

E C O N O M I C S B U L L E T I N

Beauty and the Beast: An Empirical Tale of City Attributes

Pavel Yakovlev
Duquesne University

Arzu Sen
West Virginia University

Abstract

In 2007, Travel Leisure magazine conducted a survey of 60,000 people who were asked to score a number of U.S. cities in several broad categories such as culture, cityscape, people, cuisine, shopping, entertainment, and many others. This paper investigates whether peoples' perceptions of various city traits can be systematically linked to economic, demographic, and geographic factors that can shape city image. We find numerous statistically significant correlations between perceived city attributes in various categories and city facts from the Census Bureau. Some of our findings appear very intuitive, but some are rather surprising. For instance, demographic and racial groups often exhibit statistically significant coefficients that may vary dramatically across groups or regressions.

Citation: Yakovlev, Pavel and Arzu Sen, (2007) "Beauty and the Beast: An Empirical Tale of City Attributes." *Economics Bulletin*, Vol. 18, No. 9 pp. 1-9

Submitted: November 26, 2007. **Accepted:** December 19, 2007.

URL: <http://economicsbulletin.vanderbilt.edu/2007/volume18/EB-07R00006A.pdf>

1. Introduction

In the 2007 "America's Favorite Cities" survey conducted by Travel & Leisure magazine, 60,000 people were asked to score a number of U.S. cities in several broad categories such as culture, cityscape, people, cuisine, shopping, entertainment, and many other subcategories. According to the survey, Miami received the highest score (4.53) for people's physical attractiveness and Philadelphia received the lowest (3.75). Respondents gave Seattle the highest score (4.6) for people's intelligence and Los Angeles the lowest (3.43). Portland received the highest score (4.59) for cleanliness and New Orleans the lowest (2.96). New Orleans also received the lowest score for safety (2.91), while Santa Fe received the highest (4.34). Portland received the highest score (4.57) for public transportation and Los Angeles received the lowest (2.46).

The question bagging to be asked is what factors might explain these variations in perceived city attributes? Tiebout's (1956) migratory sorting and Ricardo's (1817) comparative advantage theories can provide some intuition as to why cities and people who live in them may take on certain traits. These theories suggest that people with different traits would move to cities that best match their preferences and cities would develop comparative advantage in different industries, goods, services, and amenities, but additional empirical research on this topic is warranted, especially when it concerns city and population traits that are difficult to quantify. This paper investigates whether peoples' perceptions of various city traits can be systematically linked to economic, demographic, and geographic factors that can shape city image.¹ We analyze a large number of pair-wise relationships between various city traits and numerous explanatory variables and present results only for some of the most interesting categories. Even though our empirical method is restricted to a pair-wise correlation (regression) analysis due to a small number of observations (25 cities), we find numerous statistically significant and intuitive correlations. If some of these correlations appear obvious or even stereotypical, it is important to note that they do not necessarily indicate causality and may simply proxy for omitted variables. For instance, racial groups may come up as having statistically significant relationships with various city attributes without necessarily implying that they cause them. Additionally, the displayed pair-wise correlations are average statistical approximations and may deviate significantly from individual experiences.

2. Attractiveness, Friendliness, Intelligence, Diversity, and Singles

The first set of correlations for city scores on physical attractiveness, friendliness, intelligence, diversity, singles scene and numerous regressors is shown in Table 1. The correlation analysis reveals that the perceptions of physical attractiveness are significantly (at 5% level) and positively related to the consumer price index (CPI), male population, Caucasian, Asian and Hispanic populations, renters, educational attainment (i.e. percent with bachelor degrees), foreign born, married individuals, income, median home price, and average temperature. The factors that are negatively and significantly related to perceived physical attractiveness are African American population, home owners, vacant homes, family size, unemployment rate, city

¹ City ratings or scores for various categories are obtained from [Travel and Leisure](#) magazine, while city economic, demographic, geographic and other characteristics are obtained from the [2006 American Community Survey, U.S. Census Bureau](#).

age, and driving etiquette.² City score for singles is highly correlated with clubbing score leading to almost identical correlation coefficients of these two traits with regressors. Therefore, Table 1 presents only the regression coefficients for singles score, which is negatively related to Caucasians, home owners, educational attainment, city age, and driving etiquette, but positively related to African Americans, foreign born, family size, commute time, poverty, median housing value, population density, and average temperature. Table 1 also shows that diversity score is negatively related to Caucasian and male populations, but it is positively related to Asian and African American populations, foreign born, population density, and city age. Perceived friendliness is negatively and significantly related to CPI, share of African Americans and Hispanics, foreign born, family size, commute time, share of renters, poverty, population density, and housing values. However, friendliness appears to be positively and significantly related to Caucasian population, home owners, educational attainment, married individuals, and driving etiquette. The perceived intelligence is positively and significantly related to CPI, educational attainment, income, median home value, population density, city age, and driving etiquette, but it is negatively and significantly related to Hispanic population, vacant homes, married individuals, foreign born, family size, unemployment rate, and average temperature.

