

Ralph Parlin
Final Portfolio
Prof. Rom and Alex
Spring 2015

Team-

Thanks for a great class. I hope to see you guys around.

The Sharing-economy

Intent of Portfolio:

Create stimulating visualizations that help explore the Sharing-economy.

Why is the Sharing-economy a Policy Issue?

Just as the U.S. economy transitioned from agriculture to industrial, there has been a recent shift in the digital economy that is gaining attention. Globally, people are leveraging internet access and mobile technology to connect, consume, and transform their communities. The term for this shift in consumer behavior is—among other emerging names—collaborative consumption. This global behavior has created a market valued at over \$287 billion that many are now referring to as the “share-economy” where consumers are buying less and sharing more as the value of access to goods and services becomes synonymous with the value of ownership. Consumers of all demographics are participating in the share-economy as new platform-model-businesses arrive in record speed sometimes pushing aside incumbent firms through regulatory arbitrage to help consumers connect and transfer the latent value of idle resources. However, activity in the share-economy is getting the attention of researchers and policy makers as the arrival of share-economy firms challenge the status quo and regulators across the country scramble to keep pace. The speed of growth, coupled the scarcity of data, blur the facts surrounding the issues on how share-economy firms impact consumer protection, employer/employee relations, and the competitive landscape. Further complicating the issue is the divergent opinion on what the appropriate mix of federal, state and local government policy should be in determining regulations for the share-economy.

This project visually explores aspects of the sharing-economy in order to gain clarity and insight on share-economy implications. The in-depth case analysis of AirBnB in Portland, Oregon, provides visualizations that offer insights on homesharing impacts in Portland. Analyzing parameters such as price, how many times people are renting out their property, how many properties they are renting out, etc., helps inform policy decisions and regulations related to this sharing-economy activity. The graphics in the Portland Oregon set have light context paragraphs as they are designed to be explored as a set where information is accumulated through exploration of the visual story.

Table of Contents

Graph Number	Page Number
# 1: Worldwide Curiosity In The Sharing-Economy.....	4
# 2: Venture Capital Investments In The Sharing-Economy.....	5
# 3: Sharing-Economy Categorization And Companies.....	6
#4: 2013 Sharing-Economy Participation	7
#5: Who Is Willing to Share What?.....	8
#6: Most Appealing Aspects Of The Sharing-Economy	9
#7: Market Entry 2000-2010.....	10
#8: Current Status Of U.S. Ridesharing Policy	11
#9: 2009-2013 Venture Capital Investment In The Sharing-Economy: U.S. Ridesharing.....	12
#10: Uber's Four Largest Markets For December 2013	13
#11: Current Status Of U.S. Homesharing Policy.....	14
#12: 2009-2013 Venture Capital Investment In The Sharing-Economy: U.S. Homesharing	15
#13: U.S. AirBnB Inventory and Top Ten Most Hospitable Markets, 2014.....	16

Table of Contents (continued)

Graph Number	Page Number
#14: AirBnB in Portland Oregon: 2014 Snapshot	17
#15: AirBnB in Portland Oregon: Characteristics of AirBnBs by Neighborhood.....	18
#16: AirBnB in Portland Oregon: Average Price and Average Availability by Neighborhood	19
#17: AirBnB in Portland Oregon: Rates and Reviews	20
#18: AirBnB in Portland Oregon: Business or Pleasure-How Hosts Use the Platform	21
#19: AirBnB in Portland Oregon: Rates and Availability	22
#20: AirBnB in Portland Oregon: How Much Money Does AirBnB Make in Portland.....	23

- Final Portfolio

A Sharing-Economy Story Through Data Visualization

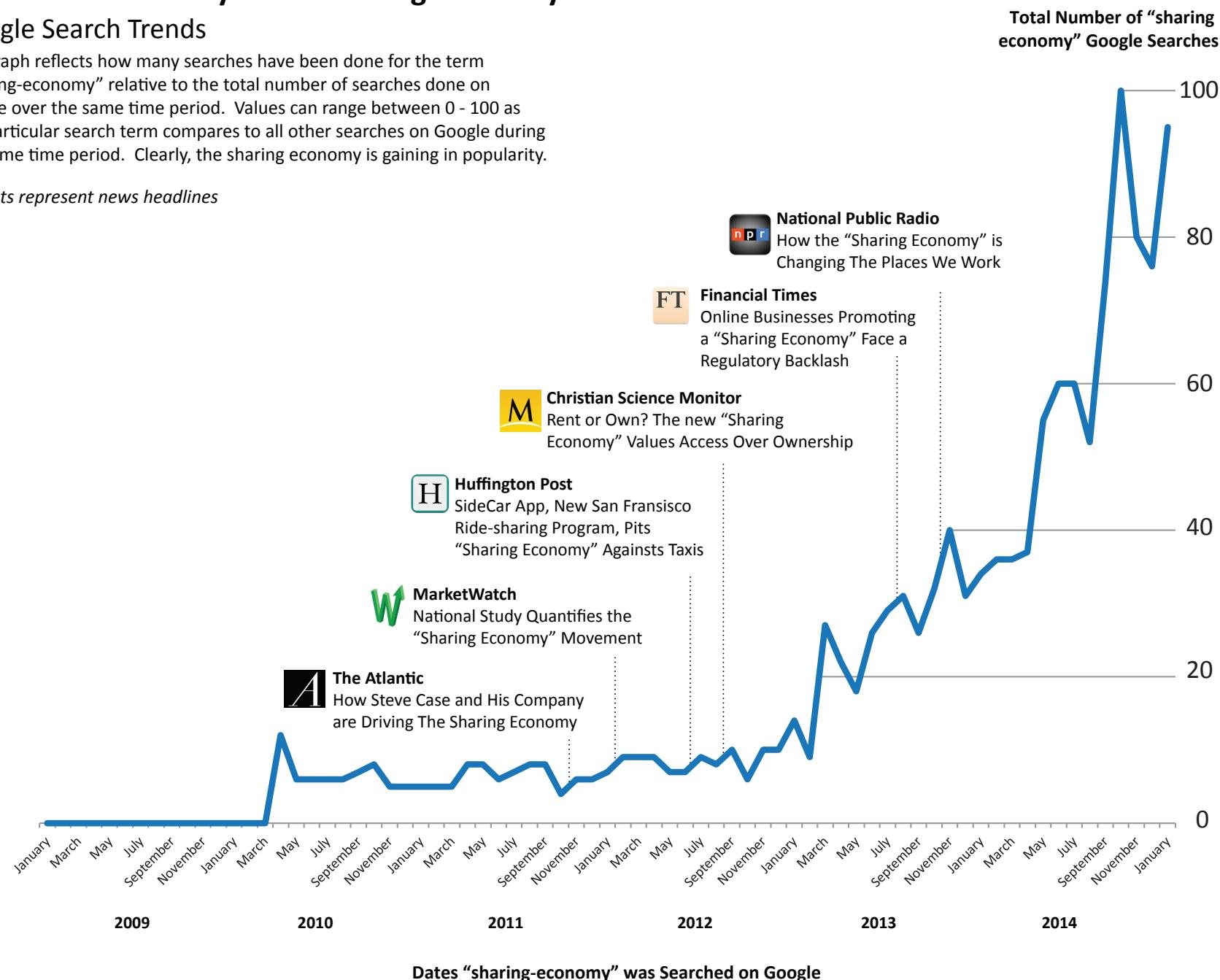
Ralph Parlin
Data Visualization
Spring 2015
May 4, 2015

• Worldwide Curiosity InThe Sharing-Economy

Google Search Trends

The graph reflects how many searches have been done for the term "sharing-economy" relative to the total number of searches done on Google over the same time period. Values can range between 0 - 100 as any particular search term compares to all other searches on Google during the same time period. Clearly, the sharing economy is gaining in popularity.

