

Lifelenz Platform Usage Analysis based on Location



Hello!

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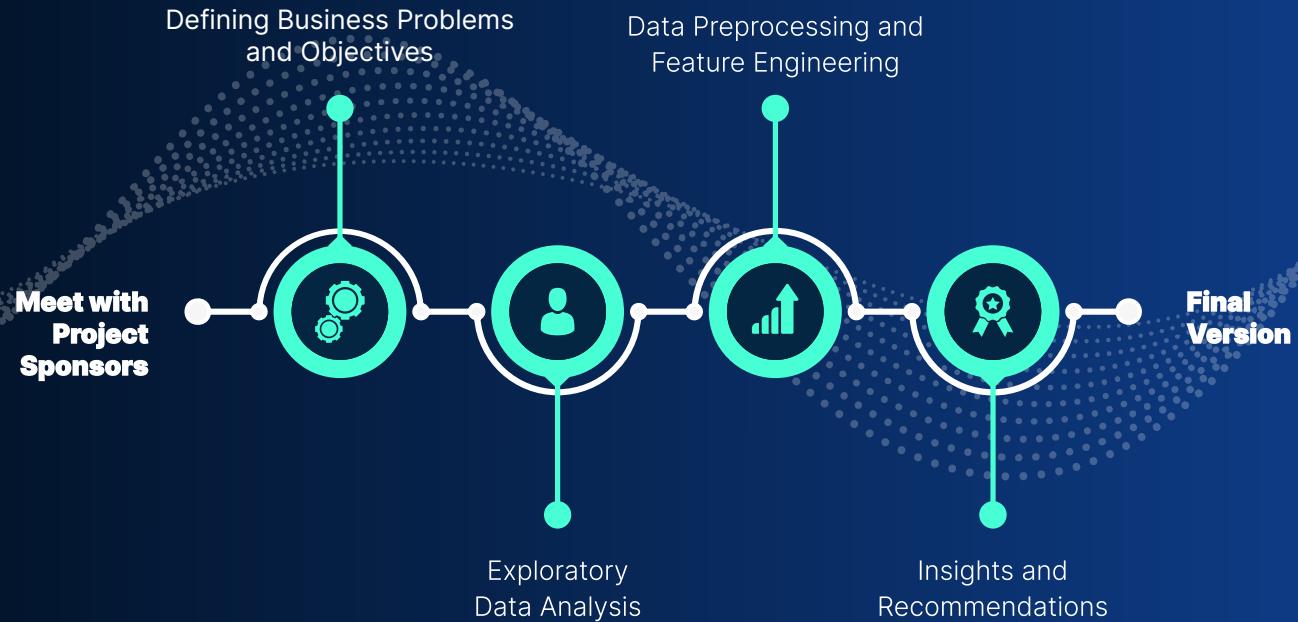
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About LifeLenz



LIFELENZ is an automated workforce and human capital management platform solving challenges related to onboarding, sales & labor forecasting, scheduling & time clock/keeping, insights & reporting and labor law compliance.

OUR TIMELINE



Business Challenges



Business Objectives

01

Location based Analysis

- Urban Vs Non-Urban
- Popular Pages and Bounce Rate Analysis
- Page Path Analysis

02

New User Retention

- Overall time spent on page
- Sessions ending with bounces
- Application usage by day

03

AOS, Corporate, and Owner

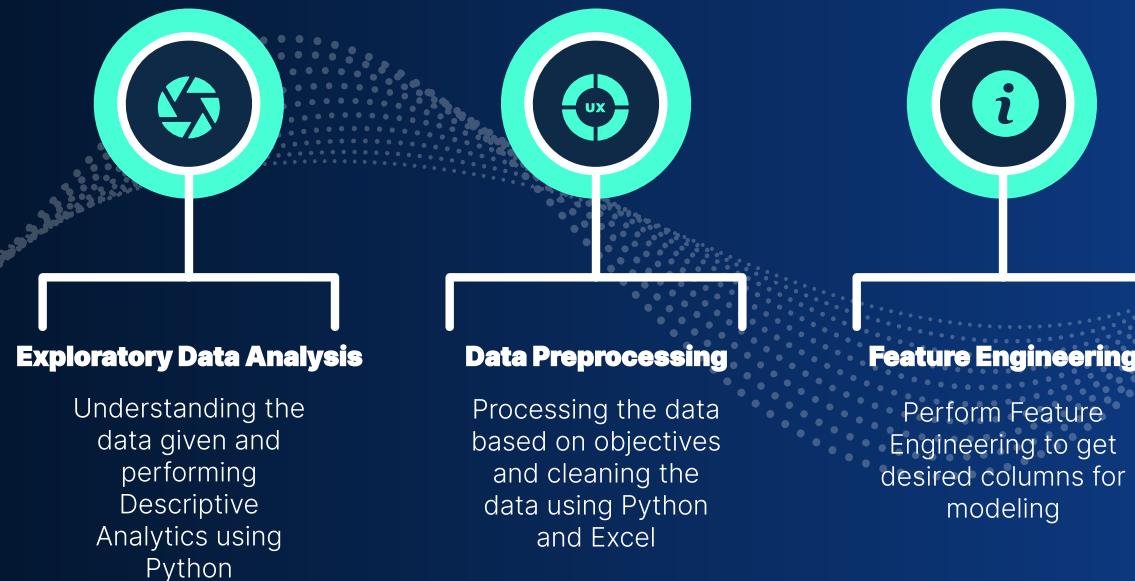
- By state numbers and
- Frequently used pages
- Time spent on pages

04

User Segmentation by Clustering

- Feature Engineering
- Determine optimal number of clusters
- Creation of proof of concept

Data Insights



Data Source



Google Analytics

Source for clickstream data

1,273,968

No. of Rows

41

No. of Columns

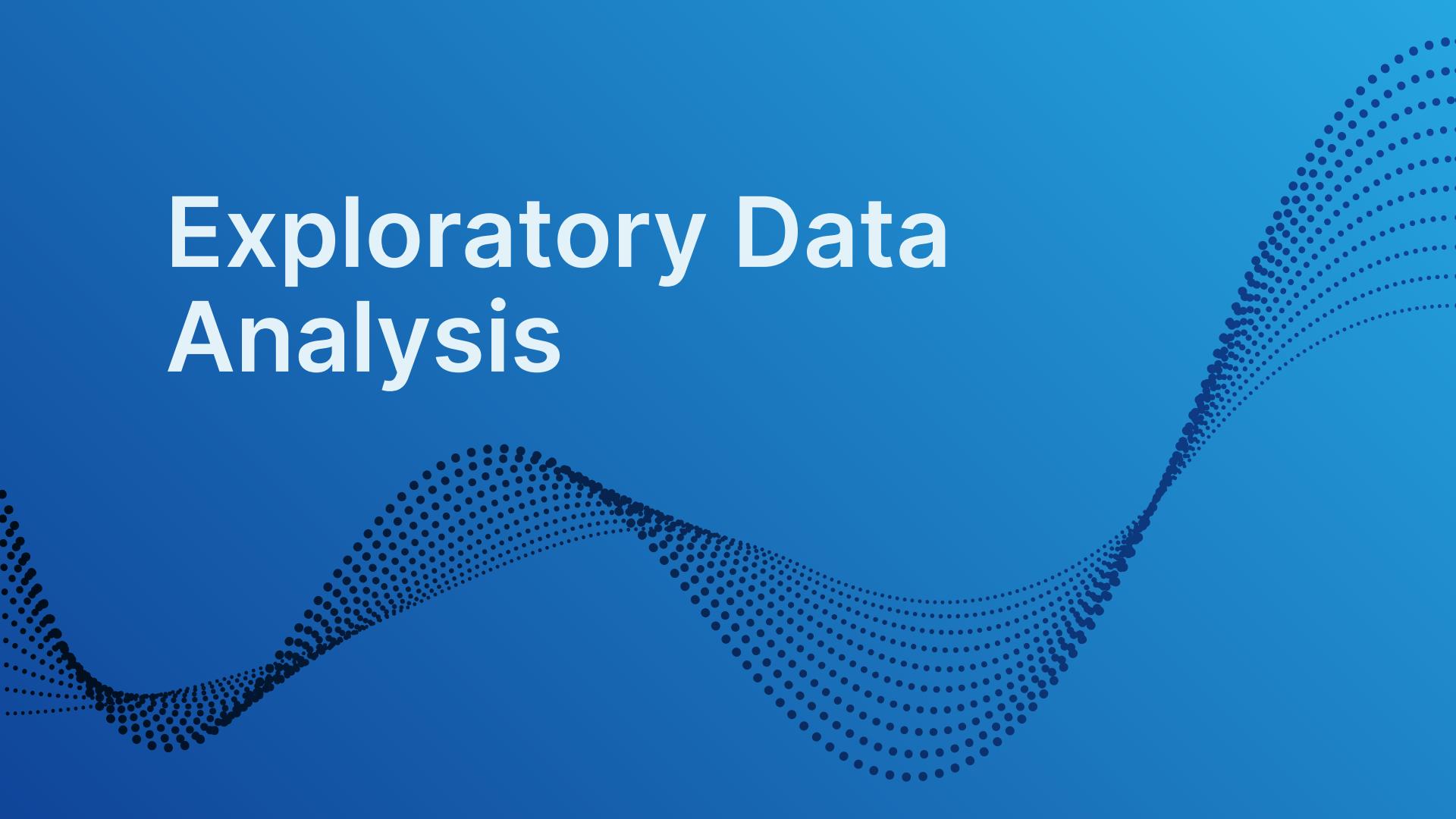
698 MB

Size of Data

Additional Data

- **AOS Scheduling Data**
 - 9 rows; 4 columns; 16 KB
- **Metadata**
 - Data dictionary for Google Analytics data
- **Population Data**
 - Auto-generated for different store locations

