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Beautiful City: Leisure Amenities and Urban Growth

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Beautiful City:
Leisure Amenities and Urban Growth*

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ABSTRACT. Modern urban economic theory and policymakers are coming to see the provision of consumer-leisure amenities as a way to attract population, especially the highly skilled and their employers. However, past studies have arguably only provided indirect evidence of the importance of leisure amenities for urban development. In this paper, we propose and validate the number of tourist trips and the number of crowdsourced picturesque locations as measures of consumer revealed preferences for local lifestyle amenities. Urban population growth in the 1990-2010 period was about 10 percentage points (about one standard deviation) higher in a metro area that was perceived as twice more picturesque. This measure ties with low taxes as the most important predictor of urban population growth. "Beautiful cities" disproportionally attracted highly educated individuals and experienced faster housing price appreciation, especially in supply-inelastic markets. In contrast to the generally declining trend of the American central city, neighborhoods that were close to central recreational districts have experienced economic growth, albeit at the cost of minority displacement.

JEL: J11, J61, R23

Keyword: Internal migration, amenities, urban population growth

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1. INTRODUCTION

A growing number of economists are shifting their attention to the role of cities as centers of leisure and consumption. City beautification and the provision of amenities that are complementary to leisure are certainly not new ideas, as the streets of Barcelona, Istanbul, Paris, Rome, or Vienna attest. In America, the City Beautiful movement of the early 20th century advocated for sizable public and private investments in monumental public spaces, parks, street beautification, and classical architecture, with an emphasis on aesthetic and recreational value. The City Beautiful philosophy emphasized the importance of improving the living conditions of the urban populace, and their physical and psychological welfare. High aesthetics were believed to imbue city dwellers with moral and civic virtue.

More recently, theoretical economic models have emphasized the importance of variety in consumption to explain why cities exist.[1] Other work points toward the role of amenities in explaining cross-city differences in, for example, suburbanization and housing prices.[2] Glaeser, Kolko, and Saiz (2001), GKS hereinafter, argue that innovations in transportation, production, and communication technologies have ambiguous impacts on agglomeration economies on the production side. Nevertheless, if consumers prefer a large variety of goods and services and if there are economies of scale in providing them, economic welfare will still depend on the size of the local market. A large literature has discussed the importance of local market potential to create virtuous cycles of concentrated demographic growth (Harris, 1954, Krugman, 1991). Given the arbitrarily large export costs of leisure-complementary services—rendering them effectively nontradable—it may be cost effective for their producers with increasing returns to scale or under imperfect competition to locate in large markets. For example, a number of studies by Waldfogel and his co-authors have shown that larger cities have more and better newspapers, radio stations, and television stations.[3] Market potential

[1] Ogawa (1998), Fujita (1988), Tabuchi (1988), Abdel-Rahman (1988).
[2] Tabuchi and Yoshida (2000), Glaeser, Kolko, and Saiz (2001), Gyourko, Mayer, and Sinai (2013).
[3] See Waldfogel, Holmes, and Noll (2004), Waldfogel and George (2003), and Waldfogel and Siegelman (2001). Carlino and Coulson (2004) argue that sports franchises appear to be a public good by adding to the quality of life in MSAs. They find that rents are roughly 4 percent higher in MSAs with an NFL team.

effects may become stronger for leisure-complementary goods as their share of total consumption grows.

Greater availability and *variety* of consumption amenities is especially attractive to households as their wealth increases.[4] In the 46 years between 1959 and 2005, real per capita income more than doubled in the United States. Increasing income inequality (Autor, Katz, and Kearney, 2006) could be turning some cities into centers of consumption for highly educated workers. The rapid rise in real income among this population has led to increased demand for luxury goods, such as meals in gourmet restaurants and live performances, which are more plentiful in large cities (GKS, Rappaport, 2008). Demand for variety may also increase more than proportionately with income, as high-skill individuals account for a larger share of the workforce in large cities (Lee, 2010). Nevertheless, it is hard to distinguish empirically the extent to which high-wage workers locate in cities to become more productive or because cities offer greater variety in consumption and leisure activities.[5]

Past empirical studies have provided some evidence on the importance of consumer amenities. A number of studies rely on implicit valuations of urban amenities estimated using a Rosen–Roback approach.[6] A number of other studies have calculated residuals in a rent-wage regression and related them to city size or growth (Tabuchi and Yoshida, 2000, GKS, Asahi, Hikino and Kanemoto, 2008). On balance, these studies suggest that, while productivity is higher in larger cities, people's tastes for urban amenities and variety are important factors accounting for the concentration of populations.