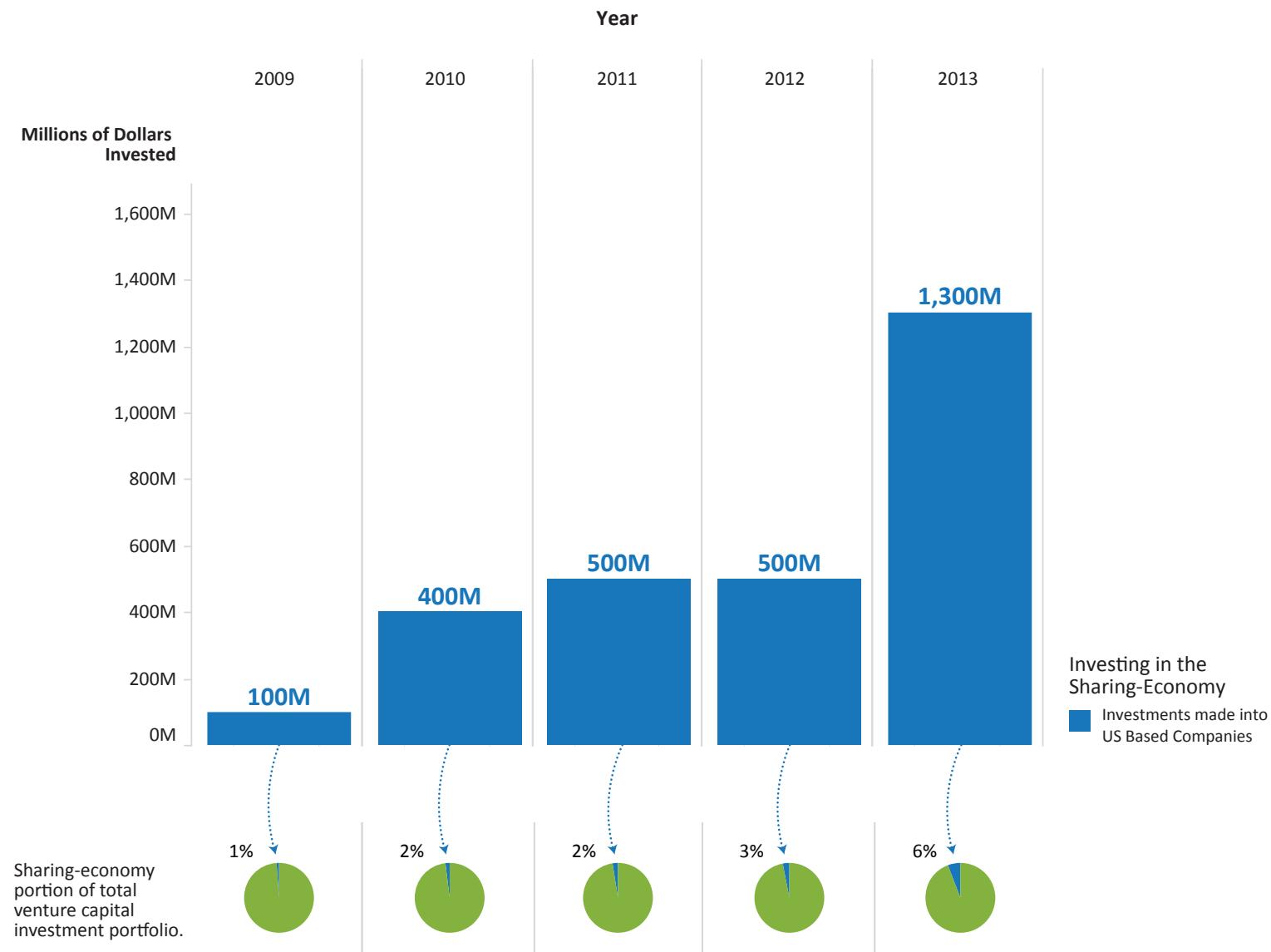
Callouts represent news headlines



Source: Google Trends | Ralph Parlin

• Venture Capital Investments in U.S. Sharing-Economy Firms

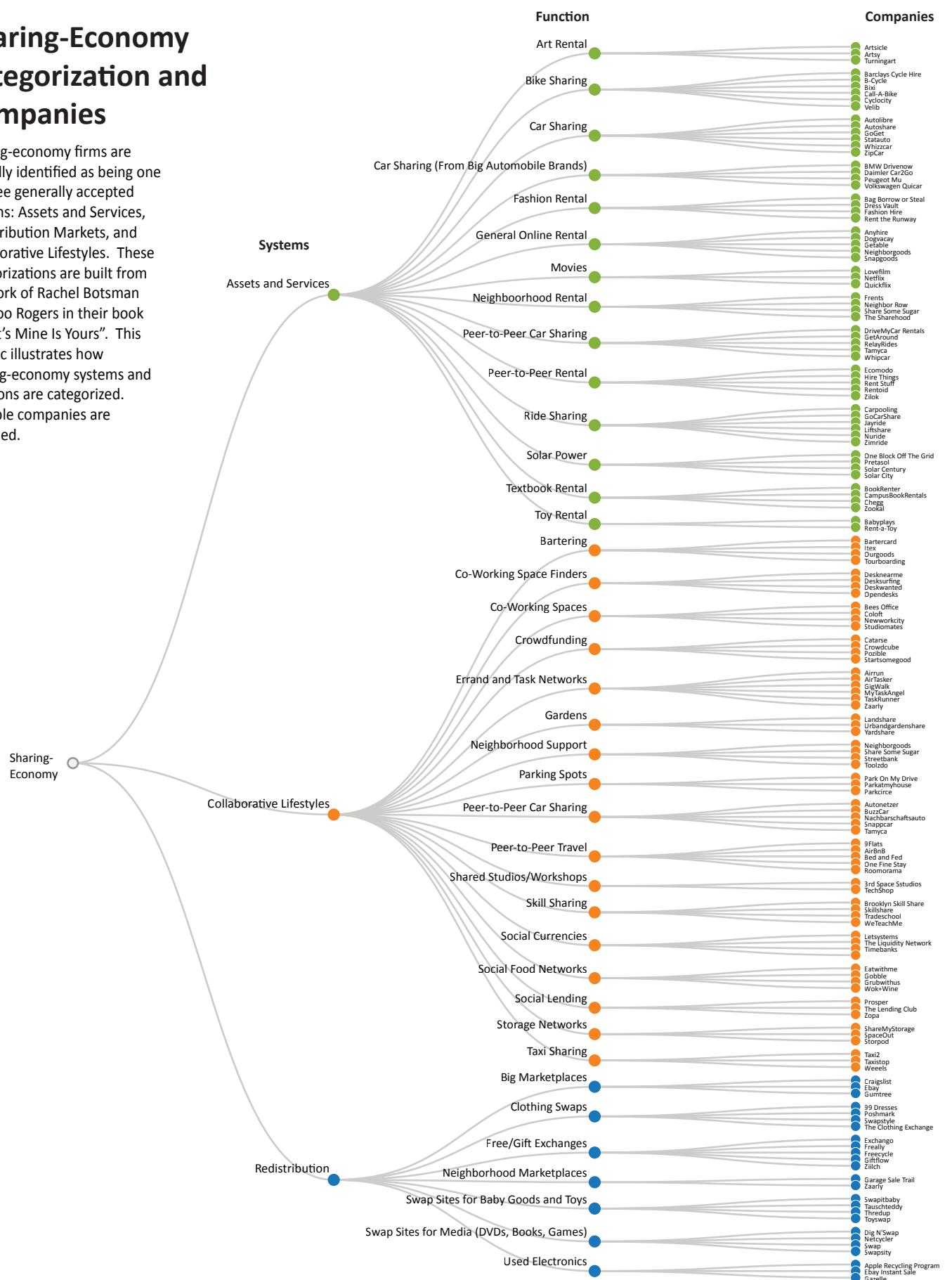
Increasing investments in sharing-economy firms helps explain how this sector of the economy has grown so fast over the last few years. The column chart below highlights the amount of money invested into U.S. sharing-economy firms from 2009 to 2013. The pie graphs illustrate how much of total venture capital portfolios are made up of share-economy firms in each year. Although there is a significant amount of investment in sharing-economy firms, the sharing-economy sector makes up a very small percent of total venture capitalist investments.



Source: Sherpa Ventures 2014 On Demand Economy Report | Ralph Parlin

Sharing-Economy Categorization and Companies

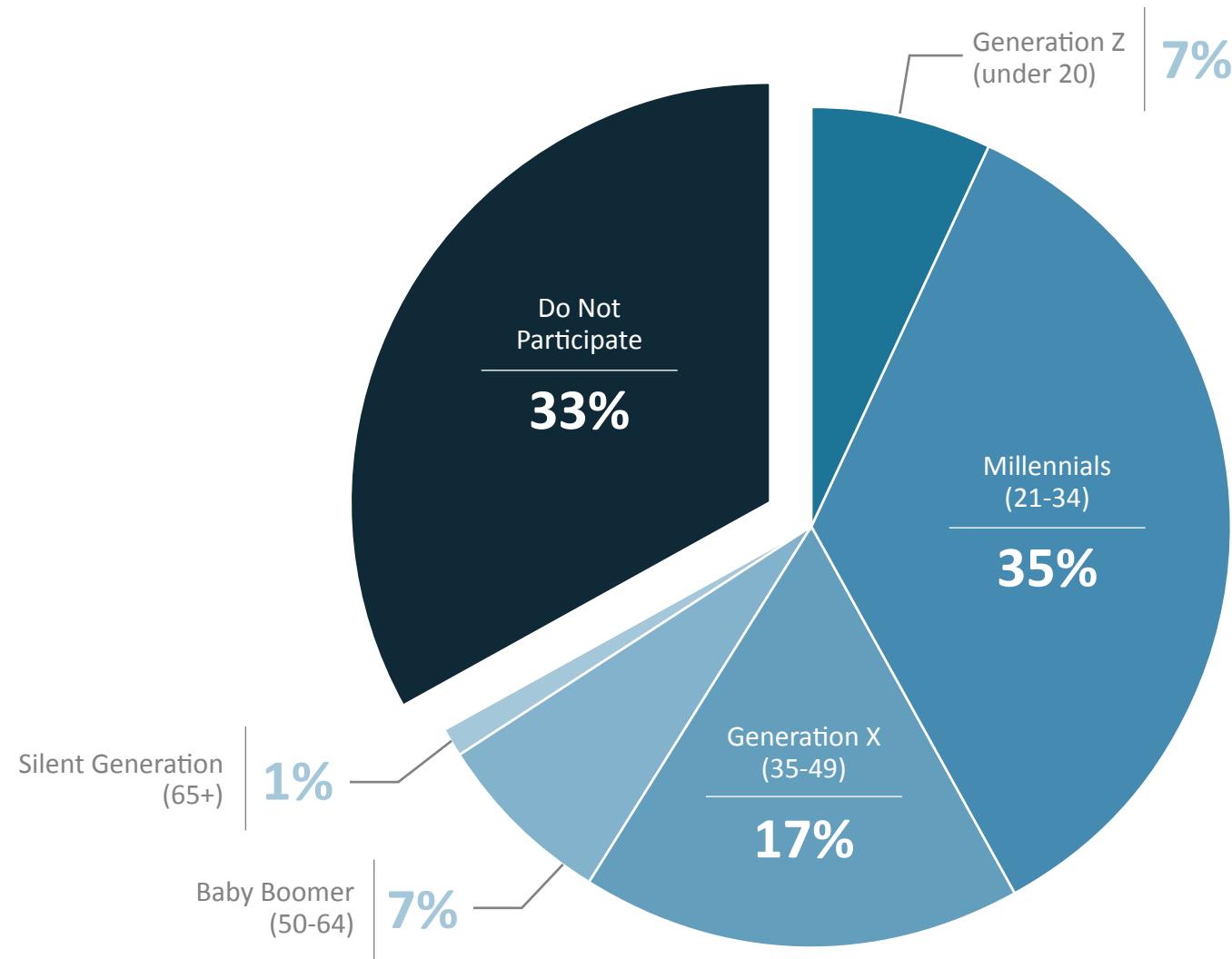
Sharing-economy firms are typically identified as being one of three generally accepted systems: Assets and Services, Redistribution Markets, and Collaborative Lifestyles. These categorizations are built from the work of Rachel Botsman and Roo Rogers in their book “What’s Mine Is Yours”. This graphic illustrates how sharing-economy systems and functions are categorized. Example companies are provided.



Source: Rachel Botsman and Roo Rogers, “What’s Mine is Yours” | Ralph Parlin

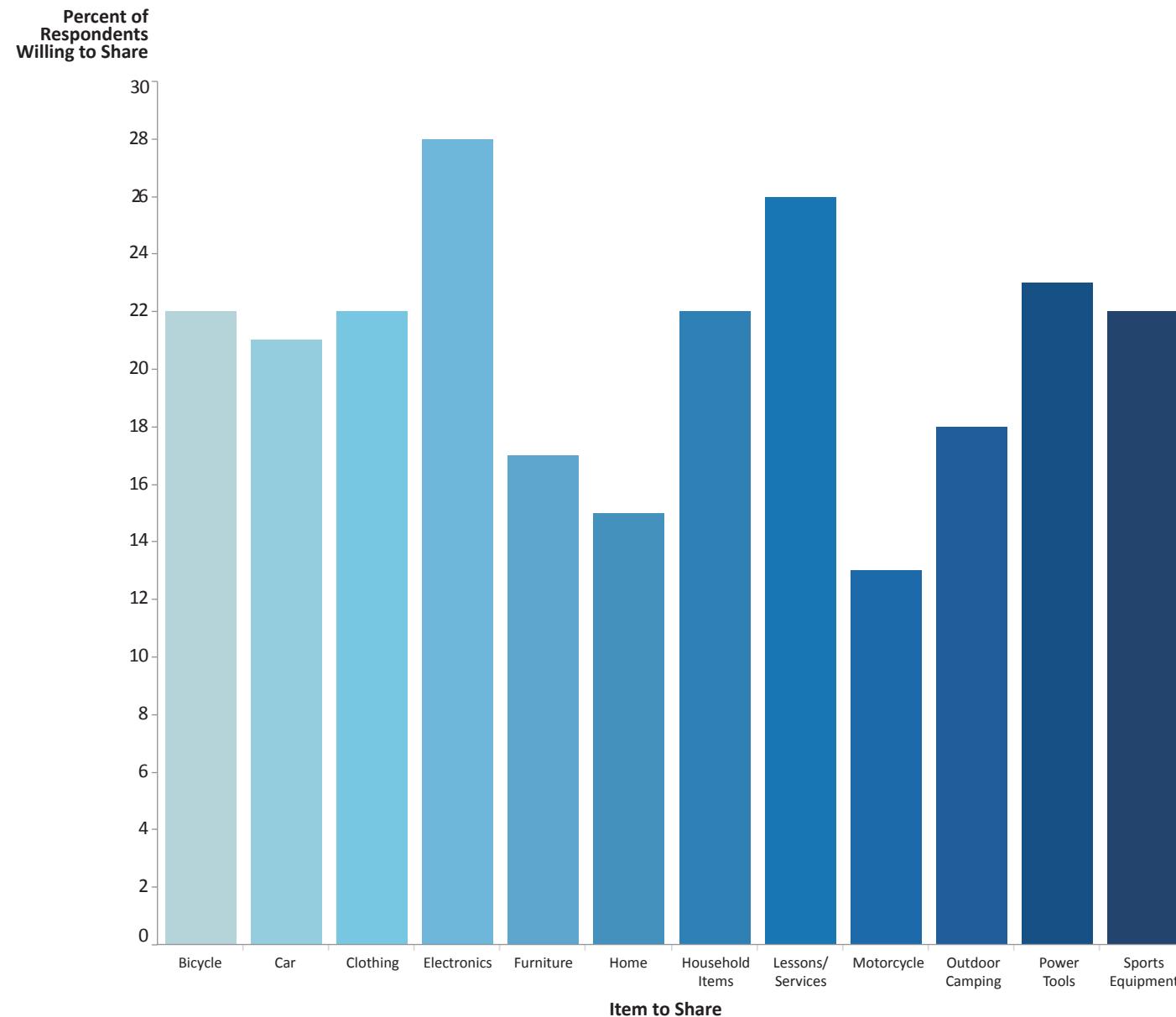
• 2013 Sharing-Economy Participation

To measure the appetite for participation in the sharing-economy around the world, Nielsen polled 30,000 internet respondents in 60 countries to identify how many people and of what age groups are joining the movement.