Exploratory Data Analysis



User Numbers

4411

Number of Unique Users (Worldwide)

3367

Number of Unique Users (US)

370

Number of Daily Visitors on Average

Session Stats

102

Avg Number of Sessions Per User

29.4

Avg Session Duration (Seconds)

0.367%

Bounce Rate

Urban Vs Non-Urban Users

	Urban	Non-Urban
Avg. No. of Sessions Per User	106	85
Bounce Rate	66.7%	33.3%

Data Preprocessing



Preliminary Processing Steps

- ***Extracting time from sl_timestamp:***
 - Extracted year, month, day, date and time to do specific analysis on the extracted variables and see variations over different periods.
- ***Feature Extraction for data merging:***
 - Extracted the values of businessUUID, location UUID, pagePathDateOfAccess, pagePathWeekDay from the variable pagePath.
- ***Replacing null pageTitle values:***
 - Filled null values in pageTitle with respective pageTitles from pagePath
- ***Downsampling dataset:***
 - Focusing on stores based within the US. Extracted the state form the regionIsoCode.

Preliminary Processing Steps (Contd)

- ***Changing the value type:***
 - Converted the variables 'continent', 'subContinent', 'country', 'region', 'metro' into categorical variables.
- ***Merged population data:***
 - After generating population data from excel, we merged it with lifelenz dataset by matching city.
- ***Characterising locations based on locations:***
 - Classified store locations as Urban and Non-Urban based on population data generated through excel.
- ***Merging AOS data:***
 - Manually merged AOS and Corporate stores by matching locationUUID

Processing Steps for Network Graph

Steps Followed:

- Filter country to United States
- Urban and Non Urban split
- Each row to contain the first page and the second page visited
- Create network visualizations to see the Page Path Trends

Original Dataset Preview

	sl_userid	sl_hitOrder	sl_hitType	sl_timeStamp	userType	sessionCount	M_bounces	browser	browserVersion	operatingSystem	...	pagePathWeekDay
0	1.033490e+09	1	Pageview	2020-07-01 06:30:00	Returning Visitor	152	0	Chrome	83.0.4103.116	Windows	...	week
1	1.033490e+09	2	Pageview	2020-07-01 06:30:01	Returning Visitor	152	0	Chrome	83.0.4103.116	Windows	...	week
2	1.033490e+09	3	Event	2020-07-01 06:30:01	Returning Visitor	152	0	Chrome	83.0.4103.116	Windows	...	week
3	1.033490e+09	4	Pageview	2020-07-01 06:30:05	Returning Visitor	152	0	Chrome	83.0.4103.116	Windows	...	day
4	1.033490e+09	5	Pageview	2020-07-01 06:30:09	Returning Visitor	152	0	Chrome	83.0.4103.116	Windows	...	day

Network Dataset Preview

	firstPage	secondPage
0	Restoring Session	Analytics
1	Analytics	Analytics
2	Analytics	Schedule
3	Schedule	Settings
4	Settings	Settings

Modeling



Modeling Idea + Data Considerations

- Segmentation of returning visitors based on platform usage
 - Implement unsupervised machine learning techniques to obtain clusters
- Considering only users located in the **United States**
- Creating a fundamental proof of concept with potential to be scaled

Data Prep for Model + Feature Engineering

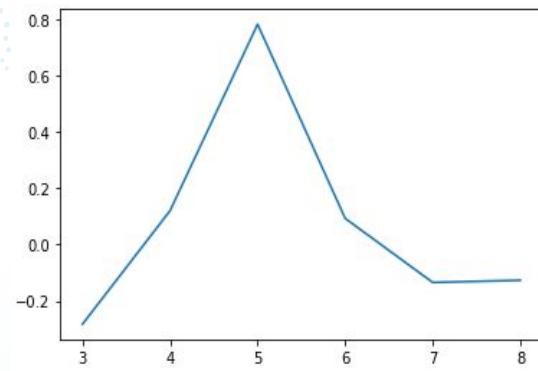
- Pivot and aggregate table to obtain data on platform usage for unique returning visitors on
 - Total No. of Days on platform within the scope of the dataset
 - No. of Visits to different pages
 - Count of different event actions taken by user
 - Avg time spent on a page
 - Total No. of Sessions on platform

Model Building Steps

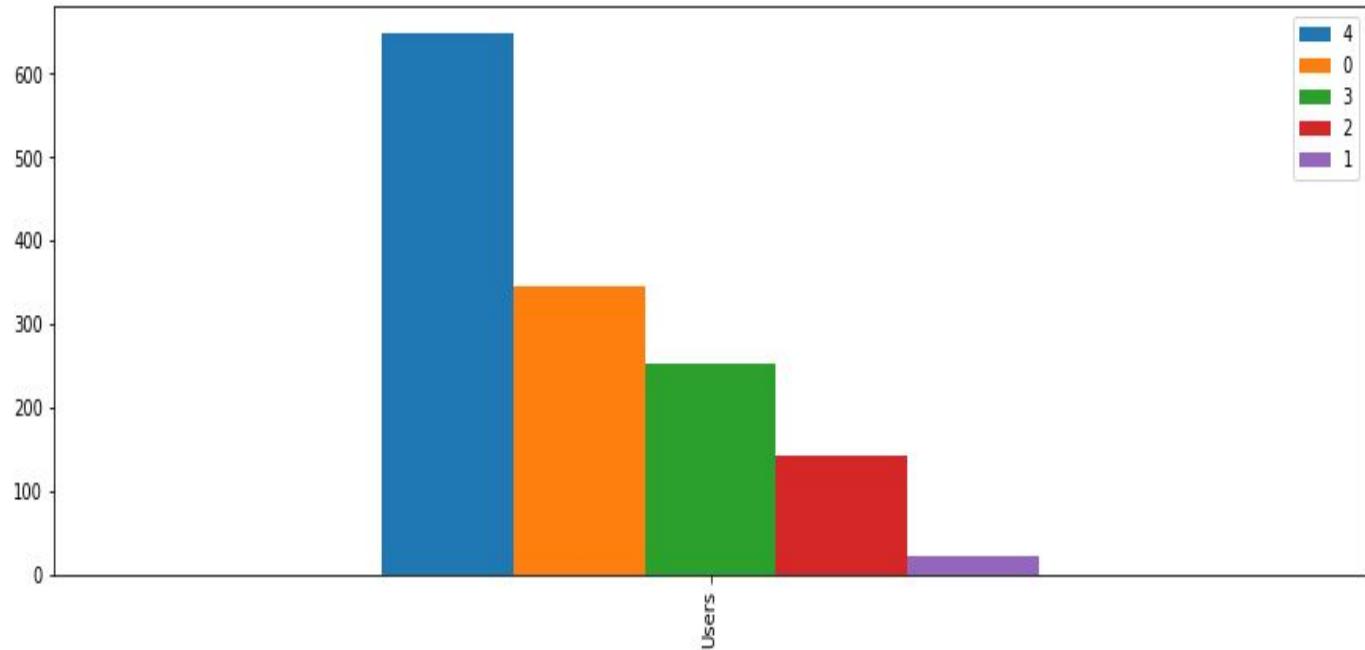
- Aggregate and obtain data on platform usage
- Convert dataframe to matrix and scale the features
- Determine optimal number of clusters with silhouette analysis
- Perform k-means clustering
- Visualize and interpret the clusters

