

# CITY OF BOISE PEER CITIES SELECTION 2020



**BOISE STATE UNIVERSITY**  
IDAHO POLICY INSTITUTE

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## EXECUTIVE SUMMARY

In collaboration with the City of Boise (City), the Idaho Policy Institute (IPI) used an objective, statistical approach to determine a set of peer cities for use across City departments. This analysis uses a set of population and demographic variables to identify a group of cities that closely match Boise's demographic profile. This peer city selection process will help City departments standardize their research about peer cities and apply lessons learned from these cities into policy and operational decisions throughout City government. IPI's next steps in the peer cities analysis include creating an online dashboard with profiles of each peer city, automating the updating process for variables, and conducting specific service level comparisons across the peer cities. Boise's primary and secondary peer cities are:

### Primary Peer Cities:

1. Spokane, WA
2. Reno, NV
3. Lincoln, NE
4. Little Rock, AR
5. Greensboro, NC
6. Des Moines, IA

### Secondary Peer Cities:

1. Fort Wayne, IN
2. Huntsville, AL
3. Lexington, KY
4. Salem, OR
5. Madison, WI
6. Winston-Salem, NC
7. Wichita, KS
8. Chattanooga, TN
9. Durham, NC
10. Amarillo, TX
11. Anchorage, AK



# INTRODUCTION

Local government leaders often look to other cities to inform decision-making by comparing policies and practices.<sup>1,2</sup> However, comparator cities are often selected based on assumptions rather than research.<sup>3</sup> For instance, using regional cities as peers is a predominant practice that may overlook cities nationwide that could inform policy. Furthermore, in some cities, departments traditionally choose their own peer cities, resulting in inconsistent comparisons across the city.

Selecting peer cities will help the City:

1. Compare performance and service levels to similar cities,
2. Detect problems or patterns in similar cities, and
3. Create opportunities for collaboration across cities.<sup>4</sup>

The City of Boise (the City or Boise) partnered with the Idaho Policy Institute (IPI) to engage in best practices for determining relevant peer cities. This report provides details about the selection process and suggests a set of peer cities for use across City departments.

## RESEARCH USING PEER CITIES ANALYSIS

A common method of selecting peer cities is a statistical tool called cluster analysis. Cluster analysis sorts large numbers of cities into smaller, homogeneous groups based on a set of objective measures. The cities in the same group are each other's peer cities. Cluster analysis helps cities understand nuanced aspects of larger problems by comparing cities in their group. Addressing issues specific to a small group of cities leads to feasible and overall more effective problem solving than using aggregate datasets or anecdotal evidence.<sup>5,6</sup>

Many research institutions use this method to learn which cities are facing common problems. For example, the City Health Dashboard, funded by the Centers for Disease Control, focuses on identifying peer cities based on similar health metrics.<sup>7</sup> One study used cluster analysis to group cities with similar levels of pollution to better educate city leaders on the exact pollutants found in the air. Grouping cities with similar levels of pollutants allows leaders to learn more about the causes of air pollution in their city and potentially lead them to action.<sup>8</sup> Another study identified cities with similar levels of chronic kidney disease so city governments can prioritize policy solutions to eventually improve the larger problem. Cities were sorted initially by their levels of chronic kidney disease, then cities were sorted into smaller groups based on variables often associated with kidney disease, such as binge drinking, exercise, and high blood pressure.<sup>9</sup>

Along with prioritizing policy agendas, peer cities analyses provide guidance on appropriate responses to problems. For instance, leaders in Oklahoma City discovered the life expectancy gap in their city was larger than national averages and looked to other cities for examples of policies to improve this problem.<sup>10</sup> Once cities with similar demographic populations were selected, leaders in Oklahoma City studied the policies and

programs of the cities with the lowest life expectancy gap to find solutions.<sup>11</sup>