• Who Is Willing To Share What?

Nielsen polled 30,000 internet respondents in 60 countries to identify what people would be willing to share in the sharing-economy. The column chart below shows the percent of respondents willing to share, by item category.



Source: Nielsen Global Survey of Share Communities, Q3 2013 | Ralph Parlin

• Most Appealing Aspects Of The Sharing-Economy

In 2014 Havas Worldwide Marketing conducted a sharing-economy study where they surveyed 10,574 people aged 16+ in 29 markets (Argentina, Australia, Austria, Brazil, Canada, China, France, Germany, India, Indonesia, Ireland, Italy, Japan, Malaysia, Mexico, the Netherlands, Poland, Portugal, Puerto Rico, Saudi Arabia, Singapore, South Africa, Spain, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States, and Vietnam) to identify what makes people participate in the sharing-economy. The graphic below shows a percentage breakdown of answers to the survey question that asked "Which Aspects of the sharing-economy appeal to you?"



saving money



feeling active and useful



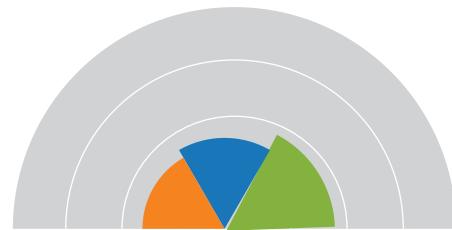
reducing my consumption
and carbon footprint



supporting individuals and/or
small independent companies



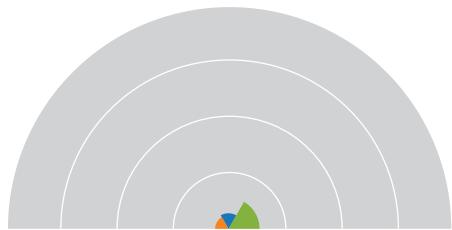
meeting new people



contributing to the broader
movement away from
hyperconsumption

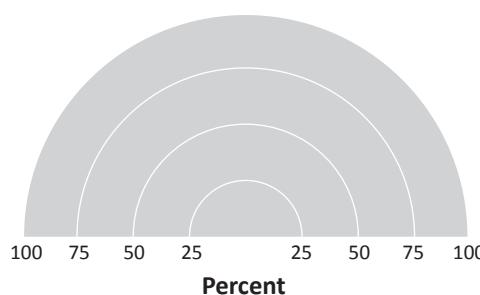


having an interesting
experience



no interest in the
sharing-economy

Scale



Age Groups

	16-34
	35-54
	55+

• Market Entry 2000-2010

The Arrival of Transportation and Space Sharing Firms

Over the past several years, the sharing-economy firms that have grown to become known as the most controversial in the U.S. are Ridesharing and Homesharing companies. This is due in part because many are not subject to the same regulations as their incumbent counterparts. The graphic below shows the U.S. Ridesharing and Homesharing companies that have entered the market since 2000.



- Current Status Of U.S. Ridesharing Policy

30 Most Populous Cities

As the Ridesharing market grows, it is getting the attention of researchers and policy makers as the arrival of these share-economy firms challenge the status quo and regulators across the country scramble to keep pace. The graphic below illustrates the policy and regulatory actions of the thirty most populous cities across the U.S. The colors indicate the response, and the size of the circle represents the size of the population in order to better illustrate the magnitude of the policy actions.

of the 30 most populous cities...

3%

have taken no action

47%

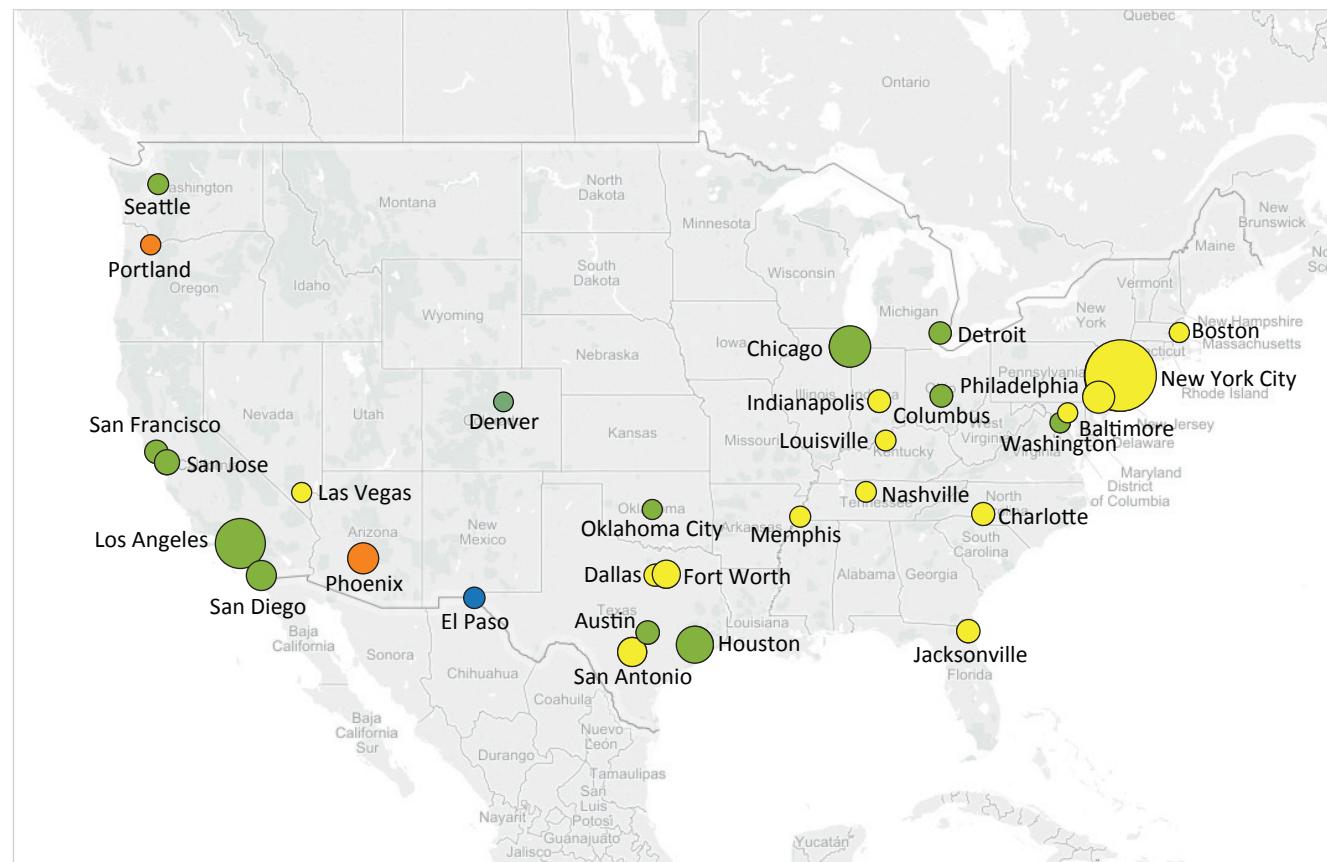
have policy pending

43%

have authorized ridesharing

7%

have not authorized ridesharing



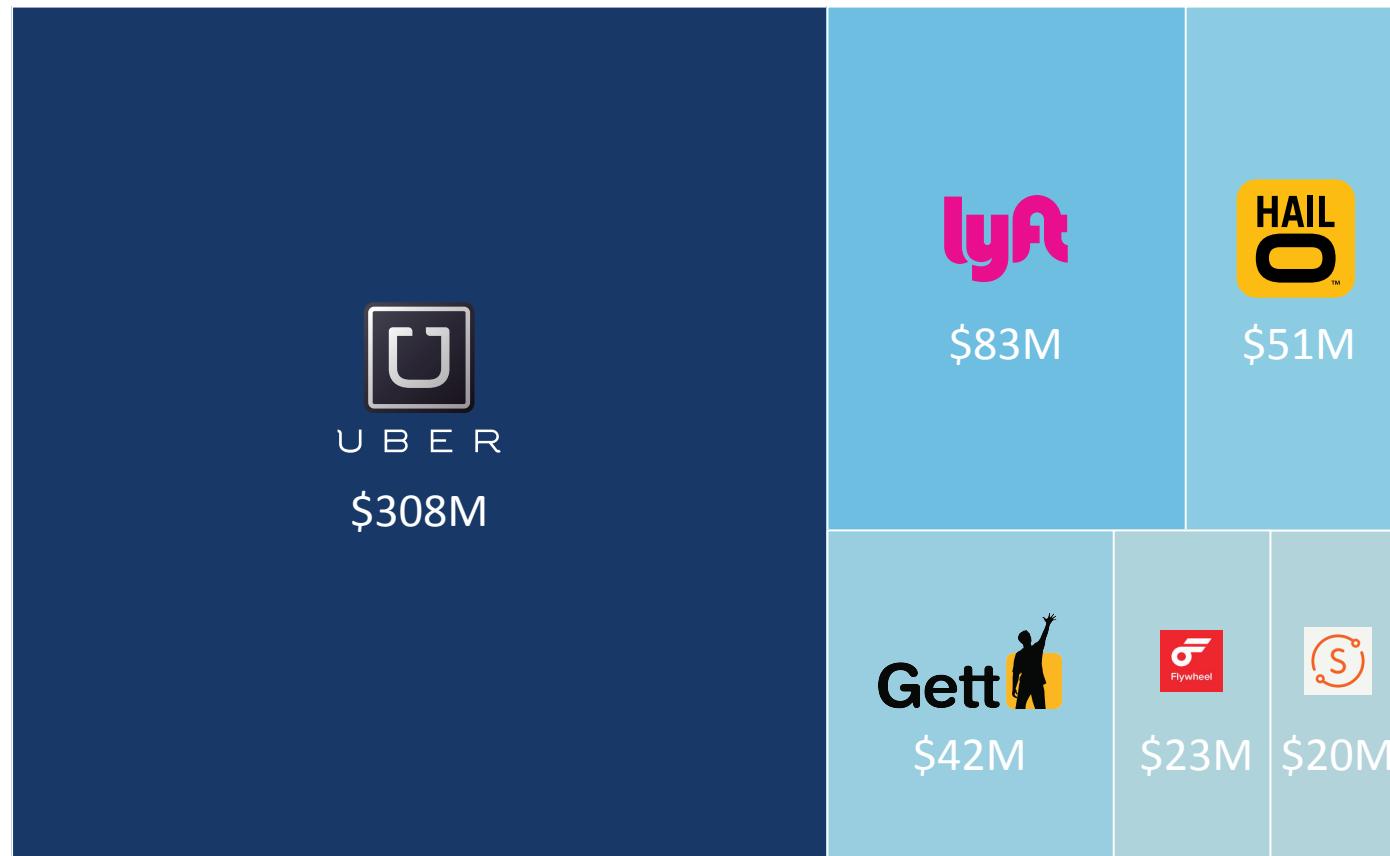
City Population	
603,488	
2,000,000	
4,000,000	
6,000,000	
8,405,837	