Silhouette Analysis

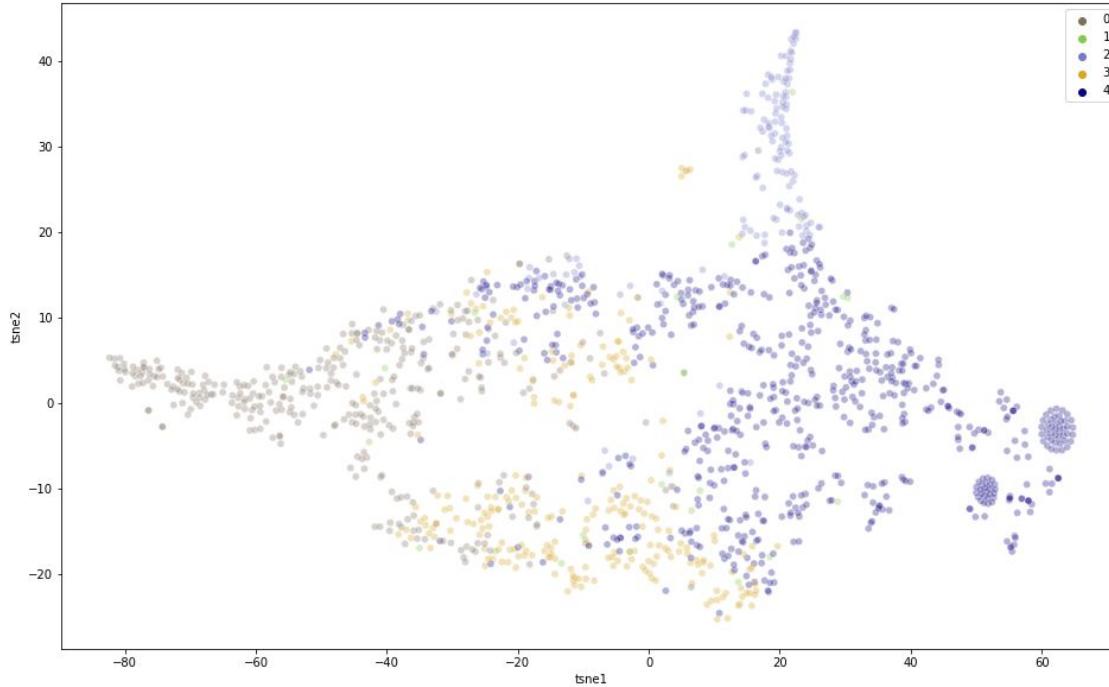
- To determine optimal number of clusters
- No. of clusters corresponding to silhouette score closest to 1 is optimal
- Obtained optimal No. of clusters as 5



Resultant Clusters



Cluster Visualization



General Analysis



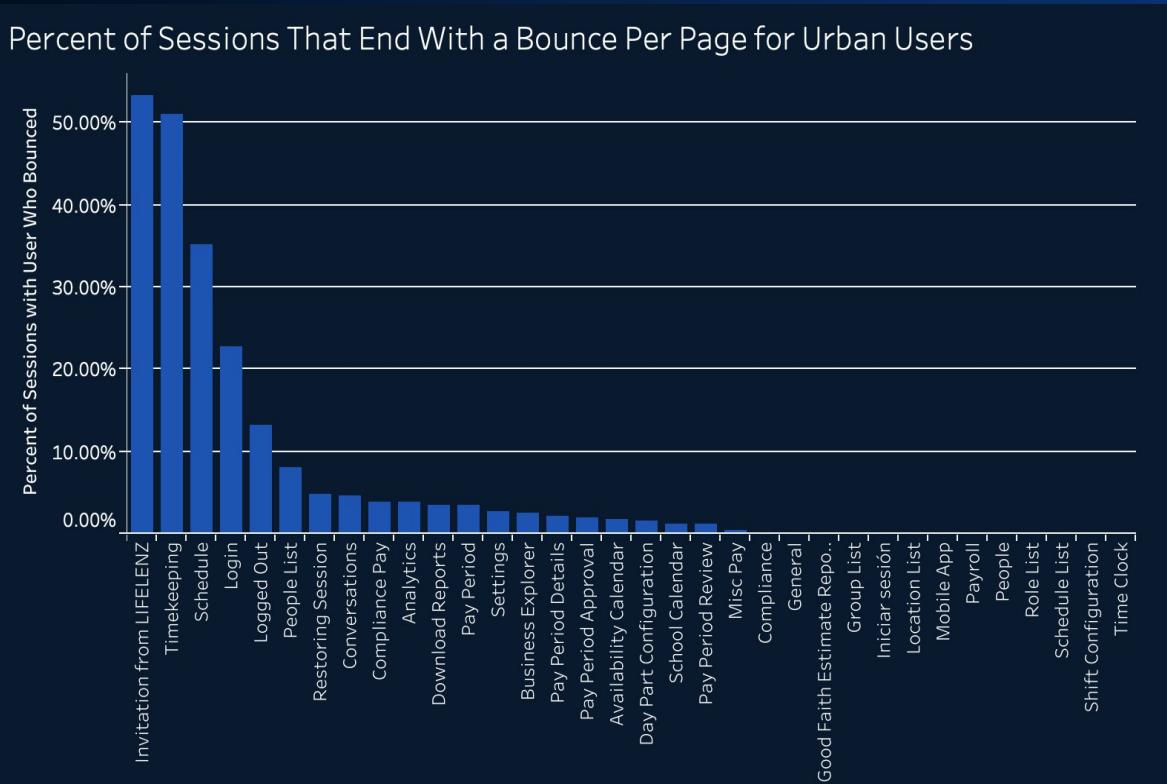
Heatmap of Time Usage

Application Usage Over Time



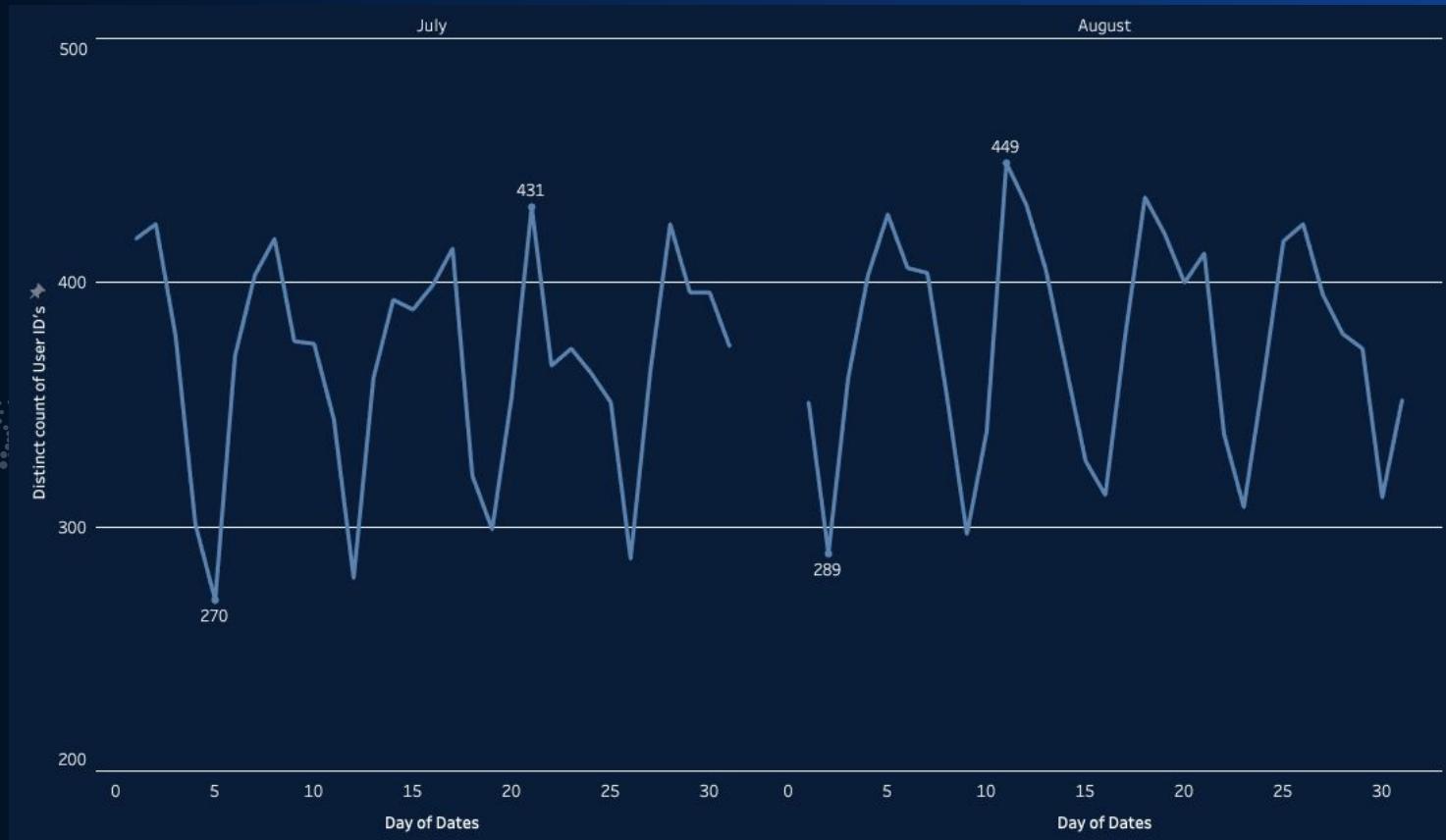
- Aggregates all data
- UTC Time Zone
- Peak: Early Tuesday
- Not Local Time

Percentage of Pages Bouncing/Session



- **Invitation page with highest bounce rate for Urban users**
- **100% Bounce Rate from Reset Password page to check email link**