3. History, Architecture, Culture, Public Parks and Transportation

The pair-wise correlations shown in Table 2 indicate that history, architecture, culture, public parks and transportation scores share many common statistically significant correlates. For instance, all five of these city traits are positively correlated with CPI, educational attainment, per capita income, population density, and city age, but are negatively correlated with Hispanic population, foreign born, married males, and average temperature. City scores for both public parks and public transportation quality are positively and significantly related to Asian population, median home price, and median income. As might be expected, public parks' quality is negatively and significantly correlated with vacant homes. However, only perceived public transportation quality has a significant positive correlation with commute time and median age, but has a negative significant correlation with Caucasian population and poverty rate. The pair-wise correlations for public parks and transportation might be especially interesting to urban economists as these results may reinforce or contradict some of the previous findings in the urban economics literature.

4. Live Music, Theaters, Museums, Cuisine, and Shopping

Table 3 shows that city scores for live music, theaters, museums, cuisine, and shopping are also significantly correlated with many regressors. Theater and museum scores have very similar correlation coefficients. For instance, older and more expensive cities with higher levels of income, renters, and education tend to have higher theater and museum scores. Interestingly, the percentage of African Americans, but not Caucasians, is positively and significantly related to city theater and museum scores. The pair-wise correlations in Table 3 also show that overall food or cuisine quality is negatively and significantly related to housing and transportation components of the CPI index, but not significantly related to the grocery component of the CPI. Perceived food quality is also negatively and significantly related to Caucasian and Hispanic

² City driving etiquette scores come from the survey on driving etiquette or road rage conducted by Prince Market Research in 2007. The determinants of driving etiquette were recently examined by Yakovlev and Sen (2007).

population, home owners, foreign born and average temperature, but it is positively related to African American population, income, city age, and driving etiquette. Shopping score is positively and significantly related to CPI, median age, educational attainment, foreign born, family size, commute time, poverty, median home price, population density, and city age, but it is negatively and significantly related to Caucasian and male population, home owners, percentage of married males, average temperature, and driving etiquette.

5. Cleanliness, Safety, and Getaway Trips

Cleanliness and safety are positively and significantly related to home ownership rates, income, and educational attainment and negatively related to population density, unemployment, and family size (Table 4). Surprisingly, there is a positive and significant correlation between safety and male population even though males make up a higher proportion of incarcerated population than females. Various racial groups often display puzzling coefficients as well. For instance, Caucasians and Asians appear positively and significantly related to cleanliness and safety, while African Americans, Hispanics, and foreign born appear negatively and significantly related to these perceived city traits. As shown in Table 4, perceptions of cities as sophisticated and romantic getaways appear to be positively and significantly related to CPI, median age, Asian population, educational attainment, income, median home value, and city age, but are negatively and significantly correlated with family size and male population, among other variables. Interestingly, sophisticated getaway score is negatively and significantly related to Caucasian population, while romantic getaway score is negatively and significantly related to African American population. City rating as a family vacation is negatively and significantly related to Hispanic population, percentage of males, vacant homes, foreign born, family size, average temperature, and commute time, but positively and significantly related to Asian population, educational attainment, income, driving etiquette, and city age.

6. Conclusion

In this paper, we have identified numerous statistically significant relationships between perceived city attributes and various economic, demographic, and geographic factors. Despite small sample size and subjective nature of city scores, this study found more statistically significant correlations between survey responses and city census statistics than did a similar study on road rage determinants by Yakovlev and Sen (2007). While, some of these correlations are rather intuitive, others are not. For example, we find that older and more northern cities receive higher scores for history, architecture, culture, intelligence, quality of public parks and transportation, as might be expected. Cuisine score is positively related to ethnic diversity, while perceived intellectual environment is positively related to income and education. Safety, for instance, is positively and significantly related to home ownership rates, income, and educational attainment. Other correlations suggest that cities with more physically attractive people are not renowned for their historical, architectural, cultural, and intellectual environment. Yet, different demographic and racial groups often exhibit very diverse and rather intriguing correlation coefficients. For instance, the relative size of male population is positively related to safety, while the relative size of Caucasian population is negatively related to public transportation. However, caution is warranted in interpreting these results as they represent correlation rather than causation and may dramatically differ from individual experiences.