Authorized Rideshare Policy
No Action Taken
Policy Pending
Authorized
Not Authorized

- **2009-2013 Venture Capital Investments In The Sharing-Economy**

U.S. Ridesharing

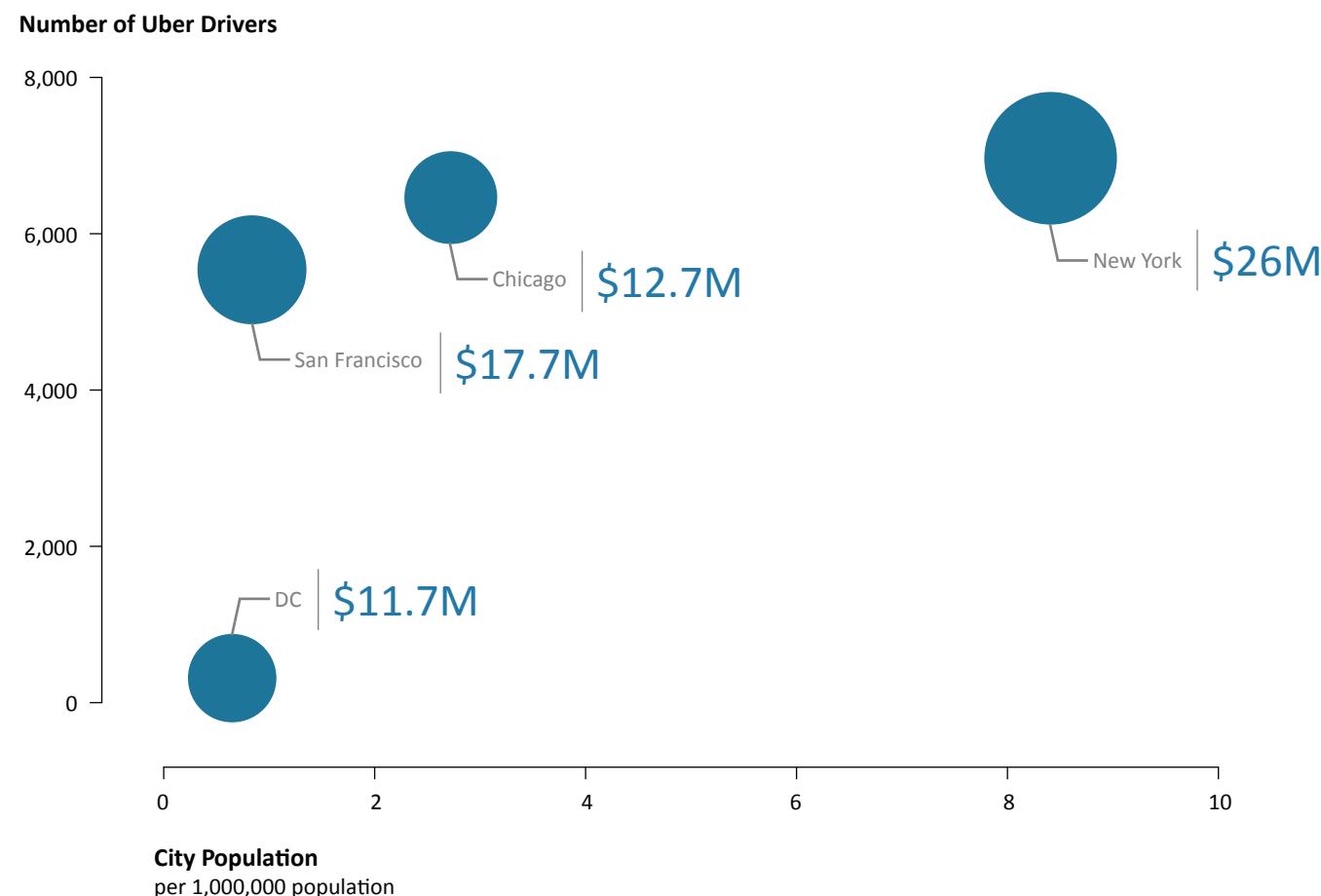
Increasing investments in sharing-economy firms helps explain how this sector of the economy has grown so fast over the last few years. The graphic below highlights the amount of money invested into U.S. Ridesharing firms from 2009 to 2013. The size of each rectangle represents the amount of money invested in each firm.



- **Uber's Four Largest Markets For December 2013**

Revenue and Market Penetration

Derived from leaked Uber financial reports for the month of December 2013, the graphic below provides some of the first insight into just how much impact Uber is having on the “driver-for-hire” market in terms of drivers employed and revenue earned. This one month snapshot helps explain why the company is currently valued at \$10 billion...and why so many taxi commissions are upset with their arrival.



Source: Business Insider Magazine
(leaked documents from Uber, December 2013 financial statements) | Ralph Parlin

• Current Status Of U.S. Homesharing Policy

30 Most Populous Cities

As the Homesharing market grows, it is getting the attention of researchers and policy makers as the arrival of these share-economy firms challenge the status quo and regulators across the country scramble to keep pace. The graphic below illustrates the policy and regulatory actions of the thirty most populous cities across the U.S. The colors indicate the response, and the size of the circle represents the size of the population in order to better illustrate the magnitude of the policy actions. Unlike its ridesharing partner, city officials appear less likely to begin movement on homesharing policies and regulations.

of the 30 most populous cities...

