Dwell Time Analysis for National Parks

EXECUTIVE SUMMARY

- *National Park Service sought framework for visitor use and travel patterns analysis.*

- *StreetLight custom metrics captured Origin-Destination insights, with dwell-time details.*

- *Park planners and managers have an innovative data set to improve visitor-use management and community engagement.*

The National Park Service (NPS) needed to create a framework for using Big Data to study visitor activity. A Services Project from StreetLight gave Fehr & Peers and NPS new insights into how people travel and spend time within Colorado national parks.

Mission: Establish Big Data Framework

The number of visitors in national parks has grown steadily over recent decades, leading to increased demand on park resources. The National Park Service (NPS) felt that there were some gaps with traditional methods for studying visitorship, leading them to explore Big Data. NPS wanted to understand travel patterns within national parks, and how visitors were engaging with gateway communities.

This interest in Big Data prompted NPS to work with Fehr & Peers to analyze visitor activity. Although the pilot project was specific to Colorado, analysts hoped to establish a framework for applying Big Data to future NPS planning challenges.

The StreetLight team was able to adapt the custom metrics to the specific type of travel, such as long-distance and multi-stage trips, that NPS was interested in."

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FEHR PEERS

Analysis: Capture Dwell Time in Custom Metrics

Fehr & Peers worked with StreetLight to fill in the data gaps, and to quantify what NPS knew only anecdotally.

StreetLight used individual trips, with code specifically developed for the project, to derive dwell time and worked with F&P to determine which trip definitions made sense for this project. Custom dwell-time metrics looked at the elapsed time between the end of a device's trip, and the start of the next trip, in order to determine the various dwell times spent at points of interest throughout the parks.

For each of these custom metrics, StreetLight completed Origin-Destination analyses to determine the amount of time visitors were spending at different locations within the same park, and within multiple parks.

Results: Improve National Parks Management

The study provided new insights into the behavior of travelers, including the share of visitors making very short trips within national parks. Results also showed that internal trips within parks were dominated by a few destinations or by one corridor within the park — meaning that many people who travel to the park often visited only one attraction or a few attractions.

These dwell-time insights helped NPS have better grounding for visitor use management decisions, such as managing parking at points of interest.

This information will also be used to improve NPS' relationships with gateway communities, informing decisions on economic development, tourism impacts, and transportation infrastructure in these communities.
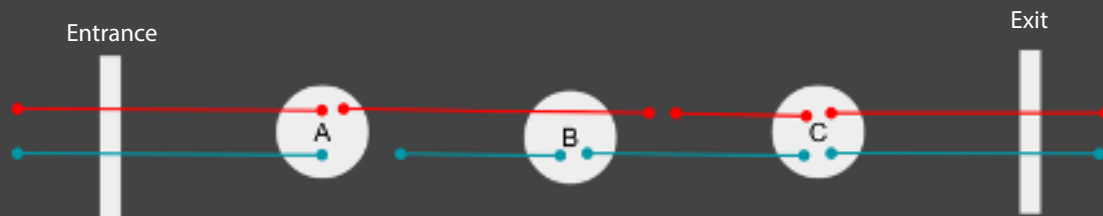
Origin and Destination Inter-Park Travel

A (Park)   B (Gateway)   C (Park)
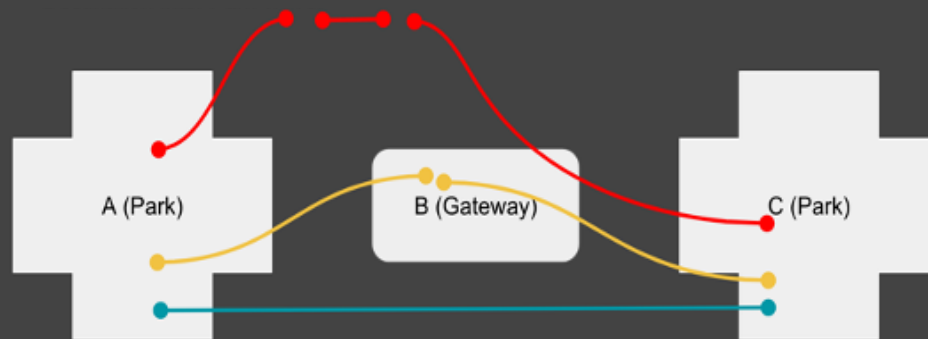
StreetLight provided inter-park Origin-Destination travel metrics.

Internal Park Sequence Metrics

*All trips take place on the same day

Entrance   A   B   C   Exit

Fehr & Peers worked with StreetLight to analyze internal park Origin and Destination travel metrics.