Appendix

TABLE 1
Pair-wise Correlations for City Scores on People's Attractiveness, Friendliness,
Intelligence, Diversity, and Singles

	Attractiveness	Friendliness	Intelligence	Diversity	Singles
Attractiveness	1.0000				
Friendliness	0.1183	1.0000			
Intelligence	0.0580	0.2903*	1.0000		
Diversity	0.1220	-0.2435*	0.1154	1.0000	
Singles	0.3648*	-0.1389	-0.0996	0.3806*	1.0000
Overall CPI	0.2476*	-0.4203*	0.1777*	0.5716*	-0.0569
Grocery CPI	0.1497*	-0.2288*	0.1434*	0.4533*	-0.1137
Housing CPI	0.2666*	-0.4377*	0.1034	0.5713*	-0.0516
Utilities CPI	-0.0642	-0.3536*	0.2649*	-0.0196	0.1800*
Transportation CPI	0.1027	-0.0968	-0.0457	0.1359	-0.0849
Healthcare CPI	0.2927*	-0.4780*	0.3107*	0.3167*	0.0354
Males (%)	0.2178*	-0.0178	0.0089	-0.3126*	-0.0869
Median age	0.0611	0.1402	0.0188	0.4805*	-0.0882
Caucasian (%)	0.1756*	0.1926*	0.0778	-0.5017*	-0.2806*
African American (%)	-0.4347*	-0.1496*	-0.0599	0.1579*	0.2359*
Asian (%)	0.3103*	0.0965	0.1010	0.3657*	0.0820
Hispanic (%)	0.2285*	-0.3504*	-0.4453*	-0.0003	-0.0501
Home owners (%)	-0.3465*	0.5230*	-0.0583	-0.5002*	-0.4417*
Renters (%)	0.3465*	-0.5230*	0.0583	0.5002*	0.4417*
Vacant homes (%)	-0.2779*	0.1622*	-0.3235*	0.2111*	0.0977
High school degree (%)	0.0093	0.6046*	0.6188*	-0.0942	-0.2988*
Bachelor degree (%)	0.2490*	0.3354*	0.7614*	0.1000	-0.2020*
Foreign born (%)	0.5440*	-0.6036*	-0.2507*	0.3187*	0.3762*
Average family size (%)	-0.2147*	-0.3182*	-0.4745*	0.2104*	0.3415*
Married males (%)	0.3307*	0.2491*	-0.3315*	-0.1840*	-0.0529
Average commute time	-0.1016	-0.6938*	-0.0042	0.4472*	0.4974*
Median income	0.2307*	0.0636	0.4135*	0.1946*	-0.0411
Individuals in poverty (%)	-0.1371	-0.2473*	-0.1383	-0.0415	0.2339*
Median home price	0.4580*	-0.3344*	0.1796*	0.5067*	0.1759*
Unemployment rate (%)	-0.3847*	-0.0802	-0.1476*	0.2301*	0.1235
Population density	0.0863	-0.6040*	0.2399*	0.5778*	0.3741*
City age	-0.1543*	0.0098	0.3369*	0.2746*	-0.2743*
Annual average temperature	0.1781*	-0.0789	-0.7230*	0.0702	0.2132*
Driving etiquette	-0.2840*	0.8055*	0.3495*	-0.4849*	-0.5606*

* Statistically significant at 5 percent.

TABLE 2
Pair-wise Correlations for City Scores on History, Architecture, Culture, Parks, and Transportation