57%

have taken no action

0%

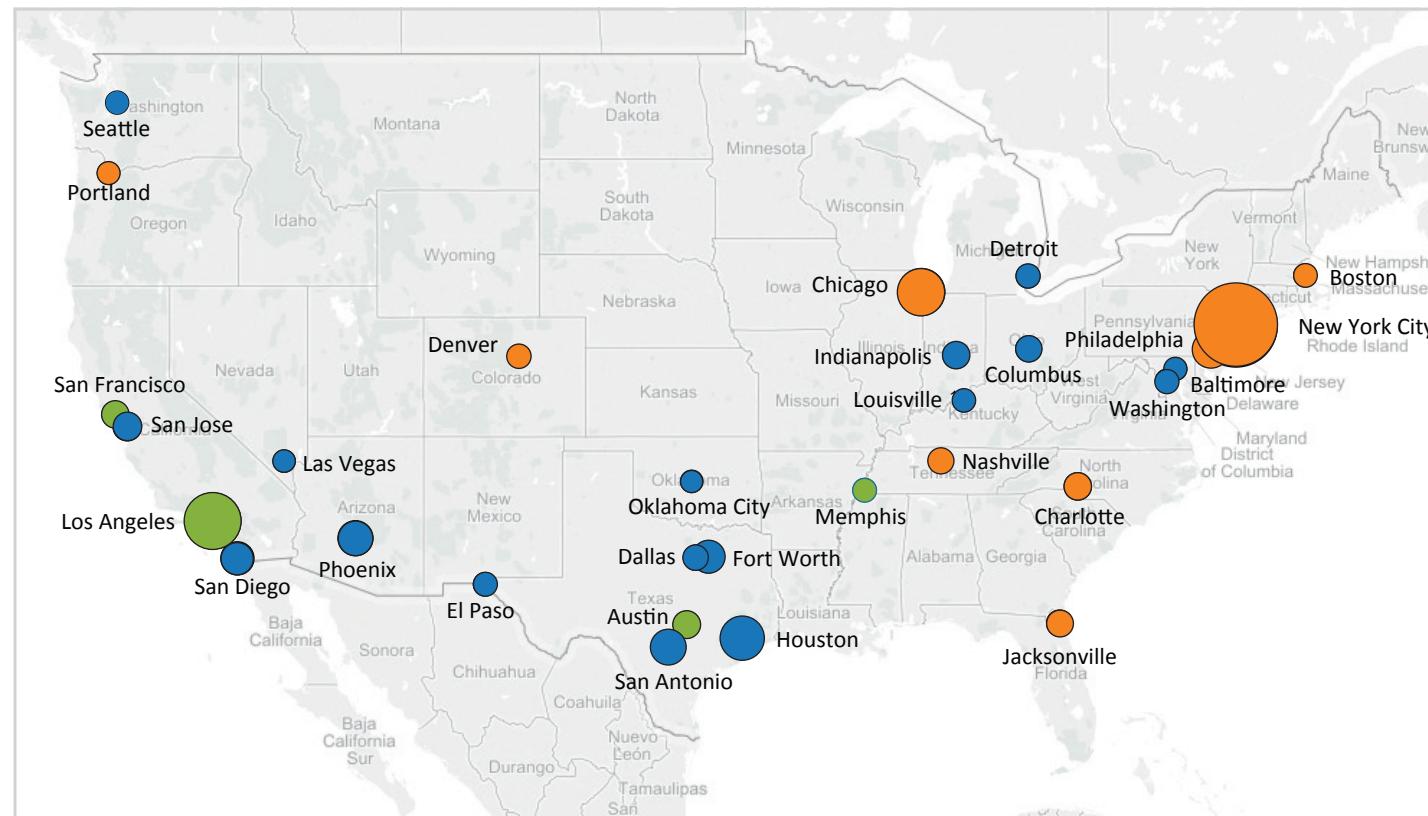
have policy pending

13%

have authorized homesharing

30%

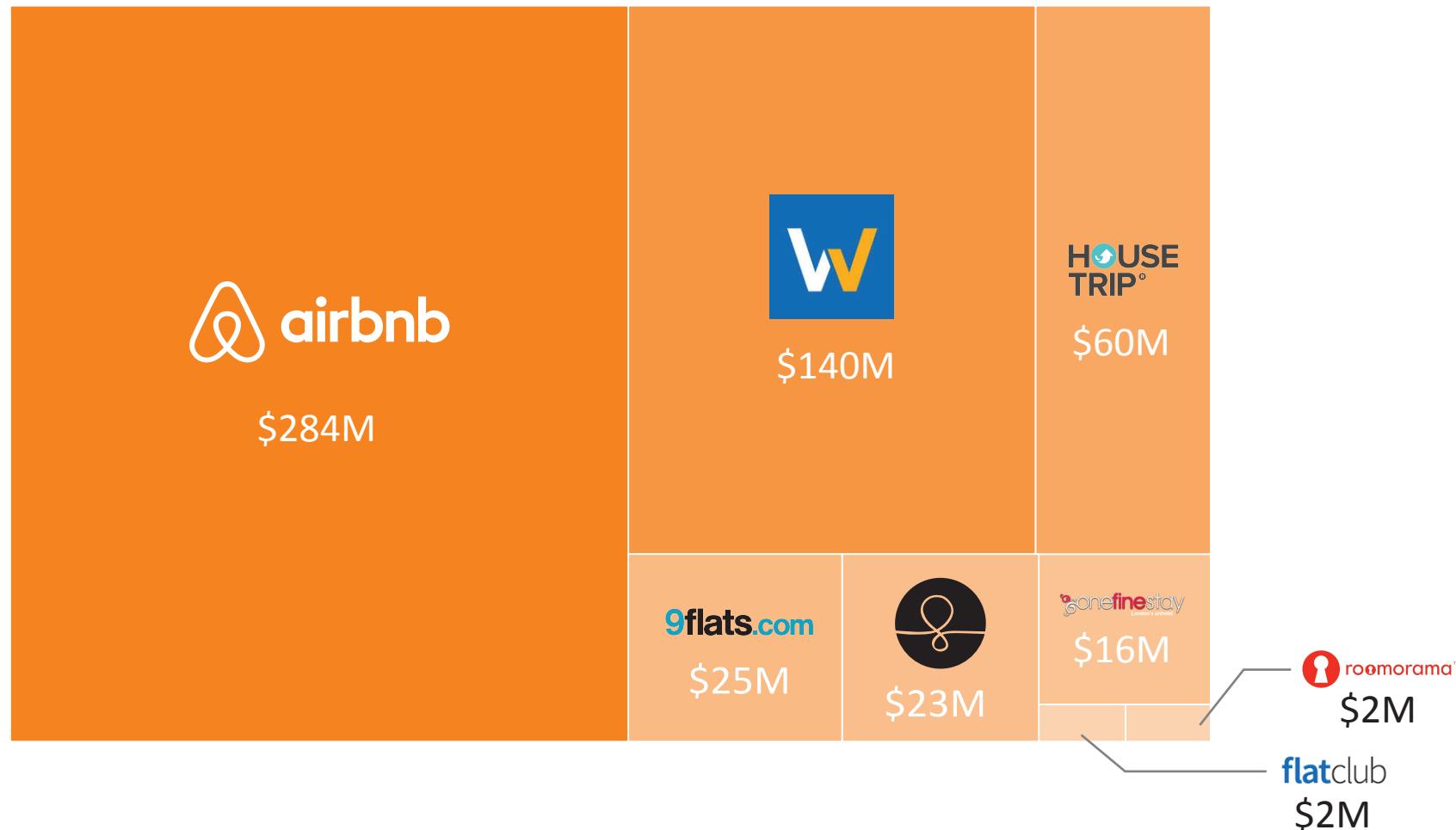
have not authorized homesharing



- **2009-2013 Venture Capital Investments In The Sharing-Economy**

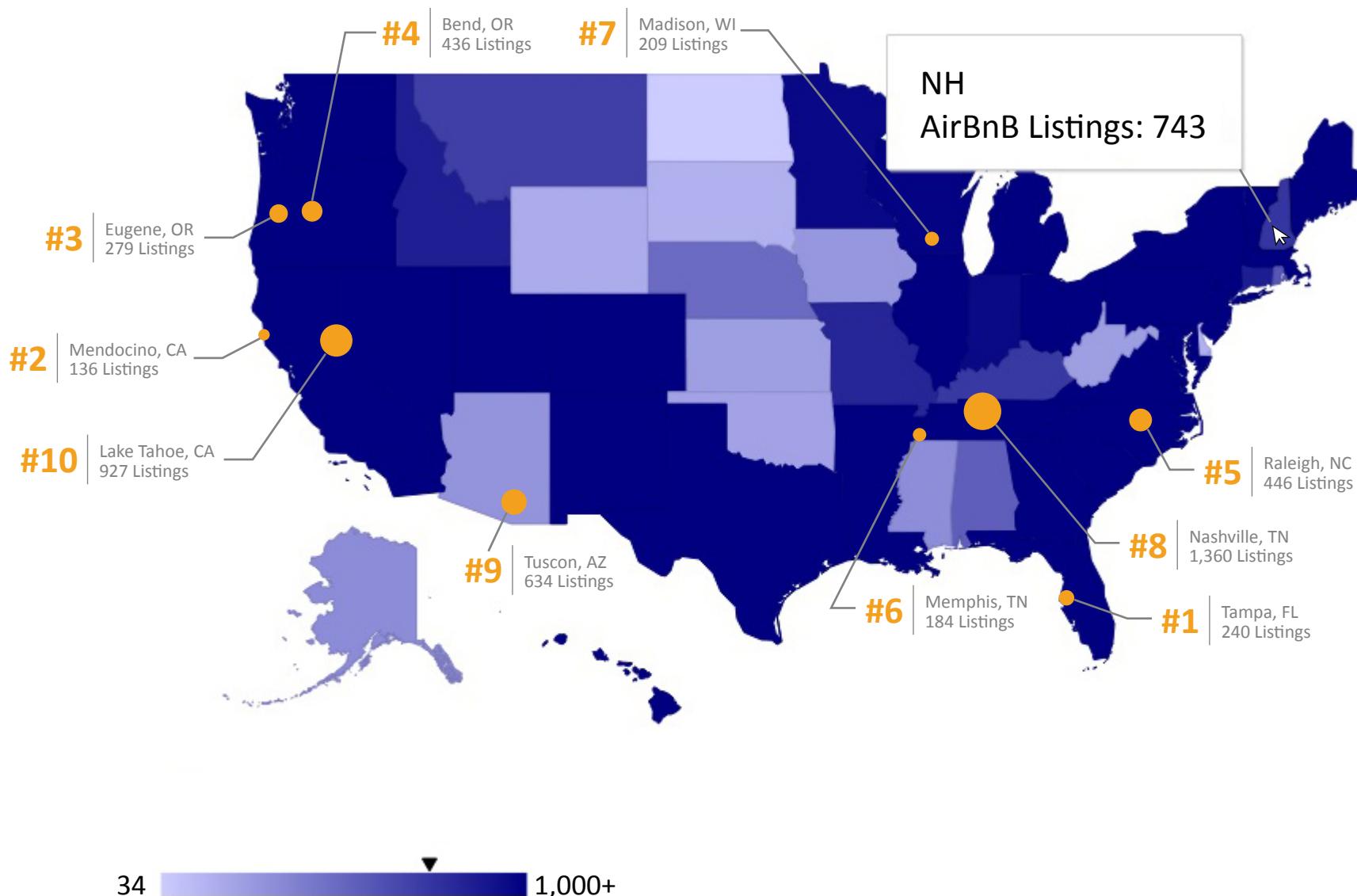
U.S. Homesharing

Increasing investments in sharing-economy firms helps explain how this sector of the economy has grown so fast over the last few years. The graphic below highlights the amount of money invested into U.S. homesharing firms from 2009 to 2013. The size of each rectangle represents the amount of money invested in each firm.



- **U.S. AirBnB Inventory And Top Ten Most Hospitable Markets, 2014**

The interactive graphic below shows AirBnB inventory levels for accommodations by state. The listing numbers that appear when hovered over represent the total of whole house, private room, and shared room inventory. Also listed are the top ten most hospitable cities based off AirBnB's Hospitality Index listed in rank order.

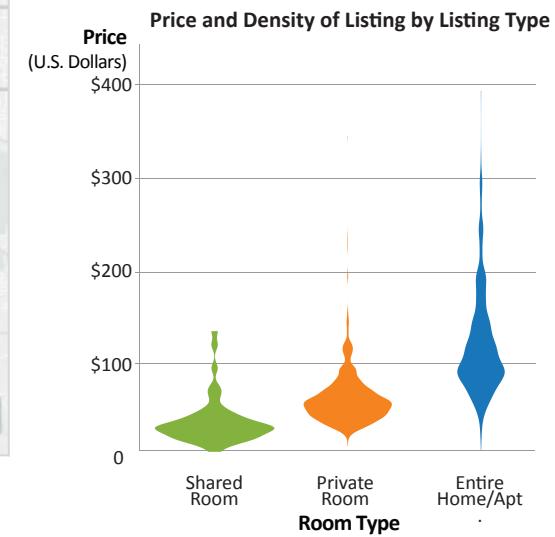
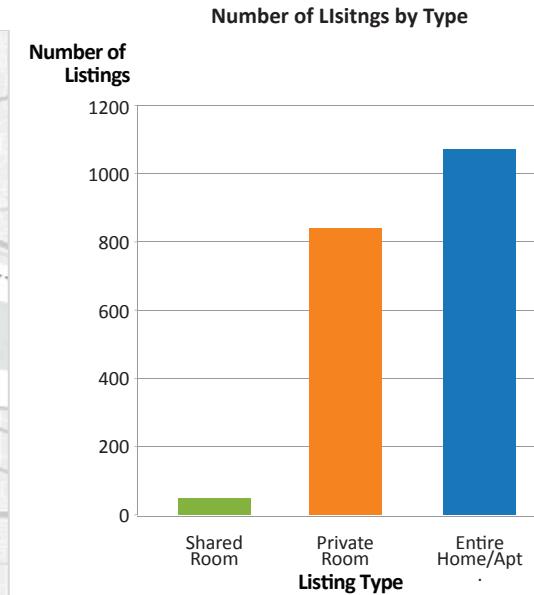
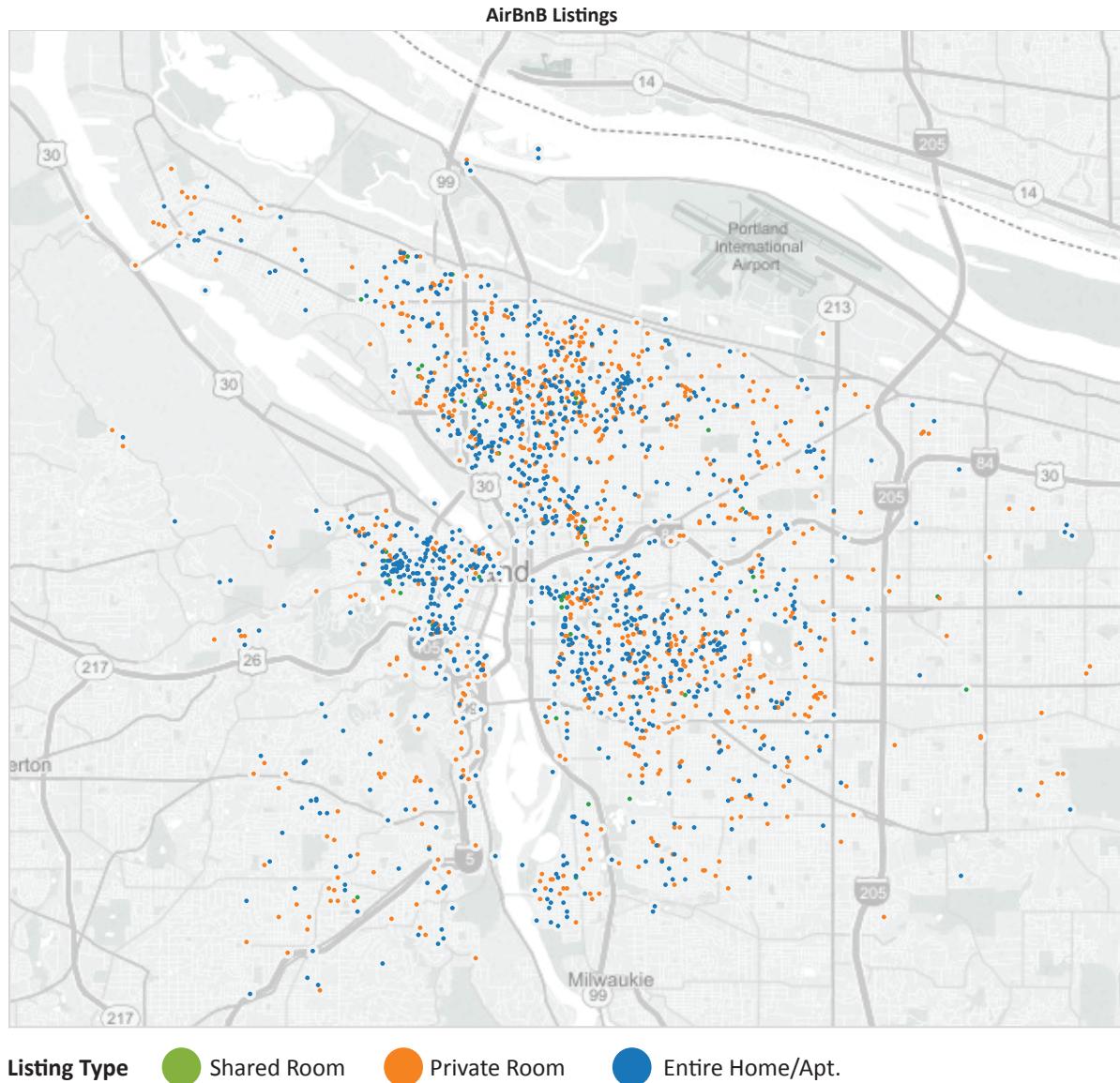


*Public data available only for inventory levels from 0 to 1,000.
Many states have multiple cities with well over 1,000 listings.*

Source: AirBnB Inventory and Hospitality Index | Ralph Parlin

- **AirBnB in Portland, Oregon**
2014 Snapshot

People that list their property on AirBnB are called “hosts” where they offer guests from around the world shared room, private room, or an entire house or apartment rentals. The center graphic below illustrates the current composition and disposition of AirBnB in Portland, Oregon. The small graphic in the upper right highlights the number of listings by type of listing and the graphic in the lower right shows how these listing types are distributed by price.