Cyclical Use of Application



Maximum users log in on Wednesday



Location Based Analysis



Percentage of Unique Urban vs Non Urban Users



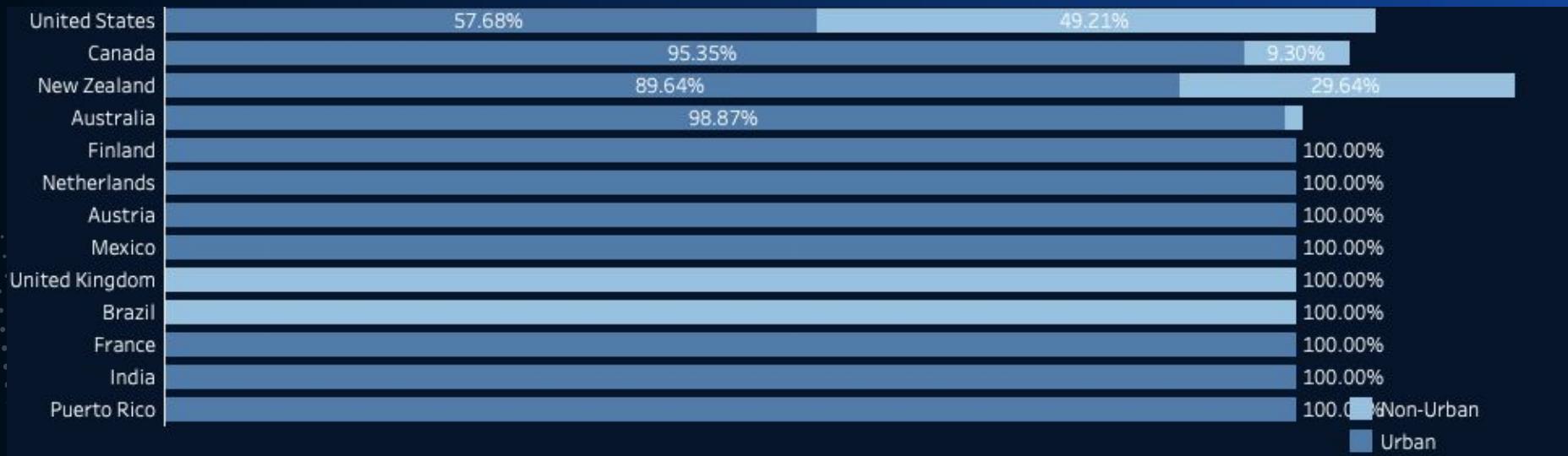
Urban Users

2919

Non Urban Users

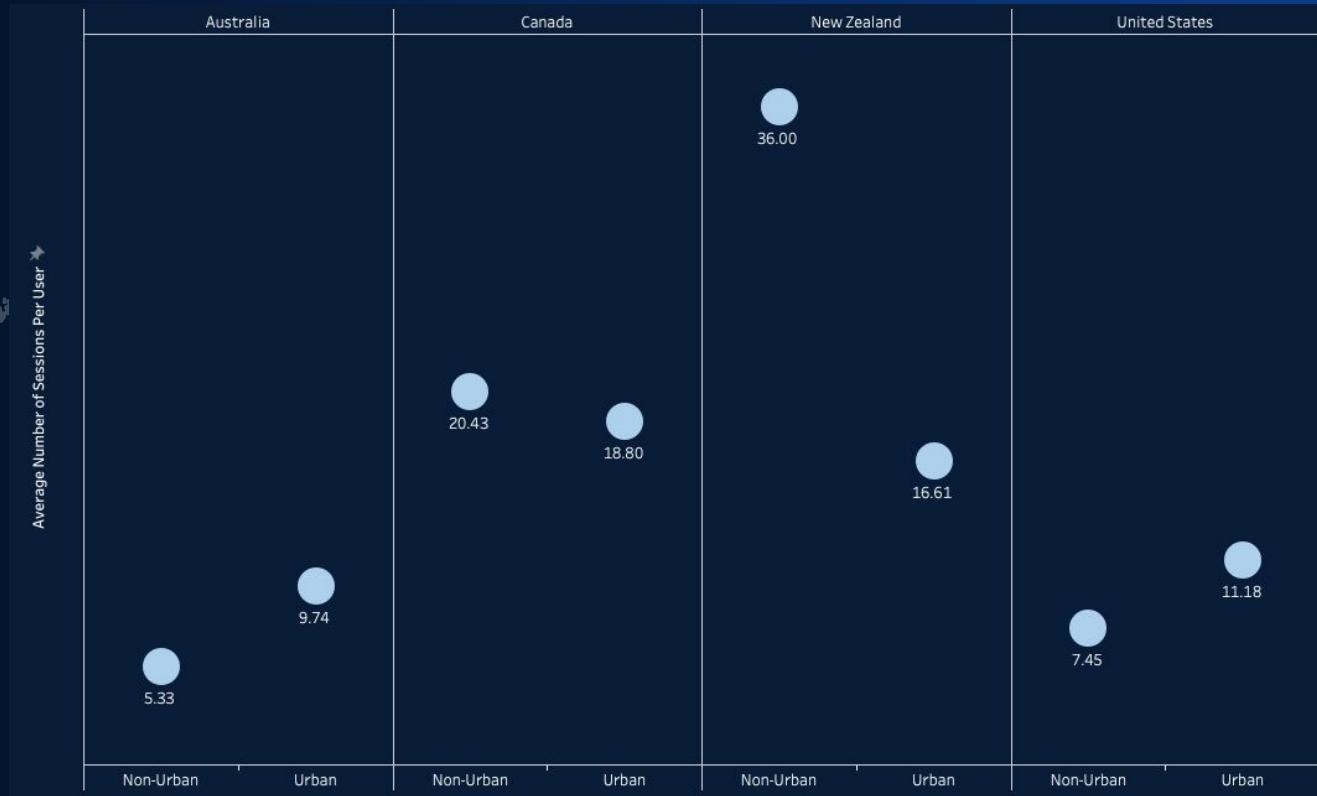
1826

More Urban Users as compared to Non Urban Users

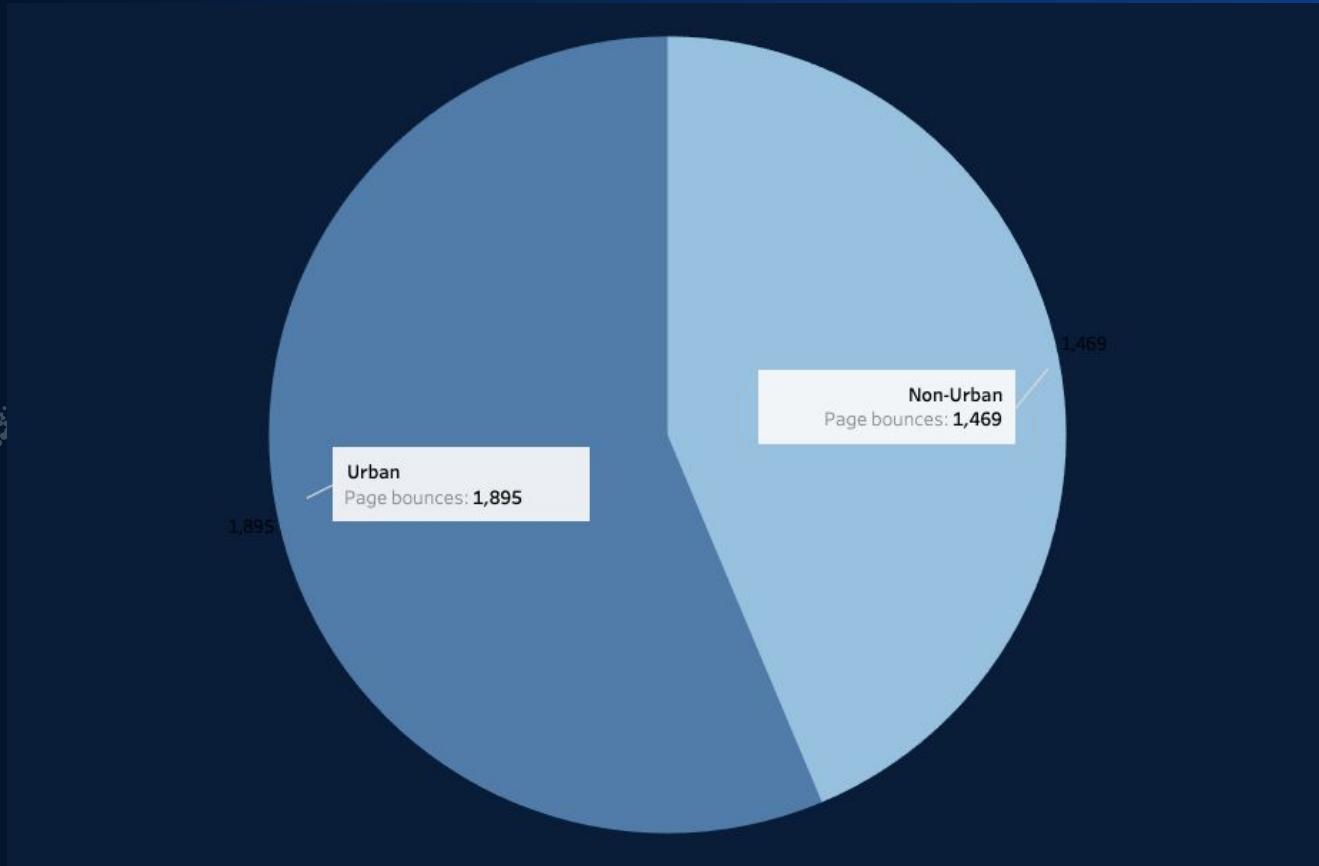


***Some areas have no
Non-Urban users***

Non Urban vs Urban Average Session Per user



Page Bounces by Users in USA



Top 10 Most Popular Pages by User Sessions in USA

- Timekeeping | LifeLenz
- Schedule | LifeLenz
- Business Explorer | LifeLenz
- Settings | Settings | LifeLenz
- Restoring Session... | LifeLenz
- People List | Settings | LifeLenz
- Analytics | LifeLenz
- Compliance Pay | LifeLenz
- Login | LIFELENZ
- Logged Out | LIFELENZ