While market potential effects are indubitably important to explain the resurgence of consumer megalopolises, there remains a great deal of variation in amenities after conditioning on city size. Regardless of their population, some cities have a comparative advantage in the production of consumer-oriented services and *public goods*, due to a

[4] See, for example, the articles by Brueckner, Thisse, and Zenou (1999), GKS, and Adamson, Clark, and Partridge (2004).
[5] Gyourko, Mayer, and Sinai (2013) also argue that it is the composition of the workforce and not necessarily greater productivity that explains higher housing prices in some locations, referred to as superstar cities.
[6] Rosen (1974), Roback (1982), Blomquist, Berger, and Hoehn (1988), Gabriel and Rosenthal (2004), Rappaport (2008), Albouy (2016).

historic character, architectural variety, pleasant public spaces, or natural scenic beauty. Local public policy may also play a role. Policymakers and private investors are paying increasing attention to the provision of public goods that are complementary to leisure activities (Florida, 2002): museums, waterfront parks, open-air shopping centers, and other public spaces. Cities around the world—such as Bilbao in Spain; Glasgow in Scotland; and in the U.S., Oklahoma City, OK; Camden, NJ; and San Antonio, TX—are leveraging public investments in spaces for leisure—and beautification—to spur economic development.

Of course, low property taxes, better schools, shorter commutes, working conditions, and the like remain very important for household location choices. Here, however, we choose to focus on the combination of public and private goods and consumption externalities (e.g., historic character or aesthetic charm) that are more than strictly local and difficult to reproduce. One can move to a metropolitan area with poor average quality of education and yet sort into a high-quality school district. But the package of environmental, aesthetic, and recreational amenities within driving distance is fairly homogenous at each metro. Such amenities tend to be complementary to the enjoyment of leisure but can also improve psychological welfare—thereby making people more productive—and the quality of human interactions or make work and travel more pleasant. Some of them may assist in conforming distinctive local identities. Such difficult-to-measure amenities certainly play a role in inter-metropolitan mobility decisions. This could be the case even for households that hardly make use of them in practice. As with marketing techniques, *perceptions* about leisure opportunities, urban attraction, local charm, and the lifestyles they evoke could themselves become drivers of consumer behavior. In order to avoid a more constraining term, we henceforth denominate them "lifestyle amenities."

We will thus ask the question: Do natural or manmade lifestyle amenities really matter for urban economic development? In this paper, we present evidence that supports an affirmative answer to this question.

We start by deploying two types of measures for the demand for urban lifestyle amenities stemming from revealed preferences, the first one based on the number of tourist visits by metro. Leisure visitors are attracted by an area's special traits, such as proximity to the ocean, scenic views, historic districts, architectural beauty, and cultural and recreational opportunities. But these are some of the very characteristics that attract households permanently. Following Ahlfeldt (2013), the second measure is based on the number of photos crowdsourced by users on the website Panoramio. This application (embedded in Google maps) allowed users to display and geotag photos capturing picturesque, scenic, or otherwise appealing locations. We calculate the number of photos within the boundaries of each metropolitan area as a measure of picturesqueness and availability of recreational opportunities.

It is virtually impossible to include in any one study the vast and differing variety of private and public lifestyle amenities that draw people to cities. Typically, researchers have chosen which ones to use, such as restaurants, bars, or gyms (e.g., GKS, Couture and Handbury, 2017, Kuang, 2017). In addition to being subjective *ex ante*, these sets of amenities cannot be comprehensive. It is problematic to keep experimenting with alternate potential amenities *ex post*, lest we collectively overfit urban growth equations (Sala-i-Martin, 1997, Belloni, Chernozhukov, and Hansen, 2014). Our measures can therefore be seen as objective metrics that capture the extent and *quality* of lifestyle amenities. It is not us making the choice of which amenities should be relevant: We let consumer and user behavior point to the cities they like best by voting with their feet or their clicks.

In section 2, we describe these measures and their correlates. The elasticity of the amenity proxies with respect to population is always close to one. Inasmuch as the measures capture public goods or sources of externalities, it is therefore likely that large cities provide more amenity services *per capita*. However, we also find that there is substantial variation in both measures that is not accounted for by city size and, hence, by market potential effects. Cities with less precipitation (clear skies), lower presence of manufacturing, fewer EPA hazardous sites, an abundance of parks, a high share of coastal shore, more historic landmarks, and lower poverty levels are perceived as more attractive. These results are robust to the use of either revealed-preference proxy. They, incidentally, point to the fact that successful anti-poverty policies can improve the perceived quality of life of *all* urban dwellers.

