrix and Google

- □ Parkopedia has the **most complete coverage** of the providers assessed.
- Parkopedia provides the most accurate details about parking locations of the providers assessed.
- Parkopedia was ranked #1 overall in 10 out of 10 of the cities included in this assessment.

Project Team







Report Prepared by:

- Kevin Nolan
 - -VP, User Experience Practice
 - -+44 (0)1908 423609
 - -knolan@strategyanalytics.com



·Diane O'Neill

- -Director, UXIP Projects Europe
- -+44 (0)1908 423669
- -doneill@strategyanalytics.com

Project Contributors:

Roger Lanctot

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•

- Director, Global Automotive Practice
- +1 617 614 0714
- <u>rlanctot@strategyanalytics.com</u>
- Chris Schreiner
 - Director, UX Syndicated Research
 - +44 1908 423616
 - <u>cschreiner@strategyanalytics.com</u>
 - Sylvia McCafferty
 - Business Development Manager
 - +44 (0) 7711 005926
 - <u>smccafferty@strategyanalytics.com</u>



Appendix

Parking Apps – Location Detail – Parkopedia, Inrix ParkMe and Google Maps









Charlotte is the third-fastest-growing major city in the United States. The streets are busy. **Charlotte has no grid system for streets**, which makes the use of GPS and the accuracy of data imperative to drivers.

Parking in uptown Charlotte is cheaper than parking in the downtown area and parking is widespread. The cost of meter parking ranges from \$0.25/15 minutes to \$0.50/hour.

Parking, in general, is not problematic in Charlotte. But its street names tend to change, seemingly for no reason. For example, 'Sharon Road' becomes 'Sharon Lane' before it becomes 'Sharon Amity'. There are numerous examples and drivers must be aware that they have not made a wrong turn.





Chicago is the third-most populous city in the US, following New York City and Los Angeles. Consequently, it is a very dense city and parking is expensive. Most metered parking in Chicago ranges from \$2 per hour in areas outside the Loop and Central Business District. Charges increase to \$4.50 per hour in the Central Business District and up to \$7 per hour in the Loop.

Chicago parking lots and street parking are (generally) cheaper the further away they are from the Loop and Near North.

Knowledge is power, which is why accuracy in parking apps is so important. In a difficult city like Chicago, knowing that there are better and cheaper places to park – for example in Greektown and the West Loop and then walking, taxi or bus to a destination – will save drivers a lot of money.





Dallas is the third-largest city in Texas. It has an extensive and established tourist industry. Parking is expensive, in high demand and in general, there is not enough of it in Downtown.

Downtown Dallas has on-street parking meters, which are enforced Mon-Sun, 7am-6pm, with a maximum stay of 2-4 hours. Prices range between \$0.50-\$2.00/hour.

Dallas hosts numerous events and so travellers and locals will descend to downtown Dallas during peak hours. There are lots of multi-level garages, street parking and surface parking lots, but due to the volume of cars wanting to park, being well informed about downtown Dallas via accurate parking information *before travelling*, is imperative.





Houston is the largest city in the state of Texas. It has more than 100,000 parking spaces downtown: 2,200 on-street, 24,000 surface parking lot spaces and 75,000 garage spaces. Downtown parking can be relatively inexpensive. While some surface lots are known to up-charge in the evenings and for special events, less-expensive and sometimes even free parking may be a short walk away – this is exactly the type of information gained through parking apps.

Most meters in downtown Houston have a 3-hour time limit. At the end of the three hours, drivers must move their car to a completely different zone (not just a different space). Payment is also by smart meters which allow payment by pay-by-phone apps. They also do not accept any form of payment if the parking space is off-limits or free at the time of parking.





STRATEGYANALYTICS

Las Vegas, is an internationally renowned major resort city, known primarily for its gambling, shopping, fine dining, entertainment, and nightlife. The 'Las Vegas Valley' as a whole serves as the leading financial, commercial, and cultural centre for Nevada.

Parking in Las Vegas is straightforward, particularly around 'The Strip'. Almost every resort on or off The Strip has its own parking garage for easy access. Whether a hotel guest or just a visitor, drivers do not struggle to find parking. While some hotels do charge relatively low rates, there are lots of free or cheap parking options – made easier to find with parking apps. Some resorts also offer to validate parking tickets if a user spends a certain amount of money with them.

GTT Zone – Los Angeles, CA







Los Angeles is the largest city in California and second-largest city in the US. The city has a relatively high vehicle density, which makes it tougher to find vacant garage spaces.

However, while LA is one of California's fastest-growing neighbourhoods, it does have plenty of parking lots and garages, many of which allow parking reservations – this allows users to know exactly where they are going to park and how much it will cost.

Los Angeles also hosts many annual events such as the Grammys, Comic-Con, and the Rose Parade. It is also home to the Los Angeles Lakers, Clippers, Dodgers, and Rams. Being able to reserve parking prior to attending these events avoids cash-only lots and expensive official venue parking prices.





STRATEGYANALYTICS

New York is the most densely populated city in the US. It has one of the most dynamically changing parking landscapes globally.

New York City has been described as the cultural, financial, and media capital of the world, significantly influencing commerce, entertainment, research, technology, education, politics, tourism, dining, art, fashion, and sports. Consequently, the influx of visitors to the city, in addition to its residents has an impact on parking.

In particular, street parking in Manhattan is not recommended because of the rules and signposting which can seem like they give conflicting information. Reserving a parking space prior to visiting is recommended to ensure parking is available and secured at the best possible price.

GTT Zone – Phoenix, AZ





Phoenix is the fifth-most populous city in the US and the only state capital with a population of more than one million residents. Like most large cities finding adequate parking can be difficult.

The Phoenix region has approximately three spaces for each of the 4 million people living in the region — or 4.27 spaces for every registered vehicle. By comparison, Los Angeles has 50 percent more parking spaces than Phoenix, but it has 100 percent more people.

Unlike other cities, Phoenix does not offer free parking in metered areas on Holidays or on Sundays. Parking apps remain a huge help in trying to secure parking in downtown Phoenix especially.

STRATEGYANALYTICS







San Diego is the eighth-most populous city in the US and second-most populous in California (after Los Angeles).

San Diego does not suffer the same traffic problems that are typical of big cities and driving is often more convenient than taking public transport. Streets laid out in a grid system make navigation easy, and traffic is milder than LA or San Francisco. San Diego city parking is efficient and reliable. While San Diego street parking is challenging due to space constraints, the availability of secure and affordable parking lots more than make up for this.

Like other cities, San Diego offers much in the way of reservable parking, making it easier to find guaranteed secure parking.





STRATEGYANALYTICS

Washington DC is the capital city of the US and home to some of the most prominent government buildings in the US. DC is a busy city and also home to many historical archives and museums, thousands of politicians and attracts nearly 22 million visitors a year.

Both street and garage parking is especially hard to find around many of the monuments and memorials and near the White House.

Most garages in downtown DC are closed overnight and on the weekends, making it essential for users to check that the garages are open when they plan to arrive/leave. It is therefore imperative that apps provide the most up-to-date information they can.