Urban

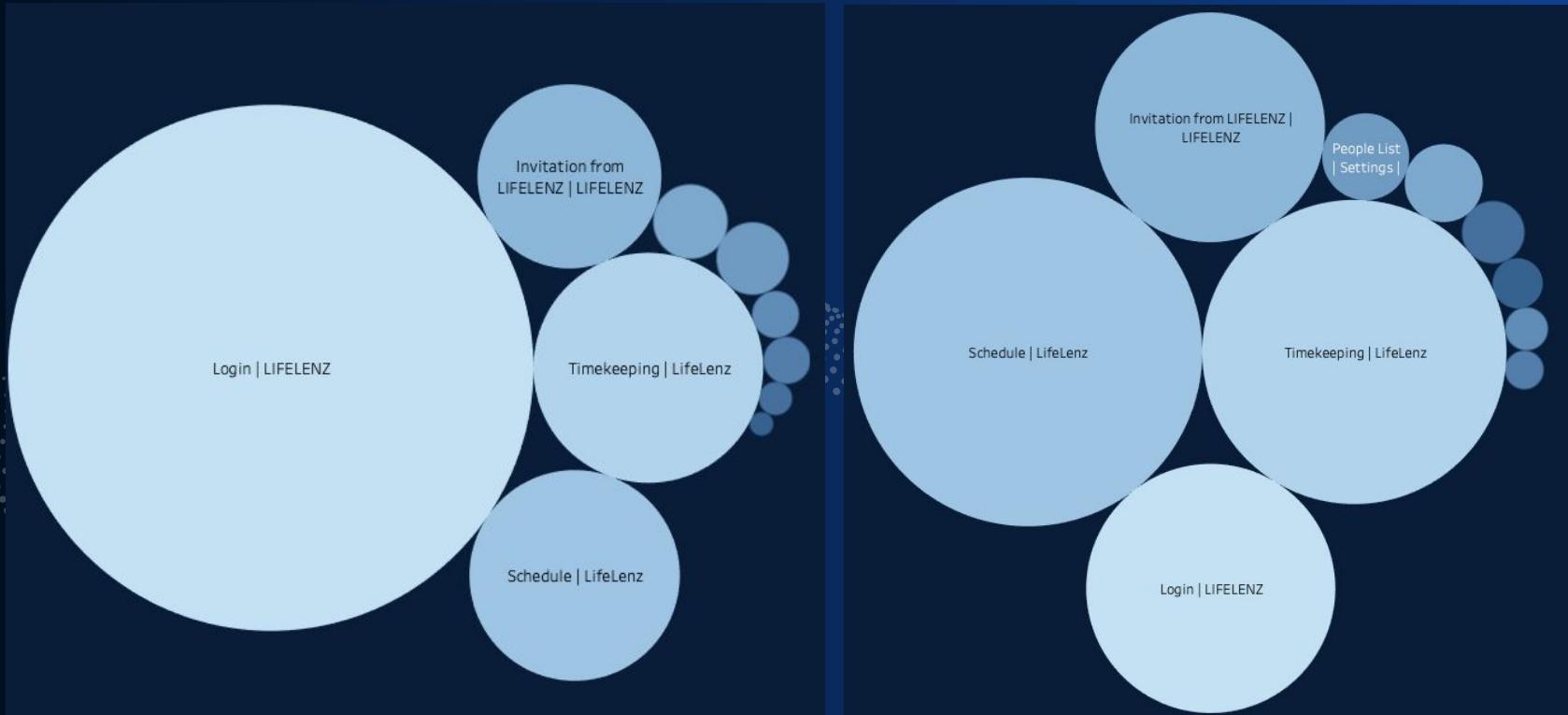
- Timekeeping | LifeLenz
- Schedule | LifeLenz
- Restoring Session... | LifeLenz
- People List | Settings | LifeLenz
- Settings | Settings | LifeLenz
- Analytics | LifeLenz
- Business Explorer | LifeLenz
- Login | LIFELENZ
- Compliance Pay | LifeLenz
- Logged Out | LIFELENZ



Non-Urban

Timekeeping and scheduling have the most user sessions for both urban and non-urban application users.