We then move, in section 3, to exploring how lifestyle amenities correlated with urban *growth* between 1990 and 2010. Our findings suggest that, all else equal, population and employment growth were about 10 percentage points higher in a metro twice as picturesque. The proxy for lifestyle amenities becomes tied with low taxes for the most important predictor of contemporaneous urban development.

We are sympathetic but cautious about a causal interpretation of these findings. As pointed out by Levine and Renelt (1992) with regard to cross-national economic growth, results that are significant in isolated regressions may turn out not to be robust when considering broader sets of explanatory variables. We do, however, arguably control for the most salient urban-growth predictors in the previous literature. City attractiveness does hold its own in comparison to these widely used variables.

We also try to dispel trivial endogeneity concerns. Controlling for a large number of covariates, including past growth rates (i.e., the lagged dependent variable), and using instruments for picturesqueness based on lagged leisure visits do not weaken the relationship between lifestyle amenities and *subsequent* growth. While thus allaying endogeneity worries, we demonstrate that a number of measures that have been previously used to capture amenities may actually suffer from reverse causation.

It is noteworthy to point out that static quality of life (QOL) estimates are less helpful in forecasting future urban growth. In our view, it is perilous to use estimates based on housing price residuals to predict demographic change in the city, because housing prices circularly embed future growth expectations. For instance, GKS calculate the residuals of a regression of the log of median housing prices on log wages across metro areas in 1980 as amenity proxies and use them to forecast population growth in the 1980s. While their results do not seem to be completely driven by reverse causation, the practice remains suspect.[7] In addition, QOL estimates are based on strong equilibrium assumptions. The study of urban shocks and resulting long-run adjustments to restore equilibrium are less suited to the strengths of that empirical framework. The variables we propose provide defensible measures of city attractiveness for forecasting purposes.

[7] These authors do caution that "one particular worry is that housing prices in 1980 are reflecting expected future housing rents growth." While the results are robust for controlling for contemporaneous growth of rents in the 1980s, prices in 1980 may be forecasting longer term growth or reduction in cap rates (e.g., potential reductions in risk inherent to fast-growing cities).

Previous work has emphasized the importance of housing supply in mediating the impact of city demand shocks on population growth (e.g., Saks, 2008, Paciorek, 2013, Ganong and Shoag, 2017). In section 3.3, we deploy the estimates of housing supply found in Saiz (2010) to demonstrate the simultaneous impact of lifestyle amenities on housing prices and demographic growth.

Finally, in section 4, we examine the relative attractiveness of neighborhoods *within* a metropolitan statistical area (MSA). The monocentric city model has largely focused on a neighborhood's distance from its central business district (CBD) as the main determinant of its density and rents. Recent papers examining the resurgence of denser urban centers as destinations for highly skilled young populations (Couture and Handbury, 2017, Baum-Snow and Hartley, 2016) use distance to CBD in order to differentiate between central and outlying locations. These studies find that younger, educated individuals are moving disproportionally to central locations, likely due to amenity effects. While the results in this literature provide valid intention-to-treat estimates, they probably underestimate the importance of amenities, because there is considerable heterogeneity in their quality within city areas—as defined by distance to CBD—and across metros. In this paper, we present new measures of centrality, based on a census tract's distance to lifestyle amenities within the city.

We define central recreational districts (CRDs) based on tracts' distances to tourism information centers, access to historic and recreational sites, and—as in Ahlfeldt (2013) with regard to London and Berlin—picturesqueness. We show that the evolution of CRDs was very different from the rest of the central city neighborhoods that surrounded them in the 1990-2010 period.[8] Despite worse initial economic conditions, CRDs managed to grow faster than other comparable neighborhoods. Rents, incomes, and education increased relatively faster in such beautiful neighborhoods, at the cost of gentrification. Distance to CBD was mostly irrelevant to the economic and demographic evolution of urban neighborhoods in the U.S., once we control for access to lifestyle

[8] We use the Census definition of central cities, which encompasses the political boundaries of the cities that name the metro areas and oftentimes also include dense, adjacent cities such as Cambridge in the Boston metropolitan area.

amenities. While the American central city generally did not come back in the 1990s, the beautiful city within flourished.