Peer city studies have the ability to produce and inspire collaboration. In 2011, the Industrial Cities Initiative (ICI) compiled data across 50 years (1960-2010) for the top ten manufacturing cities in 2010. Once completed, researchers learned that city leaders from across the country wanted to make the same kind of comparisons as the ICI in hopes of finding similar cities to learn from and form collaborations.<sup>12</sup> Another study observed transportation and demographic data with a goal to expand collaborative opportunities across cities.<sup>13</sup> Cities were grouped together based on predicted trends and then city transportation policies were analyzed. Local leaders from cities within these groups are able to learn from each other and work together to prepare for the predicted growth.<sup>14</sup>

Previous peer city studies base the selection of peer cities on metrics specific to the needs of the institution conducting the research. These need-specific metrics make it difficult for cities to use previously generated tools to identify general peer cities.<sup>15</sup> Therefore, the goal of IPI's research was to create a set of peer cities specific to Boise through a selection process informed by established research practices, as outlined below.

## VARIABLE SELECTION AND ANALYSIS

When determining how to group peer cities, the variables should be chosen carefully with input from experts and groups involved in the analysis.<sup>16,17</sup> The following six criteria are recommended for selecting variables. Variables should:

1. Be associated with the goal of analysis,
2. Be accessible at the city level for all cities,
3. Have underlying conditions that can be adjusted at a policy level,
4. Be valid, reliable, recognized, and used by others,
5. Be available at low or no cost, and
6. Be regularly updated.<sup>18</sup>

Following these criteria for selecting variables helps guarantee that the subsequently identified peer cities are accurate and beneficial.<sup>19,20</sup>

Boise's peer cities were determined using a type of cluster analysis called hierarchical cluster analysis.<sup>21,22,23,24</sup> Cluster analysis considers several variables and creates groupings of cities that are most related to each other.<sup>25</sup> The variables selected determine which cities will be clustered together.<sup>26</sup> First, clustering variables were selected. Clustering variables are population and demographic variables commonly used in social science research to identify similarities between cities. Cities with similar values for a selected set of variables are very likely to be facing similar underlying policy issues, such as issues related to growth and poverty.

After reviewing the literature and consulting with the City, IPI determined six variables to use in the cluster analysis: median age, growth rate, population density, race/ethnicity, education, and poverty rate (shown in Table 1).

**TABLE 1: CLUSTERING VARIABLES**

Variable	Definition	Detail
<b>Median Age</b>	Median age	Median age of all residents.
<b>Growth Rate</b>	Population growth rate over past 5 years	Population growth rate is calculated by finding the difference between a city's population in 2018 and 2013, then dividing the result by the 2013 population.
<b>Population Density</b>	People per square mile	The US Census determines population density by dividing the total population size by the square mileage of each city.
<b>% Non-white Residents</b>	% of residents that identify as non-white, non-Hispanic	The US Census measures the percent of residents that identify as non-white, non-Hispanic. Residents that identify as white-Hispanic, two or more races, or other are included in the percent of non-white, non-Hispanic residents.
<b>Education</b>	% over 25 with a bachelor's degree	This variable measures the proportion of people over age 25 that have earned a bachelor's degree.
<b>Poverty Rate</b>	% of population living below poverty line	The poverty rate reflects the percent of residents living below the federal poverty line.

Next, IPI compiled a list of all 257 cities in the United States with populations between 100,000 and 400,000 people and then eliminated cities that were not principal cities (the largest incorporated place in a core statistical area).<sup>27</sup> The non-principal cities were eliminated to ensure large metro area suburbs were not included in the analysis. Data for the six variables was collected for each of the remaining 112 cities. Hierarchical cluster analysis was then utilized to group the cities with the most similarities, according to the chosen variables. Boise's peer cities are those that are in the same cluster as Boise.<sup>28</sup>

Once Boise's peer cities were determined, primary and secondary peer cities were identified using a ranking index.<sup>29</sup> The index includes all six clustering variables, as well as each city's total population and metro area population. Z-scores were calculated for each value. A Z-score is a statistical approach to standardize variables for direct comparison, even if variables are measured using different scales. Then the distance of each Z-score from Boise's score was calculated. Finally, the mean distance from Boise's score was calculated for each city across all variables. The mean distances determine the ranking for each city with lower mean scores having the closest average values to Boise. The six cities with the lowest mean distance from Boise's scores are considered primary peer cities and all others are secondary peer cities.