Pages with Higher Bounce Rates



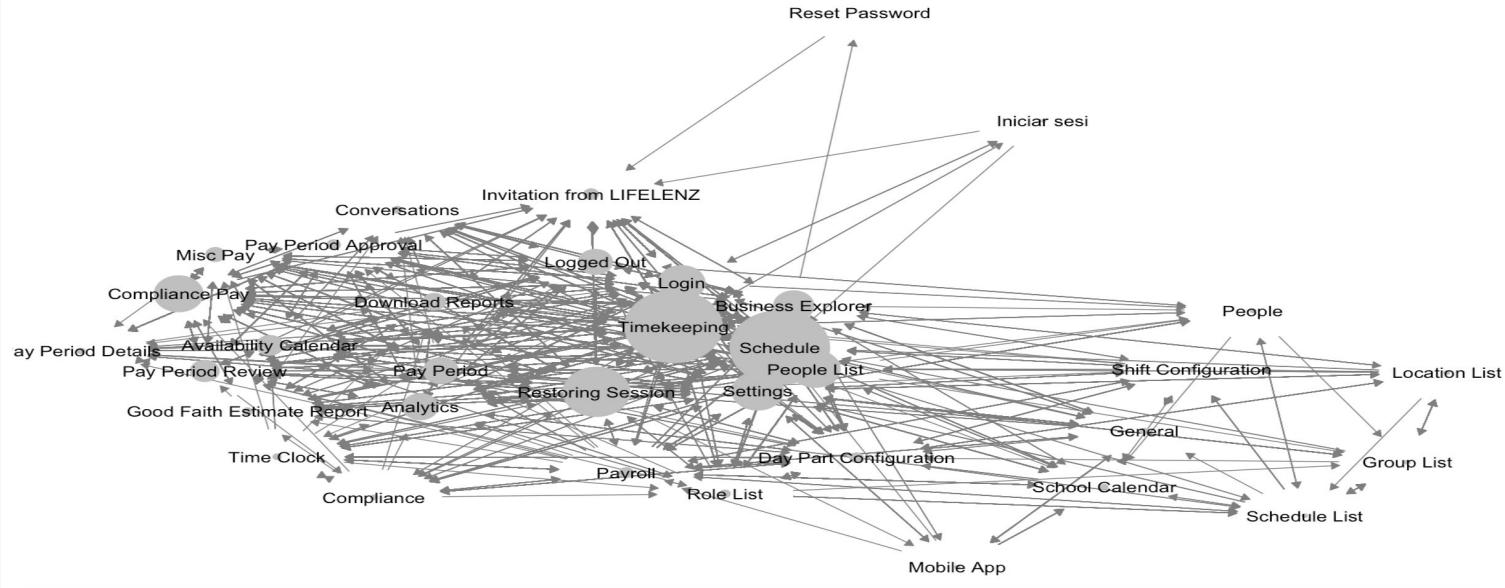
Non-Urban

Urban

Urban Network Graph

Urban App Usage Network in United States

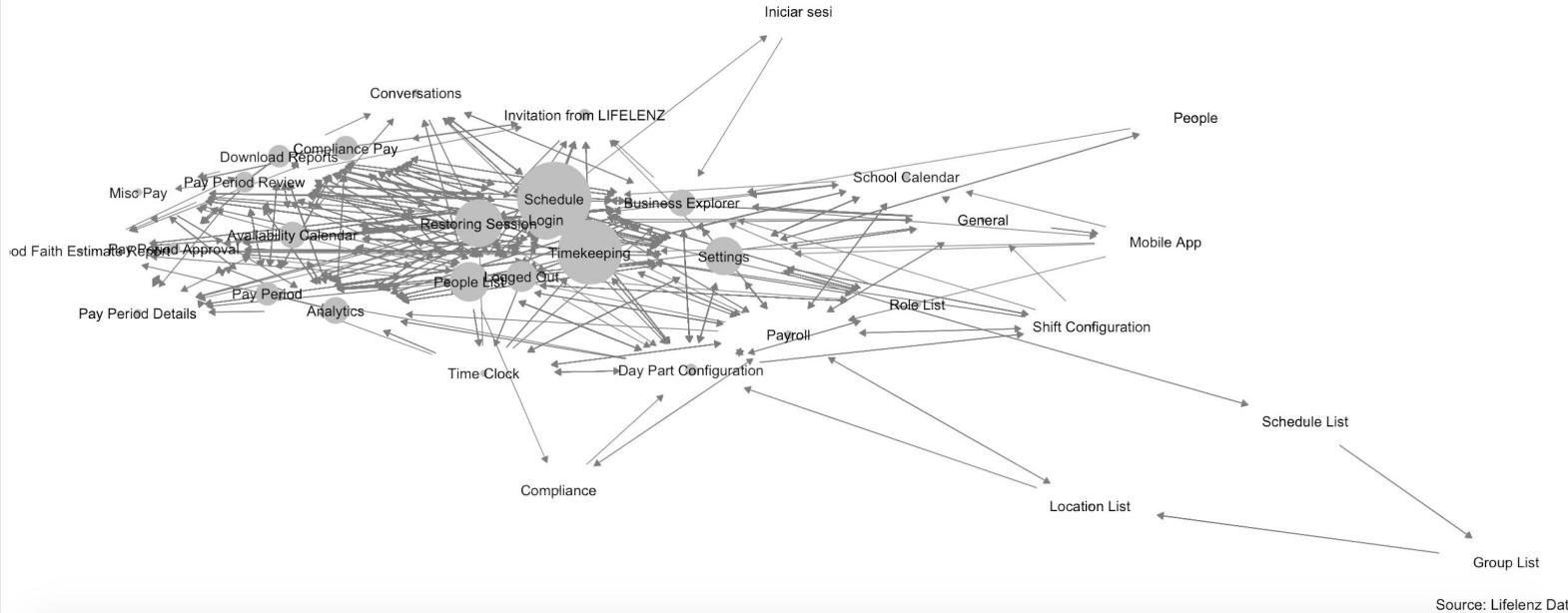
The network shows users going to and from various pages.



Non-Urban Network Graph

Rural App Usage Network in United States

The network shows users going to and from various pages.



Urban vs. Non-Urban: Page Path Analysis

Schedule Timekeeping	7552
Timekeeping Schedule	6251
Restoring Session Timekeeping	3821
Timekeeping Restoring Session	3750
Restoring Session Schedule	3593
Settings People List	3346
Timekeeping Compliance Pay	3196
Schedule Restoring Session	3172
Compliance Pay Timekeeping	2812
Schedule Settings	2621

Urban

- Most Popular:
 - Schedule → Timekeeping (then vice-versa)
 - User restores session → Timekeeping
 - Schedule → Settings → People List

Schedule Timekeeping	2444
Timekeeping Schedule	2033
Restoring Session Schedule	1421
Settings People List	1375
Schedule Restoring Session	1175
Restoring Session Timekeeping	1169
Timekeeping Restoring Session	1079
Login Schedule	927
Schedule Settings	925
Schedule Login	685

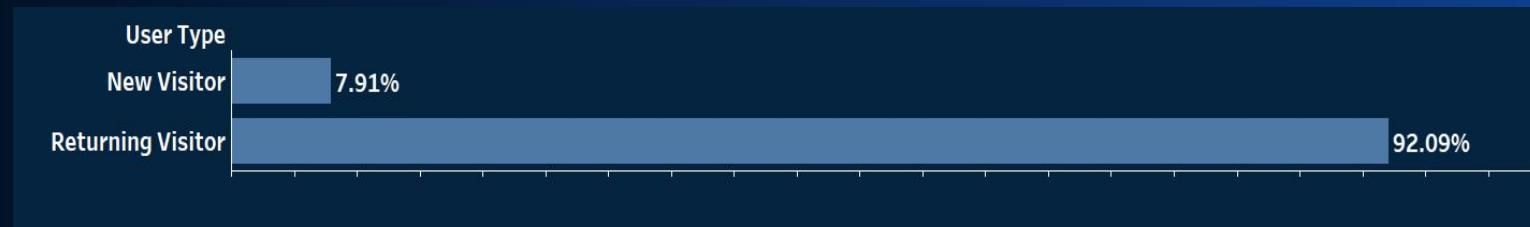
Non-Urban

- Most Popular:
 - Schedule → Timekeeping (then vice-versa)
 - User restores session → Schedule
 - Schedule → Settings → People List