2. DATA AND CORRELATES OF LIFESTYLE AMENITIES

2.1 Data

Our main explanatory variable is the attractiveness (picturesqueness) of a metro area as measured by the number of crowdsourced photos geotagged within its boundaries. We start by aggregating the total number of pictures at the metro level and examine their variance *across cities*. As described in Saiz, Salazar, and Bernard (2018), data were obtained from Panoramio, the source of the images in Google Maps until November 4, 2016. This now-discontinued photo-sharing website contained millions of geotagged photos contributed by people from all around the world. The website specialized in scenic and landmark photography. It collected user-generated pictures capturing beautiful or interesting environments, buildings, and places. The website was curated by its developers in order to avoid postings of personal and family photos. We used Panoramio's application programming interface (API) to obtain information about the approximately 3 million U.S. photos posted in 2014.

Data on the density of geotagged scenic photos have been previously used by Ahlfeldt (2013) for London and Berlin. There is burgeoning parallel literature in urban informatics examining the ability of geotagged images to capture urban features (e.g., Nikhil et al., 2017). Saiz, Salazar, and Bernard (2018) summarize this literature and perform a survey to validate the empirical use of such measures: They find that buildings with a higher frequency of geotagged photos within a radius of 50 meters do tend to be considered more beautiful by independent survey respondents.

Data on leisure trips are provided by D.K. Shifflet & Associates, a firm specializing in consulting and market research to the travel industry.[9] These data provide destinations of individuals who traveled for leisure purposes. "Travel" is defined as any overnight trip or any day trip greater than 50 miles one way. Questionnaires were mailed to 180,000

[9] D.K. Shifflet & Associates Ltd. (www.dkshifflet.com).

households in 1992 and to 540,000 households in 2002. Respondents include 49,000 traveling households in 1992 and 80,000 in 2002 (with about two-thirds of traveling households making leisure trips in either year). Returned samples were demographically rebalanced on five key measures (origin state, age, gender, household size, and household income) to be representative of the U.S. population.

Shifflet provided data for the top 200 leisure-trip destinations in 1992 and 2002. Thirty of these observations were dropped from our sample because they are not metropolitan. In addition, 32 destinations were combined into 15 metro areas based on geographic proximity.[10] In keeping with this data source, we use the 1999 MSA and New England County Metro Area (NECMA) definitions to construct all variables in the study.

Table 1 shows metros ranked by their level of tourism arrivals, for metro areas with populations above 500,000 in the 1990 census. Leisure visits in these major cities ranged from a high of a little more than 22 million leisure visits to Orlando (Florida) to a low of 660,000 visits to Newark (New Jersey).

Because Shifflet provided leisure travel numbers for the top 200 destinations only, the data are left-censored. We therefore use employment in the tourism industries together with other covariates to impute leisure visits for the left-censored observations in the growth regressions and to provide a nonproprietary proxy for tourist appeal to interested researchers. We are thus able to construct an imputed measure of tourist visits for our whole sample of 305 continental U.S. MSAs/NECMAs.

Following the convention in past studies, we measure employment in the travel and tourism industry as the sum of employment in hotels, air travel, and amusement/recreation as reported in *County Business Patterns*.[11] The correlation between

[10] We combined the following 32 cities into 15 MSAs: Atlantic City–Cape May; Greensboro–Winston-Salem, NC; Harrisburg–Hershey, PA; Jacksonville–St. Augustine, FL; Kansas City, MO–Kansas City, KS; Knoxville–Gatlinburg, TN; Las Vegas–Boulder City, NV; Los Angeles-Long Beach, CA; Minneapolis–St. Paul, MN; Norfolk–Virginia Beach–Williamsburg, VA; Orlando–Kissimmee, FL; Sacramento–Lake Tahoe, CA; Tampa–Clearwater–St. Petersburg, FL; Washington, DC–Fredericksburg, VA; and Raleigh–Durham, NC.

[11] See Wilkerson (2003) for a discussion of the issues regarding measurement of local employment for the travel and tourism industries. We developed estimates of employment in the “travel and tourism industry” for two periods, 1990 and 2000, using two- and three-digit industry detail found in the SIC breakdown for 1990 and the NAICS breakdown for 2000. Specifically, our measure of employment in the travel and tourism industry is the sum of employment in the following industries: SIC 451 (Air Transportation) and SIC 458 (Airport Terminal Services), SIC 70 (Lodging) and SIC 84 (Museums, Botanical, Zoological

the survey-based data and employment-based measures for the observations for which both series are available is quite strong (0.6) as illustrated in Figure 1: Both variables here are partialed out of log population levels, which would mechanically drive even stronger correlations. Figure 2 similarly shows the correlation between tourism and the log photo density (also residualized after controlling for log population).

