Analysis of a University Bike Sharing Program

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Bike Share Programs

Bike map from http://www.bikesharingmap.com/
Pictures from thechicagolifestyle.com, wikipedia.org,
www.insideindianabusiness.com, and cvilletomorrow.org
Purdue’s Bike Share Program - Zagster
How it Works

Join
$25 annually

Enter Bike #

Unlock Bike and Ride

Return Bike to Rack

Membership Options

Trips under 3 hours are FREE (6 hours on weekends)
then pay $2/hour up to $10/ride

Pricing
MEMBERSHIP FEE
$25 billed annually

Rides shorter than 3 hours are FREE (6 hours on weekends)
Bike Rack Locations

- 13 bike racks on campus
- Capacity ranges from 6-12 bikes
- Bikes secured with U-bolt, key for which is in lockbox on back of bike
The Quick Numbers

- 646 Users
- 77 Bikes
- 15K Rentals
- 22K hrs Total Duration
- 425 Most rentals by a user
- 1058 hrs Highest total duration by a user
Total rentals and duration for each bike

Bike #14 has highest rentals and duration
Hours of use by bike

Pareto chart

45 bikes
Rentals by User

User: c0733c43
425 rentals

User: 7db0a300
417 rentals

135 users had 1 rental
Rentals over the study period by top user

Count of Duration (hrs)

Number of Rentals

30 Oct
15 rentals
User on Oct 30, 2015

- Not Riding
- Riding

First rental at 03:51 AM!!

Checks back in for 8 sec
Checks back in for 19 sec
Checks back in for 15 sec
Users who check in and check out near the 3hr mark

- Rides that lasted 2.5 to 3.1 hrs
- Checked in and out within 5 mins

139 users or 21.5% of all users

9 users (1.39%) did this more than 50 times
Challenges in Implementation

GPS Fence
Unique bikes in use per day, out of 77

- Average: 28.1 (of days with use)
- Average: 22.9 (all days)

Peak usage: 52 bikes

Classes begin

Official launch

Trial period
Unique bikes rented per day and hour, out of 77
Unique bikes rented per day and hour, Aug

Classes begin
Unique bikes rented per day and hour, Sept

- Family weekend
- Best month of usage
Unique bikes rented per day and hour, Oct

Temperatures drop below 50
Unique bikes rented per day and hour, Nov

Temperatures in the 60’s F

Temperatures drop below 50 F

Snowstorm

Thanksgiving

Temperatures in the 60’s F

Temperatures drop below 50 F

Snowstorm

Thanksgiving
Cumulative plot of rental duration

- 96.9% return before 3 hrs
- 97.6% return before 3:05
- 82.5% return by 2:45
- 27% return after 16 mins

11 rentals > 24 hours
Max: 76 hours

Daily Charges

Cumulative Charges

Family weekend
Average Bikes in Use by 15-min periods since Aug. 1

- Peak use in late afternoon
- Similar usage Monday-Friday, less usage on weekends
- Bikes in use even overnight
Cumulative Days Unused by Bike since Aug. 1

Bar only shown when bike is unused for at least 7 days

- Bike ad4d85a2, up to 100 days
- Bike 26f8bcc0, up to 69 days
- Bike 1c5ded65, up to 81 days
Challenges in Implementation
Challenges in Implementation
Lessons Learned - Maintenance
Lessons Learned - Support

I cannot lock my bike

Troubleshooting

Mobile App

Using Zagster Bikes

About Zagster

Billing & Account Management

What do I do if I cannot lock my bike?

Evan

02/04/2016

1. Don’t panic

2. Refer to the troubleshooting tips below. Sometimes it simply takes another try.

3. If all else fails, please call 202-999-3924

*Whatever you do, please do not leave the bike unlocked.

Your email address *

Support Type *

Subject *

Issue Description *
Lessons Learned – Geo Fencing

GPS Fence

Current Rental

BIKE NUMBER

2120

CODE

1211407

Confirm End Rental?

Your bike must be locked to a Zagster dock before you end your rental.

No  Yes

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Future Research

• GPS data
  • Origin-destination study
  • Locate demand
  • Understand usage patterns

• Weather integration
  • Explain anomalies in usage

• User feedback surveys
Questions?

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