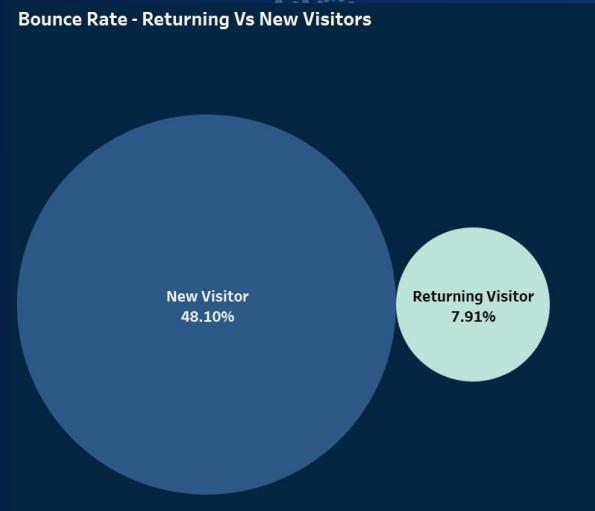
New Visitors



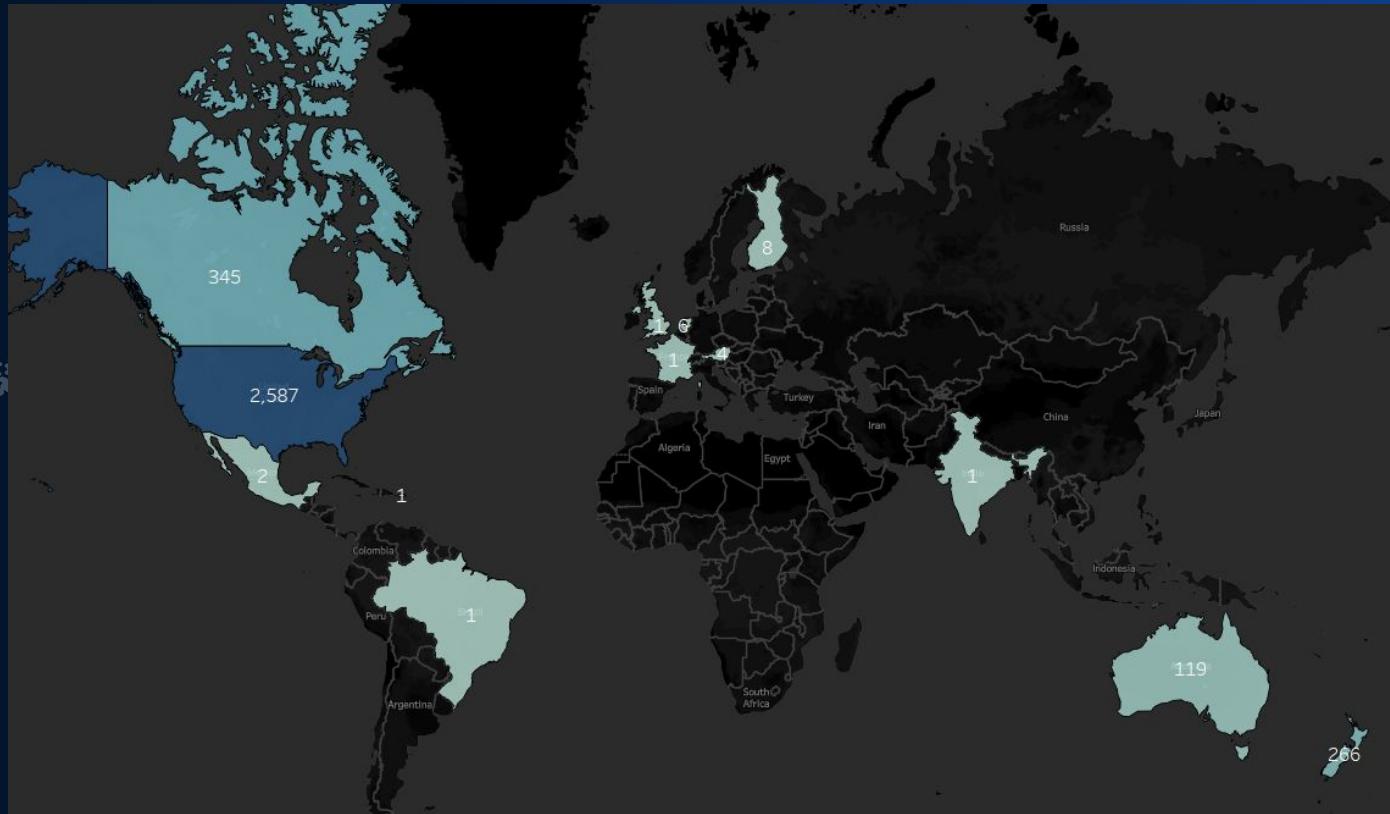
of New Vs Returning Visitors



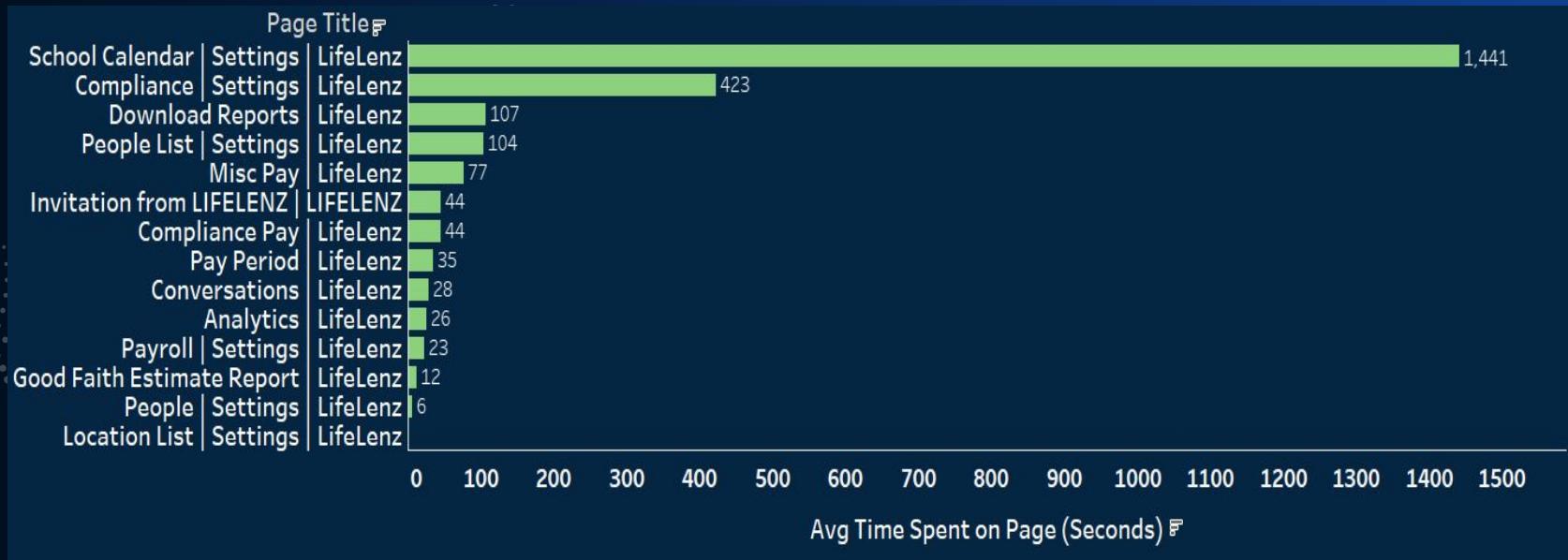
Bounce Rate - Returning Vs New Visitors



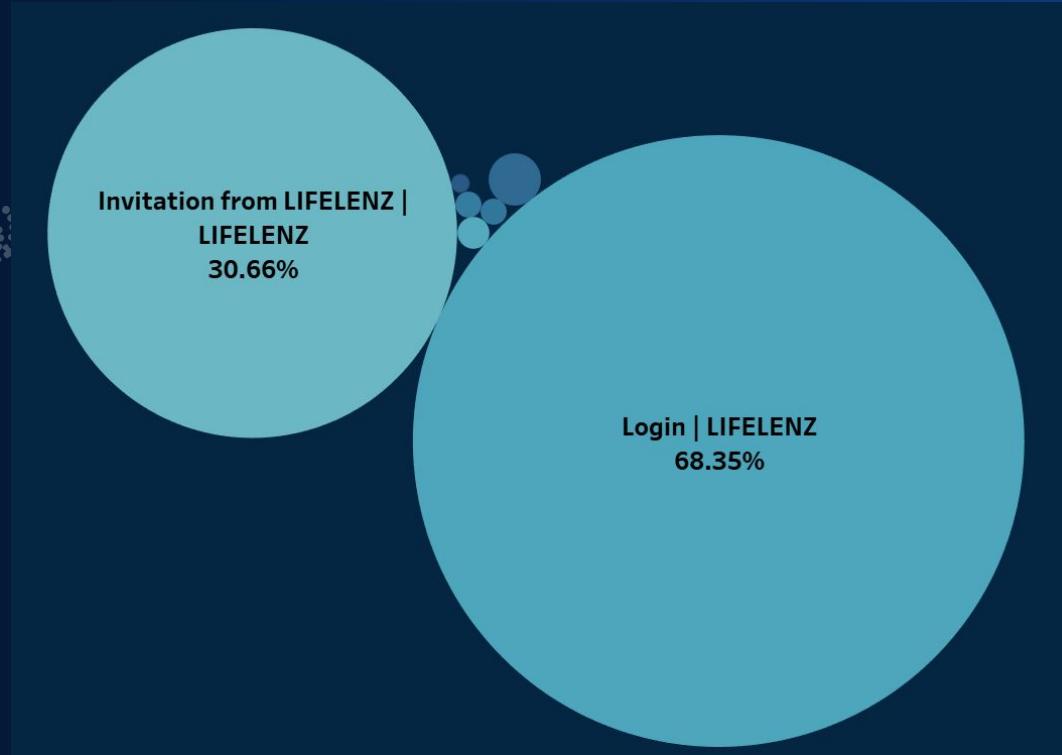
New Users by Country



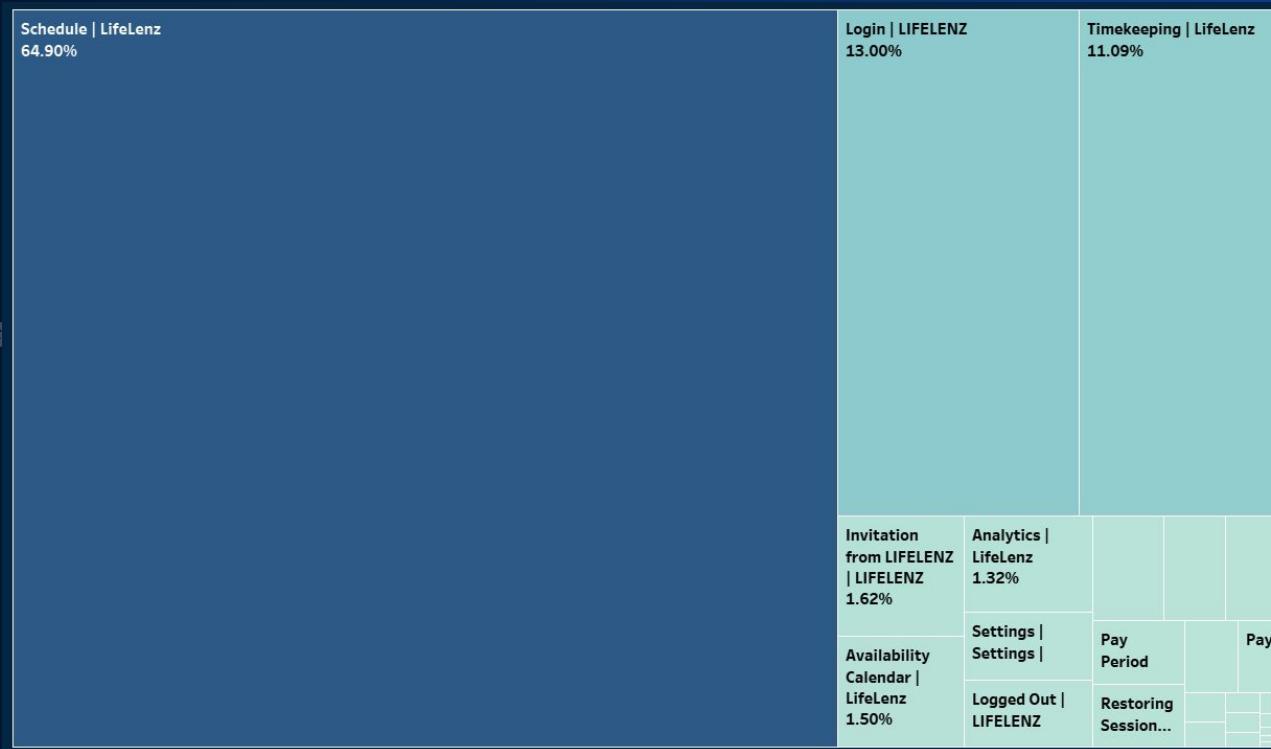
Avg. Time Spent on Various Pages by New Users