	History	Architecture	Culture	Parks	Transportation
History	1.0000				
Architecture	0.7815*	1.0000			
Culture	0.8155*	0.8753*	1.0000		
Parks	0.5633*	0.3944*	0.6560*	1.0000	
Transportation	0.5083*	0.6146*	0.6503*	0.6777*	1.0000
Overall CPI	0.2004*	0.2409*	0.3223*	0.2179*	0.2515*
Grocery CPI	0.2760*	0.2710*	0.3496*	0.2100*	0.2494*
Housing CPI	0.1569*	0.2101*	0.2584*	0.1456*	0.1735*
Utilities CPI	-0.0717	0.0818	0.2456*	0.1426*	0.3564*
Transportation CPI	0.0812	-0.0170	-0.0362	0.0179	0.0847
Healthcare CPI	0.1635*	0.3383*	0.3839*	0.2108*	0.2420*
Males (%)	-0.5275*	-0.5647*	-0.4400*	-0.1555*	-0.3161*
Median age	0.2237*	0.2887*	0.1584*	0.1064	0.2264*
Caucasian (%)	-0.4127*	-0.2994*	-0.3191*	-0.0774	-0.2088*
African American (%)	0.3618*	0.3767*	0.3254*	-0.0258	0.1004
Asian (%)	0.1187	-0.0235	0.0292	0.2468*	0.2916*
Hispanic (%)	-0.3701*	-0.2720*	-0.3700*	-0.4150*	-0.5143*
Home owners (%)	0.0031	-0.0948	-0.1867*	-0.1193	-0.0750
Renters (%)	-0.0031	0.0948	0.1867*	0.1193	0.0750
Vacant homes (%)	0.2300*	0.2253*	0.0243	-0.2142*	-0.1191
High school degree (%)	0.2853*	0.1740*	0.2515*	0.5294*	0.4933*
Bachelor degree (%)	0.3700*	0.2631*	0.4359*	0.6535*	0.3925*
Foreign born (%)	-0.3992*	-0.1969*	-0.2080*	-0.1940*	-0.2020*
Average family size (%)	-0.0365	-0.0757	-0.0843	-0.3522*	-0.3116*
Married males (%)	-0.3349*	-0.2682*	-0.4343*	-0.3024*	-0.1686*
Average commute time	0.0697	0.3011*	0.3657*	-0.0134	0.2574*
Median income	0.0516	0.0805	0.1323	0.2526*	0.3650*
Income/capita	0.2476*	0.2508*	0.3387*	0.3958*	0.4134*
Individuals in poverty (%)	0.1323	0.1092	0.1719*	-0.0005	-0.1938*
Median home price	0.0345	0.1266	0.1923*	0.1985*	0.2208*
Unemployment rate (%)	0.0805	0.2807*	0.2387*	-0.0262	0.1641*
Population density	0.2306*	0.4462*	0.5421*	0.2137*	0.4261*
City age	0.7791*	0.6868*	0.7449*	0.3417*	0.3436*
Annual average temperature	-0.3685*	-0.5016*	-0.7183*	-0.5345*	-0.4700*
Driving etiquette	-0.1771	-0.3173*	-0.1291	0.3211*	0.1934*

* Statistically significant at 5 percent.

TABLE 3
Pair-wise Correlations for City Scores on Live Music, Theater, Museums, Food Quality, and Shopping

	Live music	Theaters	Museums	Food/Cuisine	Shopping
Live music	1.0000				
Theaters	0.2743*	1.0000			
Museums	-0.0016	0.7709*	1.0000		
Food/Cuisine	0.6561*	0.4801*	0.4434*	1.0000	
Shopping	0.3286*	0.5284*	0.5676*	0.5944*	1.0000
Overall CPI	-0.0765	0.2782*	0.3721*	-0.1297	0.3286*
Grocery CPI	-0.0169	0.2162*	0.3691*	-0.0011	0.4508*
Housing CPI	-0.0999	0.2191*	0.3156*	-0.1893*	0.2884*
Utilities CPI	0.1576*	0.5444*	0.2950*	0.0673	0.0427
Transportation CPI	-0.0792	-0.1570*	-0.0019	-0.3448*	-0.0760
Healthcare CPI	-0.0377	0.4173*	0.3771*	-0.0740	0.3855*
Males (%)	-0.1563*	-0.1934*	-0.3791*	-0.2877*	-0.2774*
Median age	0.0925	-0.1114	0.0902	-0.0511	0.1926*
Caucasian (%)	-0.2142*	-0.1367	-0.3218*	-0.2466*	-0.1725*
African American (%)	0.1521*	0.1780*	0.3185*	0.2531*	0.1106
Asian (%)	0.1103	-0.0447	-0.0154	-0.0289	0.0259
Hispanic (%)	-0.1885*	-0.3061*	-0.3017*	-0.2531*	-0.0271
Home owners (%)	-0.2589*	-0.2498*	-0.1732*	-0.1731*	-0.4066*
Renters (%)	0.2589*	0.2498*	0.1732*	0.1731*	0.4066*
Vacant homes (%)	0.1010	-0.2815*	-0.0295	0.1653*	0.1143
High school degree (%)	-0.0478	0.1803*	0.1814*	0.0499	-0.0892
Bachelor degree (%)	-0.0764	0.2896*	0.3933*	0.0752	0.1937*
Foreign born (%)	0.1498*	0.0034	-0.1885*	-0.1618*	0.2131*
Average family size (%)	0.1679*	-0.1285	-0.0330	0.2385*	0.1793*
Married males (%)	0.0255	-0.3285*	-0.4719*	-0.2387*	-0.1569*
Average commute time	0.3054*	0.5693*	0.3929*	0.3261*	0.4078*
Median income	-0.0338	0.2283*	0.1199	-0.1062	-0.0011
Income/capita	-0.0893	0.3083*	0.3129*	-0.0652	0.1038
Individuals in poverty (%)	0.0805	0.1019	0.1959*	0.2637*	0.1974*
Median home price	0.0817	0.2594*	0.2005*	-0.0832	0.3442*
Unemployment rate (%)	0.1425*	0.2528*	0.3157*	0.3263*	0.1287
Population density	0.2658*	0.6685*	0.5341*	0.3106*	0.5476*
City age	-0.0450	0.3976*	0.7008*	0.3144*	0.5884*
Annual average temperature	0.0462	-0.8005*	-0.7654*	-0.2957*	-0.3689*
Driving etiquette	-0.2581*	-0.0471	-0.1215	0.1609	-0.3718*