# GETTING TO KNOW BOISE'S PEER CITIES

Boise shares a cluster with 17 other principal cities from across the country. As anticipated, there are no exact similarities to Boise, but of the 112 cities in the analysis these are the cities most similar in regards to all six variables. Table 2 lists Boise's primary and secondary peer cities in order of their similarity to Boise along with each city's total population and metro area population. Table 3 shows the values of the clustering variables for each peer city. The peer cities are spread across regions, including the Northwest, Mountain West, Midwest, and South.

The primary peer cities most closely resemble Boise based on the six clustering variables as well as the total population and metro area population. Primary peer cities will be required in all peer cities research, while secondary peer cities can be included based on the individual needs of City departments.

**TABLE 2: CITY AND METRO AREA POPULATION TOTALS**

Name	Total Population	Metro Area Population
Boise, ID	224,300	730,426
<b>Primary Peer Cities</b>		
Spokane, WA	214,804	573,493
Reno, NV	242,633	469,764
Lincoln, NE	280,849	334,590
Little Rock, AR	198,135	741,104
Greensboro, NC	288,719	767,711
Des Moines, IA	215,932	655,409
<b>Secondary Peer Cities</b>		
Fort Wayne, IN	264,052	437,631
Huntsville, AL	193,663	462,693
Lexington, KY	318,734	516,697
Salem, OR	166,756	432,102
Madison, WI	252,086	660,422
Winston-Salem, NC	242,125	671,456
Wichita, KS	389,563	644,888
Chattanooga, TN	177,365	560,793
Durham, NC	264,310	575,412
Amarillo, TX	198,773	265,947
Anchorage, AK	296,112	399,148

Source: 2018 American Community Survey 5-year estimates

**TABLE 3: VALUES OF THE CLUSTERING VARIABLES**

Name	Median Age	Growth Rate	Population Density	% Non-white Residents	Education	Poverty Rate
Boise, ID	36.2	4.25%	2,735	17%	41%	13%
<b>Primary Peer Cities</b>						
Spokane, WA	36.1	4.07%	3,187	19%	30%	17%
Reno, NV	35.6	7.13%	2,309	39%	33%	14%
Lincoln, NE	32.6	4.91%	3,030	20%	39%	13%
Little Rock, AR	36.3	0.18%	1,660	54%	41%	17%
Greensboro, NC	35.2	4.41%	2,287	57%	37%	17%
Des Moines, IA	33.9	1.15%	2,459	35%	26%	16%
<b>Secondary Peer Cities</b>						
Fort Wayne, IN	34.8	2.69%	2,419	32%	28%	16%
Huntsville, AL	36.9	5.15%	921	42%	43%	17%
Lexington, KY	34.4	3.79%	1,142	29%	43%	17%
Salem, OR	35.4	7.91%	3,565	33%	27%	15%
Madison, WI	30.8	4.96%	3,274	26%	58%	17%
Winston-Salem, NC	35.4	3.28%	1,858	54%	34%	20%
Wichita, KS	34.8	0.20%	2,414	37%	30%	16%
Chattanooga, TN	37.6	3.49%	1,263	43%	29%	18%
Durham, NC	33.8	8.28%	2,445	61%	49%	16%
Amarillo, TX	33.9	1.39%	1,968	45%	23%	15%
Anchorage, AK	33.2	-2.80%	171	42%	35%	9%

Source: 2018 American Community Survey 5-year estimates

# NEXT STEPS

## PEER CITY PROFILES

Now that Boise's peer cities have been selected, IPI will build an online dashboard 'Peer City Profiles' that City employees can use to view profiles for each of Boise's peer cities. The profiles will include information and resources that City employees can use while researching these cities for policymaking and general comparison needs. The table in Appendix A displays potential variables that will be included on the profiles, as well as definitions and potential sources where IPI will gather the data. IPI will compile this information into a dataset that can be manually updated and will continue to explore ways that some variables can be updated easily. Data may not be available for all of these variables, so IPI will work with City staff to make the final determination of variables included on the profiles.