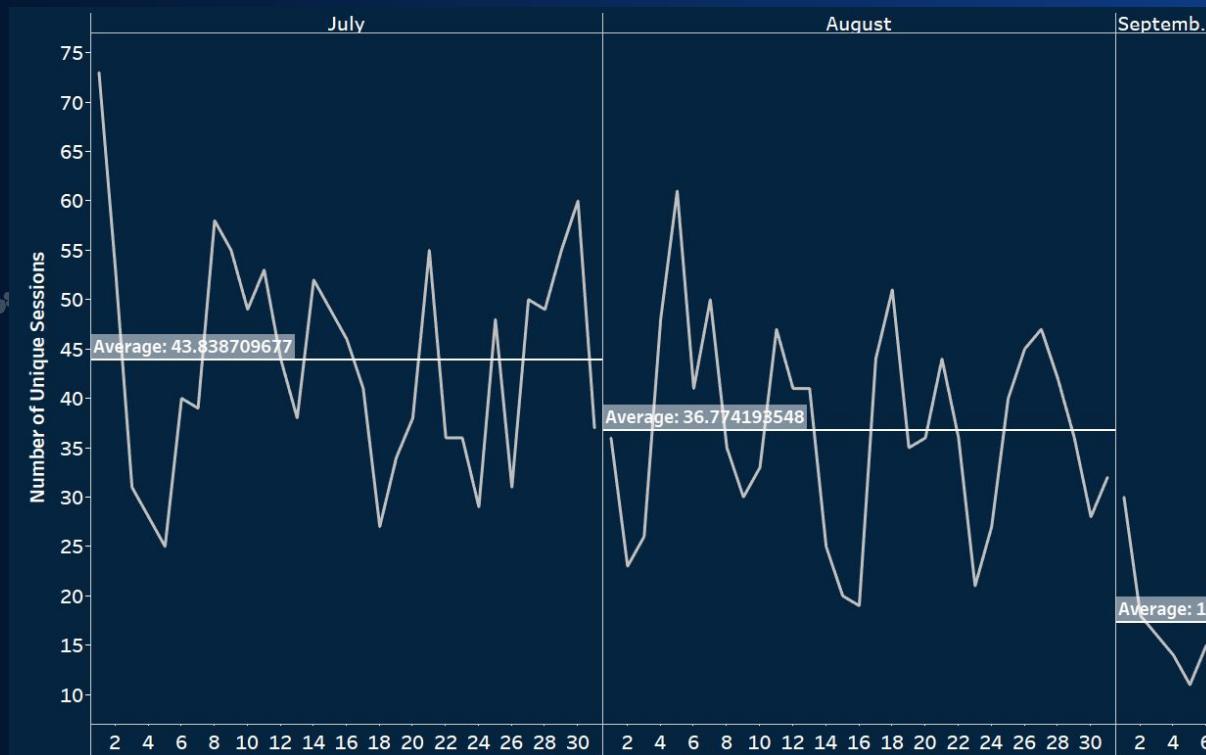
Pages with Higher Bounce Rates



Frequently Visited Pages by New Users



New Users by Day and Month

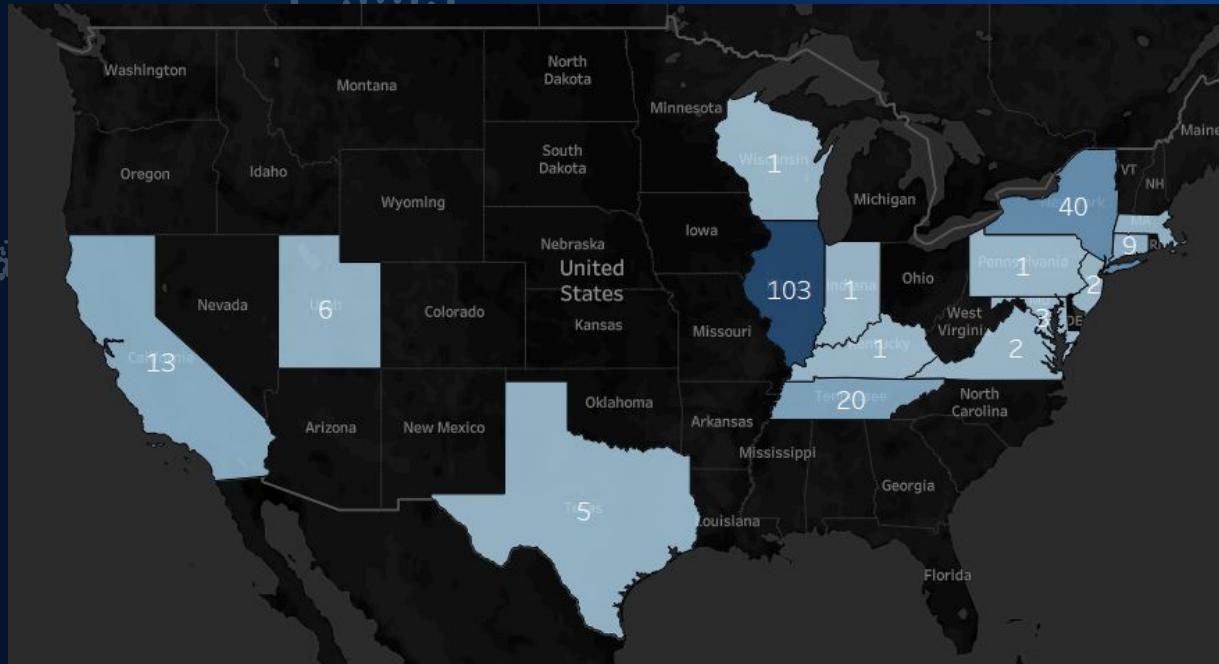


AOS vs Non-AOS Operated Stores



Illinois has the highest number of Stores

AOS Stores in the US

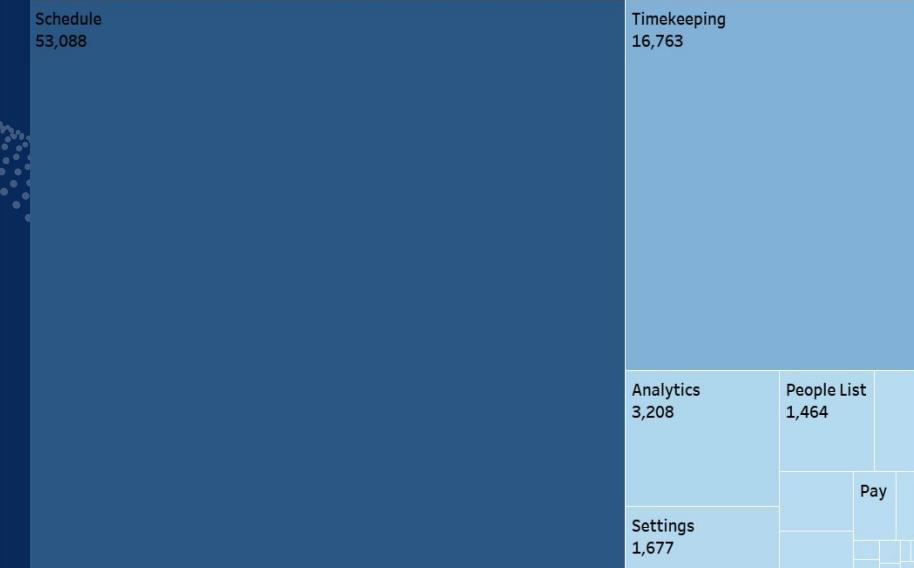


Stores using AOS focus more on Analytics

Owner Stores not using AOS



Owner Stores using AOS



Average Time spent on a Page

Owner Stores not using AOS

Compliance
People List
Download Reports
Location List
Good Faith Estimate Report
Misc Pay
Mobile App
People
Invitation from LIFELENZ
School Calendar

0.00 mins.

109.4

Owner Stores using AOS

People List
Pay Period Details
Download Reports
Compliance
Misc Pay
Compliance Pay
Pay Period Review
Analytics
Time Clock
Payroll

12.96 mins. 140.52 mins

Recommendations



Challenges and Future Scope



Challenges

- Limited knowledge on platform navigation
 - *Subject matter expertise can improve analysis*
- No access to application and Google Analytics
 - *Analysis and KPI tracking simpler on GA*
- Data provided only for 2 months - COVID times
 - *Historical data can provide further context*

Future Scope

- Real Time Dashboard (ideally on GA)
- Expand Timeframe
- Identify Users with Low Engagement
- New Customer Classification using Existing Clusters
- Feedback

Thanks for listening!

Special Thanks to

- Our Course Professor, Mr. Suresh Acharya, for providing valuable advice on how to skillfully navigate through this project
- Our Project Sponsor, LifeLenz, for giving us this opportunity, and CAO, Michael Slivar, for being so responsive
- Our Course TA, Aniket Datar, for evaluating and providing insightful comments on our deliverables

Recording

- You can view a recorded presentation for these slides on this [link](#)

Questions?

- Any queries can be sent to our email (addresses available [here](#))