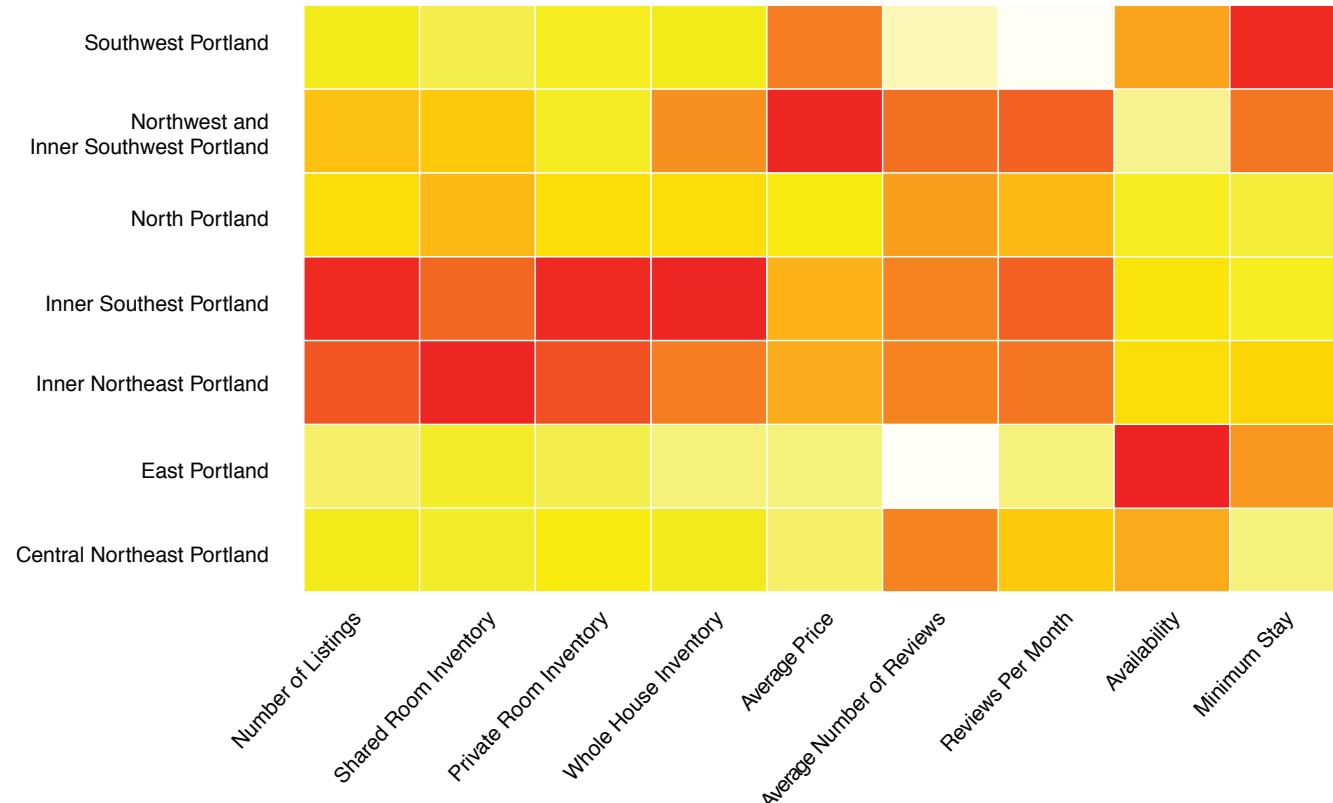


Source: M. Cox. *Inside AirBnB* | Ralph Parlin

- **AirBnB in Portland, Oregon**

Characteristics of AirBnBs by Neighborhood

The heatmap below illustrates several important parameters of Portland, Oregon's AirBnB data arrayed by neighborhood. Darker colors equal higher values. This product provides a quick snapshot of AirBnB activity trends by neighborhood.



Portland Neighborhoods

Southwest Portland	Northwest and Inner Southwest Portland	Hayden Island	Hosford-Abernethy	Concordia	Parkrose Heights
Arnold Creek	Arlington Heights	Kenton	Kerns	Eliot	Pleasant Valley
Ashcreek	Downtown	Overlook	Laurelhurst	Grant Park	Powellhurst-Gilbert
Bridlemile	Forest Park	Piedmont	Montavilla	Humboldt	Russell
Collins View	Goose Hollow	Portsmouth	Mt. Scott-Arleta	Irvington	Wilkes
Crestwood	Hillside	St. Johns	Mt. Tabor	King	
Far Southwest	Linn顿	University Park	North Tabor	Lloyd District	Central Northeast Portland
Hayhurst	Northwest District		Reed	Sabin	Beaumont-Wilshire
Hillsdale	Northwest Heights	Inner Southeast Portland	Richmond	Sullivan's Gulch	Cully
Homestead	Old Town/Chinatown	Ardenwald-Johnson	Sellwood-Moreland	Vernon	Hollywood
Maplewood	Pearl	Creek	Improvement League	Woodlawn	Madison South
Markham	Sylvan-Highlands	Brentwood-Darlington	South Tabor		Rose City Park
Marshall Park		Brooklyn Action Corps	Sunnyside	East Portland	Sumner
Multnomah		Buckman	Woodstock	Centennial	Sunderland
South Burlingame	North Portland	Creston-Kenilworth	Inner Northeast Portland	Hazelwood	
South Portland	Arbor Lodge	Eastmoreland	Alameda	Lents	
Southwest Hills	Bridgeton	Foster-Powell	Boise	Mill Park	
West Portland Park	East Columbia			Parkrose	

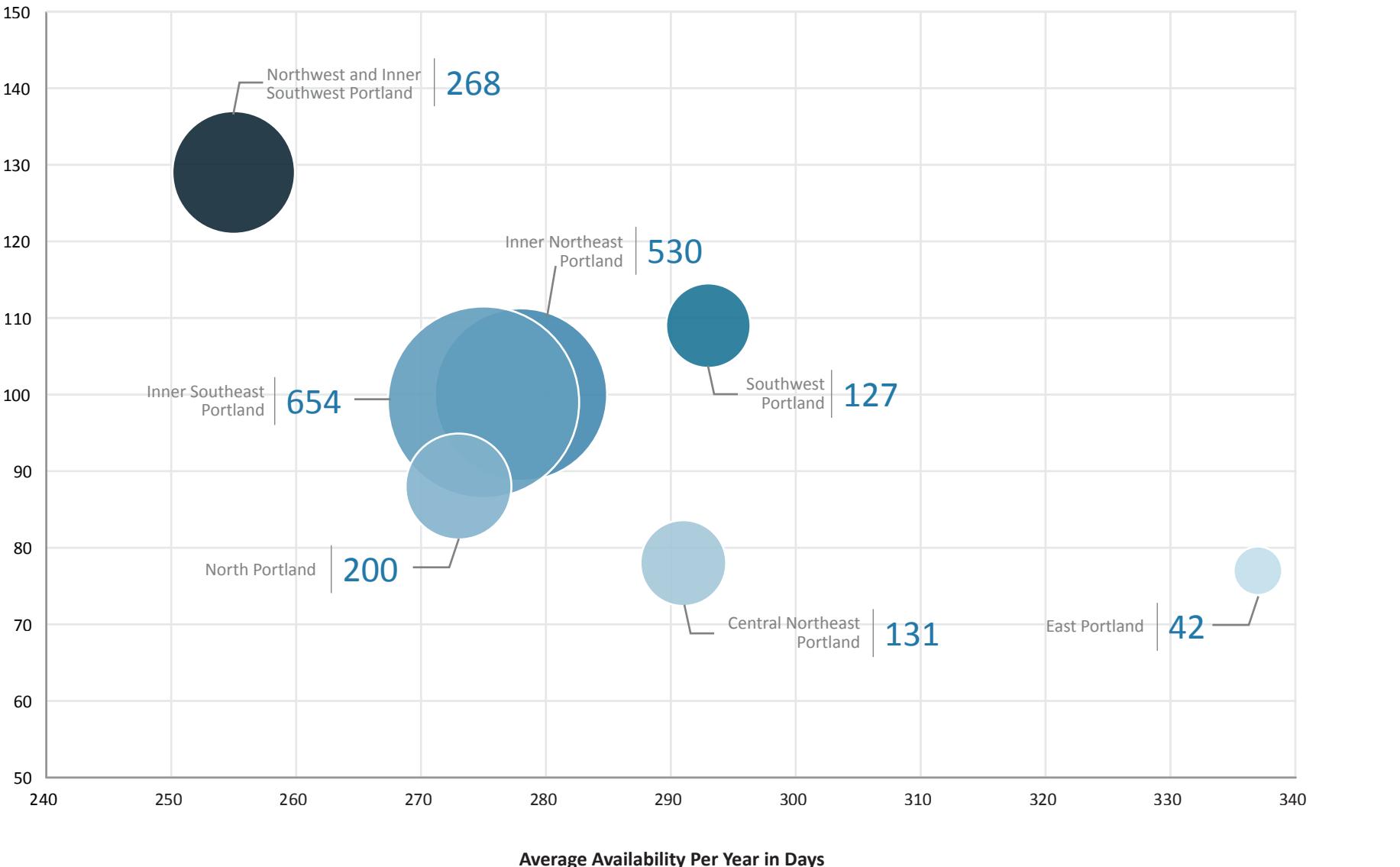
Source: M. Cox. *Inside AirBnB* | Ralph Parlin

AirBnB in Portland, Oregon

Average Price and Average Availability by Neighborhood

The graphic below illustrates the number of listings, their average price, and their average availability by neighborhood.