The profiles will also include links to additional resources about each city. For example, a link to the city website(s), city code, chamber of commerce, and any other department specific or relevant webpages. This will ease the search time for City employees that want to research specific aspects of each city. The profiles are meant to guide research by City employees and will not be equipped to answer all of the possible questions or informational needs for policymaking or City operations.

## DEVELOP AUTOMATED UPDATES

IPI will work with the City to automate updates to the 'Peer City Profiles' tool. All of the variables utilized for the cluster analysis, as well as many of the variables to be included in the 'Peer City Profiles' tool, are from the U.S. Census Bureau's American Community Survey (ACS). This data can be pulled directly from the U.S. Census application programming interface (API). An application will allow the City to update the clustering variables for all of the 112 principal cities between 100,000 and 400,000 residents. Additional variables available from ACS will be able to be updated through the automated process. The peer city profiles will include the date that each variable was updated for reference by City employees.

## CONCLUSION

This report identifies Boise's peer cities based on a cluster analysis that includes six objective measures: median age, growth rate, population density, race/ethnicity, education, and poverty rate. These peer cities will standardize the process of researching comparator cities across City departments. IPI's next steps in the peer cities analysis include creating an online dashboard and profiles of each peer city, automating the updating process for variables, and conducting a service level comparison across the peer cities. The experiences and lessons faced by policymakers in the peer cities will aid Boise in making evidence-based decisions about City policy and operational goals.

# APPENDIX A

## POTENTIAL DATA SOURCES FOR PEER CITY PROFILES

Variable	Data Collection / Potential Sources
Political Affiliation	Will be found individually by city
Presence of a University	Database of Accredited Post-Secondary Institutions and Programs*
Tax Burden	A standardized metric across cities may not be accessible. Another standardized metric may be used such as Median Household Income.
Cost of Living	A standardized metric across cities may not be accessible. Another standardized metric may be used such as Median Household Income.
Income Inequality	2018 ACS
Number of Businesses	Rand State Statistics/US Census
Number of New Businesses	Rand State Statistics/US Census
GDP	Bureau of Economic Analysis*^
Median Home Price	2018 ACS
Housing Burden	2018 ACS
Rent/Own Home	2018 ACS
Violent Crime Rate	Rand State Statistics/FBI
Property Crime Rate	Rand State Statistics/FBI
Transportation Mode Split	2018 ACS
Rate of Part-time and Full-time Employed	2018 ACS or Rand State Statistics/The Bureau of Economic Analysis
Unemployment Rate	2018 ACS
% of Households with Children	2018 ACS
Police Department Size	Rand State Statistics/National Archive of Criminal Justice Data or Bureau of Justice Statistics
Presence of a Commercial Airport	Federal Aviation Administration*

Variable	Data Collection / Potential Sources
Government Type	National League of Cities*
Municipal Budget	Rand State Statistic/US Census
Retail Sales	Will be found individually by city
Land/Water Area	US Census
Parks Acreage	Will be found individually by city
Arts and History Dept.	Will be found individually by city
Library	LibWeb Library Servers*
Fire Services	Will be found individually by city
Centralized IT	Will be found individually by city
Water Utility	Will be found individually by city
Energy Source	Will be found individually by city
Sewer	Will be found individually by city
Waste Removal Services	Will be found individually by city
Legal Prosecution	Will be found individually by city
Community Engagement Department	Will be found individually by city
Zoo	Association of Zoos and Aquariums*