* Statistically significant at 5 percent.

TABLE 4
Pair-wise Correlations for City Scores on Cleanliness, Safety, Sophisticated Getaway, Romantic Getaway, and Family Vacations

	Cleanliness	Safety	Sophisticated getaway	Romantic getaway	Family vacation
Cleanliness	1.0000				
Safety	0.9068*	1.0000			
Sophisticated getaway	0.0211	0.0845	1.0000		
Romantic getaway	0.2068*	0.4290*	0.5958*	1.0000	
Family vacation	0.5998*	0.5280*	0.1979*	0.1761*	1.0000
Overall CPI	-0.1517*	-0.0387	0.5906*	0.3429*	0.1585*
Grocery CPI	-0.1664*	0.0142	0.5683*	0.4200*	0.0758
Housing CPI	-0.1808*	-0.0810	0.5371*	0.3226*	0.1309
Utilities CPI	-0.0231	-0.0733	0.2332*	-0.2968*	-0.0023
Transportation CPI	0.0397	0.0068	0.1869*	0.1098	0.1306
Healthcare CPI	-0.0756	0.0090	0.6379*	0.3110*	-0.0486
Males (%)	0.2851*	0.2637*	-0.3038*	-0.1776*	-0.2959*
Median age	-0.1521*	-0.0419	0.3737*	0.5404*	-0.1037
Caucasian (%)	0.4534*	0.4926*	-0.2169*	0.1211	-0.0859
African American (%)	-0.4578*	-0.6399*	0.0234	-0.3856*	-0.0649
Asian (%)	0.0883	0.2087*	0.3287*	0.4283*	0.2429*
Hispanic (%)	-0.1510*	-0.0998	-0.2595*	-0.0341	-0.3044*
Home owners (%)	0.3640*	0.3592*	-0.3407*	0.0192	0.0055
Renters (%)	-0.3640*	-0.3592*	0.3407*	-0.0192	-0.0055
Vacant homes (%)	-0.4450*	-0.4987*	-0.0440	0.0496	-0.2712*
High school degree (%)	0.6308*	0.6784*	0.2494*	0.3614*	0.5254*
Bachelor degree (%)	0.4912*	0.4764*	0.4547*	0.2556*	0.4298*
Foreign born (%)	-0.2886*	-0.2330*	0.1750*	0.0989	-0.2848*
Average family size (%)	-0.6897*	-0.7514*	-0.1763*	-0.3019*	-0.3984*
Married males (%)	0.1913*	0.4296*	-0.2060*	0.4005*	-0.1310
Average commute time	-0.5677*	-0.5860*	0.3755*	-0.1878*	-0.2095*
Median income	0.3061*	0.3747*	0.3927*	0.3459*	0.2209*
Individuals in poverty (%)	-0.3671*	-0.5361*	-0.0933	-0.4533*	-0.1382
Median home price	-0.1124	-0.0194	0.5625*	0.3755*	0.1078
Unemployment rate (%)	-0.3699*	-0.4169*	0.0921	-0.0762	0.0024
Population density	-0.4184*	-0.3337*	0.6176*	0.0955	-0.1034
City age	-0.1644*	0.0648	0.5107*	0.3392*	0.1930*
Annual average temperature	-0.2581*	-0.2288*	-0.4766*	0.0454	-0.2066*
Driving etiquette	0.6336*	0.6104*	-0.2884*	-0.0293	0.3254*

* Statistically significant at 5 percent.

References

Ricardo, D. (1817) *On the Principles of Political Economy and Taxation*.

Tiebout, C. (1956) "A Pure Theory of Local Expenditures" *Journal of Political Economy*, **64**, 416-24.

Yakovlev, P. and Sen A. (2007) "What Drives Road Rage?" *Atlantic Economic Journal*, forthcoming.