Average Price
(U.S. Dollars)

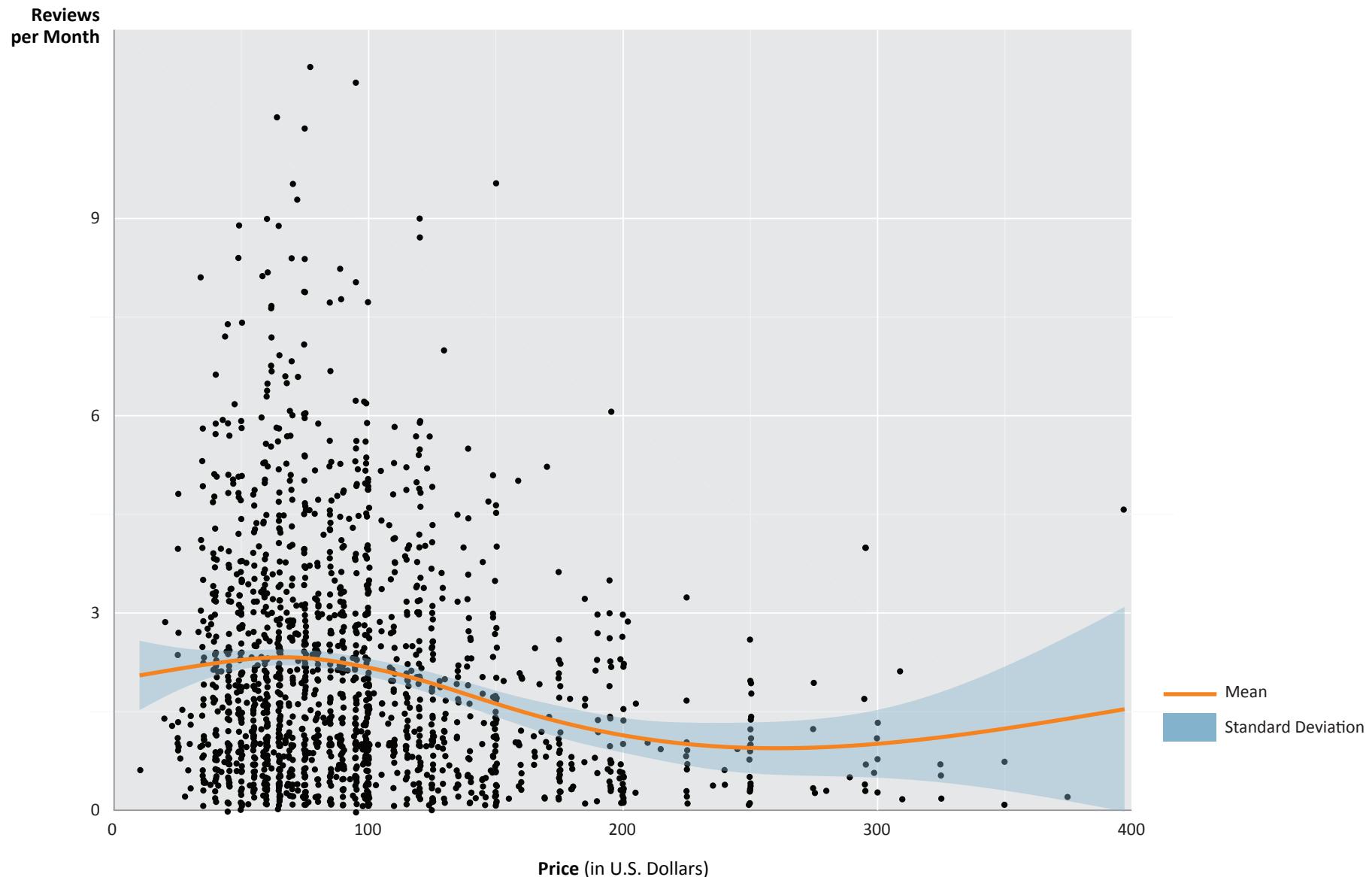


Source: M. Cox. Inside AirBnB | Ralph Parlin

- **AirBnB in Portland, Oregon**

Rates and Reviews

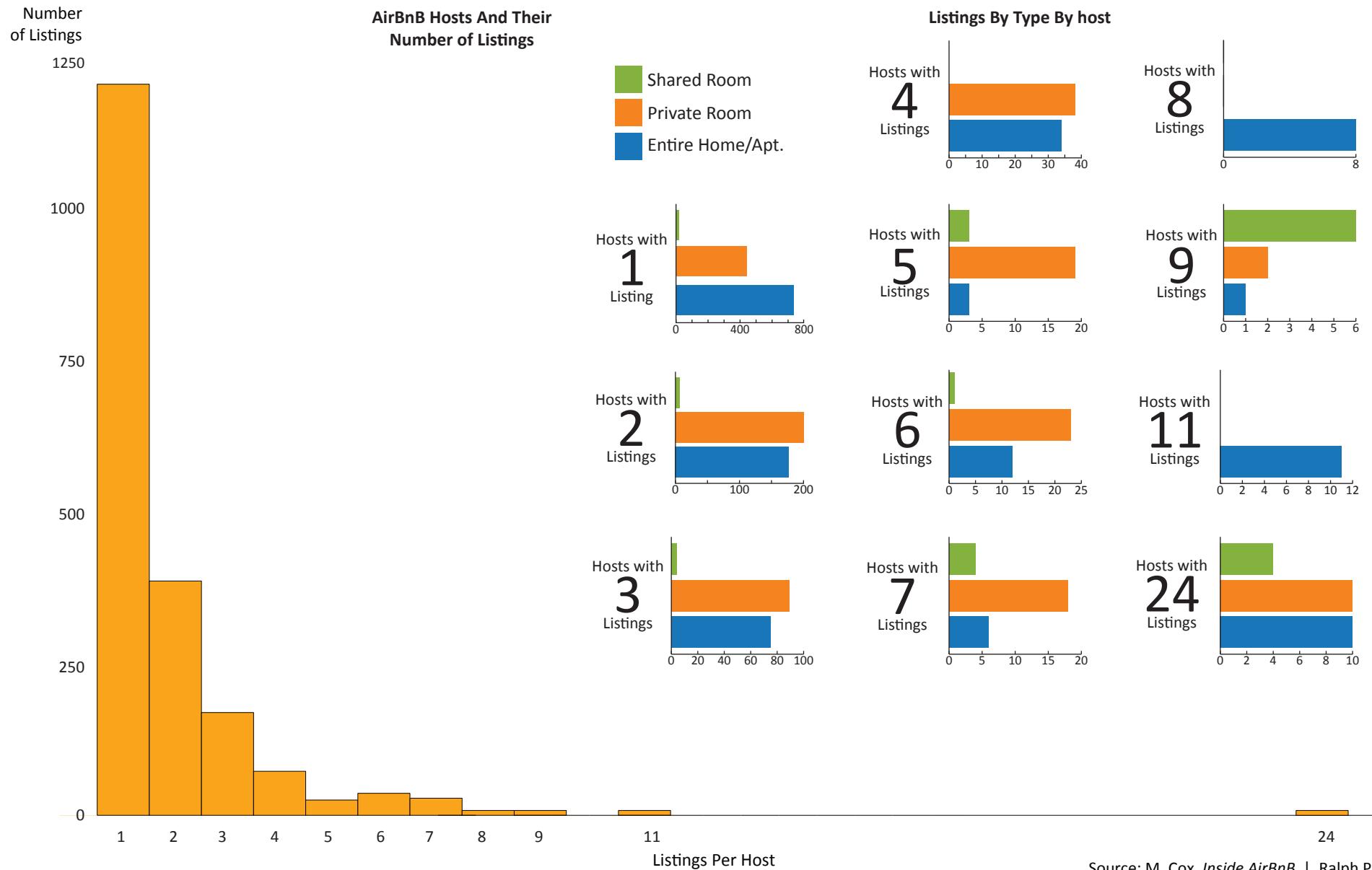
The graphic below is a scatterplot of the number of reviews a host has received by the price of the rental. This relationship was explored to identify if there is a correlation between price and the number of reviews a host receives. This relationship helps illuminate an estimate on the amount of rental activity a certain price will receive. This analysis, although it has its limitations, provides a best guess estimate on how many AirBnB transactions can be expected based off price of listing.



AirBnB in Portland, Oregon

Business or Pleasure: How Hosts Use the Platform

Many AirBnB supporters claim most people use the platform as way to make supplemental income. Assessing the number of listings each host has says a lot about how the service is being used. It's hard to believe that people with more than one listing are not using AirBnB as a business. The graphs below show the distribution of listings by amount each host has, and then provides a breakout of the types of listings each host group has.

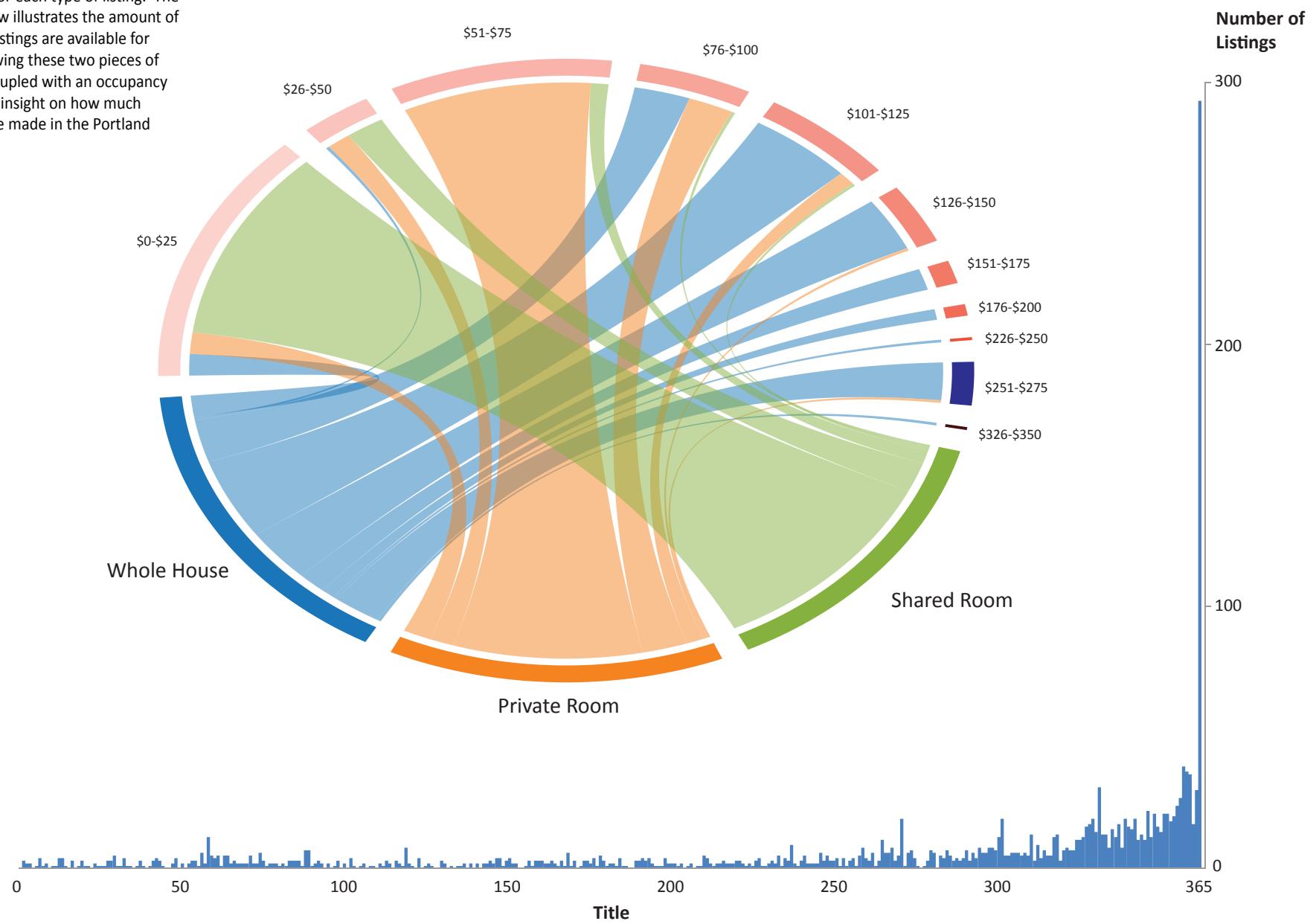


Source: M. Cox. *Inside AirBnB* | Ralph Parlin

AirBnB in Portland, Oregon

Rates and Availability

The Chord graph below illustrates a price range bracket for each type of listing. The histogram below illustrates the amount of days in a year listings are available for business. Knowing these two pieces of information, coupled with an occupancy forecast, offers insight on how much money could be made in the Portland AirBnB market.