\* May need to supplement with individual city research

^ This metric is only easily accessible at the county level

## ENDNOTES

- 1 George, T., Longworth, S., & O'Dell, M. (2016). Introducing, understanding, and using the ICI 300 peer cities identification tool. *Profitwise News and Views*. Federal Reserve Bank of Chicago, 4, 4-8.
- 2 Remington, P., Catlin, B., & Gennuso, K. (2015). The county health rankings: Rationale and methods. *Population Health Metrics*, 13(1), 11.
- 3 Oliver, T. (2010). Population health rankings as policy indicators and performance measures. *Preventing Chronic Disease*, 7(5).
- 4 Oliver (2010). See note 3 above.
- 5 Liu, S., Li, Y., & Liu, B. (2018). Exploratory cluster analysis to identify patterns of chronic kidney disease in the 500 Cities Project. *Preventing Chronic Disease*, 15(170372).
- 6 Remington, Catlin, & Gennuso (2015). See note 2 above.
- 7 Scally, C., Pettit, K., & Arena, O. (2017). 500 Cities Project: Local data for better health. Urban Institute: Washington (DC).
- 8 Zhang, J., Zhang, L., Du, M., Zhang, W., Huang, X., Zhang, Y., Yang, Y., Jianmin, Z., Deng, S., Shen, F., Li, Y., & Xiao, H. (2016). Identifying the major air pollutants based on factor and cluster analysis, a case study in 74 Chinese cities. *Atmospheric Environment*, 144, 37-46.
- 9 Liu, Li, & Liu (2018). See note 5 above.
- 10 Knighten, L. (2019). To understand life expectancy, Oklahoma City is looking beyond health. *City Health Dashboard*. <<https://www.cityhealthdashboard.com/story/1126>>.
- 11 Knighten (2019). See note 10 above.
- 12 George, Longworth, & O'Dell (2016). See note 1 above.
- 13 Moody, J., Wang, S., Chun, J., Ni, X., & Zhao, J. (2019). Transportation policy profiles of Chinese city clusters: A mixed methods approach. *Transportation Research Interdisciplinary Perspectives*, 2(100053).
- 14 Moody, Wang, Chun, Ni, & Zhao (2019). See note 13 above.
- 15 Oliver (2010). See note 3 above.
- 16 Oliver (2010). See note 3 above.
- 17 Remington, Catlin, & Gennuso (2015). See note 2 above.
- 18 Remington, Catlin, & Gennuso (2015). See note 2 above.
- 19 George, Longworth, & O'Dell (2016). See note 1 above.
- 20 Remington, Catlin, & Gennuso (2015). See note 2 above.
- 21 George, Longworth, & O'Dell (2016). See note 1 above.
- 22 Liu, Li, & Liu (2018). See note 5 above.
- 23 Moody, Wang, Chun, Ni, & Zhao (2019). See note 13 above.
- 24 Zhang, Zhang, Du, Zhang, Huang, Zhang, Yang, Jianmin, Deng, Shen, Li, & Xiao (2016). See note 8 above.
- 25 Tan, P., Steinbach, M., & Kumar, V. (2013). Data mining cluster analysis: Basic concepts and algorithms. *Introduction to Data Mining*. Longman Publishing, Boston, Massachusetts: 487-533.
- 26 George, Longworth, & O'Dell (2016). See note 1 above.
- 27 Data for population and principal city designation is from the 2018 U.S. Census American Community Survey (ACS) 5-year estimates.
- 28 Data for each clustering variable is from the 2018 U.S. Census American Community Survey (ACS) 5-year estimates.
- 29 Blomme, C., Roubal, A., Givens, M., Johnson, S., & Brown, L. (2020). 2020 County Health Rankings Report. Population Health Institute. Madison, WI: University of Wisconsin.

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This report was prepared by Idaho Policy Institute at Boise State University  
and commissioned by City of Boise.

Recommended citation:

Larsen, B., Hall, M., McGinnis-Brown, L., Moss, M., & Crossgrove Fry, V. (2020). City of Boise  
peer cities selection 2020. Idaho Policy Institute. Boise, ID: Boise State University.

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