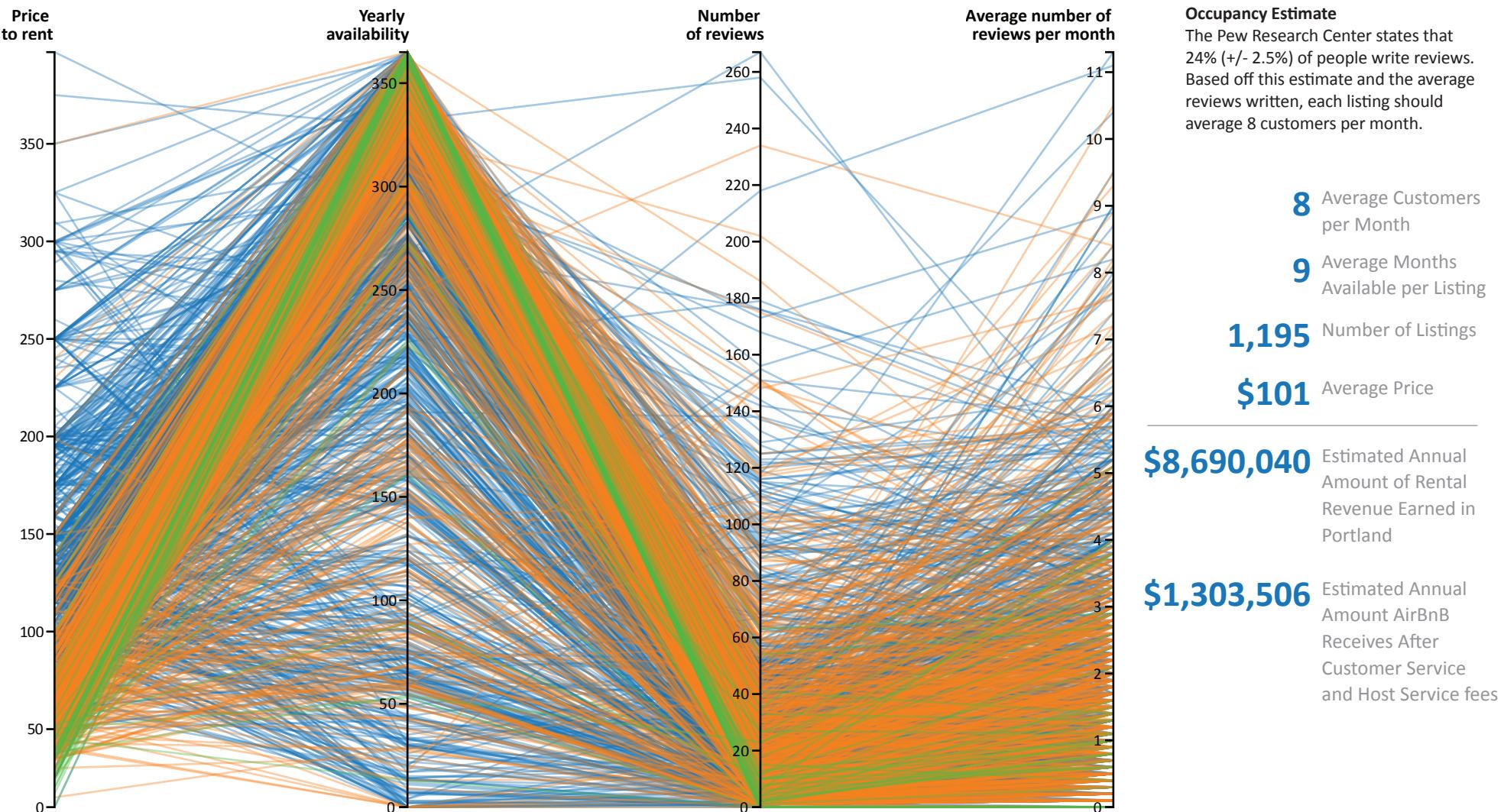


Source: M. Cox. *Inside AirBnB* | Ralph Parlin

AirBnB in Portland, Oregon

How Much Money Does AirBnB Make In Portland?

The illustration below pulls together the Portland, Oregon AirBnB activity data to derive an estimate of AirBnB's profit in this market. The graphic shows price range, availability, total number of reviews, and the average number of reviews per month. The density of data presents a pattern that can be used to establish estimates for each parameter. An estimation of annual occupancy is derived from Pew Research Center findings that state on average, 24% of people write online reviews. An estimate has been provided based off these data and assumptions.



Source: M. Cox. *Inside AirBnB* and Pew Research | Ralph Parlin

References (# = graph number)

1: Worldwide Curiosity In The Sharing-Economy

Google Trends: <https://www.google.com/trends/explore#q=Sharing%20economy>. Search term, download the csv.

2: Venture Capital Investments In The Sharing-Economy

Purchased a report from Sherpa Ventures: 2014 ODE Report, The On-Demand Economy

3: Sharing-Economy Categorization And Companies

Rogers, R. B. (2010). *What's mine is yours: The rise of collaborative consumption*. New York: Harper Collins. Pulled data from the book.

#4: 2013 Sharing-Economy Participation

<http://www.nielsen.com/lb/en/press-room/2014/global-consumers-embrace-the-share-economy.html> Pulled data from the downloaded report.

#5: Who Is Willing to Share What?

<http://www.nielsen.com/lb/en/press-room/2014/global-consumers-embrace-the-share-economy.html> Pulled data from the downloaded report.

#6: Aspects Of The Sharing-Economy That Appeal Most

Report from Havas Worldwide: Prosumer Report The New Consumer and The Sharing-Economy. http://www.prosumer-report.com/blog/wp-content/uploads/downloads/2014/05/Prosumer_18_interactive_single.pdf

#7: Market Entry 2000-2010

Sharing is Contagious. <http://www.collaborativeconsumption.com/wp-content/uploads/2015/02/Sharing-is-Contagious.pdf>

#8: Current Status Of U.S. Ridesharing Policy

National League of Cities Sharing Economy Report: An Analysis of Current Sentiment Surrounding Homesharing and Ridesharing.

<http://www.nlc.org/Documents/Find%20City%20Solutions/City-Solutions-and-Applied-Research/Sharing%20Economy%20Brief.pdf>

#9: 2009-2013 Venture Capital Investment In The Sharing-Economy: U.S. Ridesharing

Purchased a report from Sherpa Ventures: 2014 ODE Report, The On-Demand Economy

#10: Uber's Four Largest Markets For December 2013

#11: Current Status Of U.S. Homesharing Policy

National League of Cities Sharing Economy Report: An Analysis of Current Sentiment Surrounding Homesharing and Ridesharing.

<http://www.nlc.org/Documents/Find%20City%20Solutions/City-Solutions-and-Applied-Research/Sharing%20Economy%20Brief.pdf>

References (Cont.)

#12: 2009-2013 Venture Capital Investment In The Sharing-Economy: U.S. Homesharing
Purchased a report from Sherpa Ventures: 2014 ODE Report, The On-Demand Economy

#13: U.S. AirBnB Inventory and Top Ten Most Hospitable Markets, 2014

The Hospitality Index ranking come from the AirBnB corporate webpage, and the Chloropleth numbers came from me searching each state's AirBnB listings manually on their listings page. <https://www.airbnb.com/>

#14: AirBnB in Portland Oregon: 2014 Snapshot

Data set from M. Cox. (2015, March 01). *Inside AirBnB* <http://insideairbnb.com/get-the-data.html>

#15: AirBnB in Portland Oregon: Characteristics of AirBnBs by Neighborhood

Data set from M. Cox. (2015, March 01). *Inside AirBnB* <http://insideairbnb.com/get-the-data.html>

#16: AirBnB in Portland Oregon: Average Price and Average Availability by Neighborhood

Data set from M. Cox. (2015, March 01). *Inside AirBnB* <http://insideairbnb.com/get-the-data.html>

#17: AirBnB in Portland Oregon: Rates and Reviews

Data set from M. Cox. (2015, March 01). *Inside AirBnB* <http://insideairbnb.com/get-the-data.html>

#18: AirBnB in Portland Oregon: Business or Pleasure-How Hosts Use the Platform

Data set from M. Cox. (2015, March 01). *Inside AirBnB* <http://insideairbnb.com/get-the-data.html>

#19: AirBnB in Portland Oregon: Rates and Availability

Data set from M. Cox. (2015, March 01). *Inside AirBnB* <http://insideairbnb.com/get-the-data.html>

#20: AirBnB in Portland Oregon: How Much Money Does AirBnB Make in Portland

Data set from M. Cox. (2015, March 01). *Inside AirBnB* <http://insideairbnb.com/get-the-data.html>

PEW Statistic: <http://www.pewinternet.org/2010/09/29/online-product-research-2/>

Source Code for Google AirBnB Choropleth

```
<html>
<head>
<script type="text/javascript" src="https://www.google.com/jsapi"></script>
<script type="text/javascript">
google.load("visualization", "1", {packages:["geochart"]});
google.setOnLoadCallback(drawRegionsMap);

function drawRegionsMap() {
    var data = google.visualization.arrayToDataTable([
        ['State', 'AirBnB Listings'],
        ["AK",2.323],
        ["AL",2.034],
        ["AR",2.1785],
        ["AZ",2.443],
        ["CA",2.185],
        ["CO",2.113],
        ["CT",1.9035],
```

["DC",1.699],

["DE",2.0905],

["FL",2.089],

["GA",2.2255],

["HI",2.2305],

["IA",2.143],

["ID",2.4175],

["IL",2.034],

["IN",2.0815],

["KS",2.2275],

["KY",2.052],

["LA",2.107],

["MA",1.775],

["MD",2.013],

["ME",1.7675],

["MI",1.9315],

["MN",2.1375],

["MO",2.065],

["MS",2.264],

["MT",2.1315],

["NC",2.1335],
["ND",2.145],
["NE",2.2855],
["NH",1.751],
["NJ",2.049],
["NM",2.2295],
["NV",2.3605],
["NY",1.887],
["OH",1.993],
["OK",2.198],
["OR",1.9635],
["PA",1.9315],
["RI",1.721],
["SC",2.1375],
["SD",2.395],
["TN",2.0665],
["TX",2.3645],
["UT",2.6285],
["VA",2.051],
["VT",1.6915],

```
["WA",1.9825],  
["WI",2.006],  
["WV",1.82],  
["WY",2.2445]  
]);  
  
var options = {  
    region: 'US',  
    resolution: 'provinces',  
    keepAspectRatio: true, //draws largest possible map  
    legend: {textStyle: {color: 'blue', fontName: 'Calibri', fontSize: 16}},  
    colorAxis: {colors: ['#CCCCFF', '#000080']},  
    //user specified color range  
    tooltip: {textStyle: {color: "#000080",  
        fontName: "Calibri",  
        fontSize: 24}},  
};  
  
var chart = new google.visualization.GeoChart(document.getElementById('regions_div'));  
chart.draw(data, options);  
}  
  
</script>
```

```
</head>

<body>

<div id="regions_div" style="width: 900px; height: 500px;"></div>

</body>

</html>
```

Source Code for Google AirBnB Top Hostpitalitiy Overlay

```
<html>

<head>

<script type='text/javascript' src='https://www.google.com/jsapi'></script>

<script type='text/javascript'>

google.load('visualization', '1', {'packages': ['geochart']});

google.setOnLoadCallback(drawMarkersMap);

function drawMarkersMap() {

var data = google.visualization.arrayToDataTable([
    ['City', 'Listings'],
    ['Tampa', 240],
    ['Menocino', 136],
    ['Eugene', 279],
    ['Bend', 436],
```

```
['Raleigh', 446],  
['Memphis', 184],  
['Madison', 209],  
['Nashville', 1360],  
['Tuscon', 634],  
['Lake Tahoe', 927],  
});  
  
var options = {  
    region: 'US', // North America  
    displayMode: 'markers',  
    colorAxis: {colors: ['#e7711c']} // orange to blue  
};  
  
var chart = new google.visualization.GeoChart(document.getElementById('chart_div'));  
chart.draw(data, options); };  
  
</script>  
  
</head>  
  
<body>  
    <div id="chart_div" style="width: 900px; height: 500px;"></div>  
</body>  
</html>
```