In addition to these various measures of attractiveness, our data set includes a large host of other economic, demographic, and geographic variables that we created or gathered (details in Appendix). Table 2 reports summary statistics for the variables used in this study. The table shows, for example, that the average metro in our data set experienced population growth of about 12 percent during the 1990-2010 period.

2.2. Correlates of revealed-preference urban lifestyle measures

What drives perceived city attractiveness? In Table 3.a, we start by examining the left-censored proprietary data on tourism. We use Tobit regression models where the dependent variable is the log of leisure visits in 1992. Rather than at zero, missing observations are censored at the minimum level of tourist inflows in the Shifflet sample. The last column (column 6) in Table 3.a replaces this proprietary measure by the log of total employment in the tourism industry by city. In Table 3.b, we perform identical exercises with the log of the number of online photos by metro area on the left-hand side.

In all specifications, we include metro-level controls for: population; log number of colleges; the poverty rate; log of January temperature; log of annual precipitation; the share of people over 25 with a college degree; and the share of employment in manufacturing and finance insurance and real estate (FIRE). All variables are measured in 1990. We also calculate and use measures of the average distance of all census blocks within a given metro to parks and recreational centers (zoos, museums, amusement parks, etc.). Finally, we include a number of other variables that could capture city amenities: the log of the number of sites in the National Register of Historic Places per capita; the coastal share within a 10-kilometer radius of the centroid of the metro's central city; and

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Gardens), and SIC 79 (Amusement and Recreational Services) for 1990; we built up the corresponding SIC codes for 2000 using the bridge between the 1987 SIC breakdown and 2000 NAICS breakdown.

the mountain land share within a 10-kilometer radius of an MSA's boundary, as derived from calculations in Saiz (2010).

Table 3.c provides a comparison between the parameters on the three measures—visits, employment in tourism, and crowdsourced photo volumes—using standardized versions of all variables. Estimates can thus be interpreted as the standard deviation increase in city attractiveness in response to a standard deviation change in the dependent variables. Coefficients that are statistically significant at the 10 percent confidence level are displayed in color. Results are fairly consistent. The estimates—as summarized in Table 3.c—unambiguously suggest that larger, sunnier metro areas with lower poverty rates, lower manufacturing employment, far distance from hazardous sites, more historical buildings, and a higher coastal share within 10 kilometers of the central city are more attractive.[12] There is some support to the hypothesis that access to parks makes cities more appealing. While the share of adults with bachelor's degrees is significant only with regard to picturesqueness, the log number of colleges is in turn significant with regard to tourism. Therefore, one of the human capital proxies is always associated with city lifestyle amenities.

While a causal interpretation might not necessarily be granted, these results are by and large consistent with our priors. The negative coefficient on poverty—controlling for all other attributes—points to an important motivation for poverty alleviation: By reducing inequality, cities become more attractive for everyone—including the rich.

There is some evidence that picturesqueness grows more than *proportionally* with respect to population, although the coefficients in Table 3.b are not statistically different from 1. These elasticities with regard to tourist visits and employment, respectively, are always below 1, in Table 3.a. Hence, *visits per capita* decline with population. Of course population is endogenous to attractiveness.

However, even from a descriptive perspective, our proxies are likely to capture aspects of the urban environment with a public-good nature. We do not measure

[12] Leisure trips may also reflect the supply of hotels. In unreported regressions we examined whether leisure trips are sensitive to hotel prices. Using data on historic maximum allowed per diems as per the U.S. General Services Administration, we did not find a significant negative relationship between hotel rates and tourism, even after instrumenting for hotel prices with population in 1950. We therefore think of leisure trips as mostly capturing the *demand* for leisure in the city.

amenities directly but can model the relationship between the aggregate level of metropolitan amenities (*Am*) and our proxies—for instance, picturesqueness as captured by the number of photos (*F*) —as: $Am = \gamma \cdot F^{\rho}$.

Amenities associated with aesthetics, leisure, and lifestyles are bound to display a degree of non-congestion, as different citizens can enjoy them without excessive rivalry. As in Borcherding and Deacon (1972), one can express individual amenity consumption (q_a) as a function of total amenities and metro population (*N*): $q_a = \frac{Am}{N^{\alpha}}$, with α between 0 (amenities are public goods) and 1 (private goods). All variables are partialed out of the other ones used in Table 3.a, and we ignore error terms w.o.l.o.g. In Tables 3.a and 3.b, we estimated β in the relationship $lnF = \beta \cdot lnN$. We can then describe the individual consumption of local amenities as: $lnq_a = ln\gamma + (\rho\beta - \alpha)lnN$. Taking our estimates of β to be around one, then the question is whether $(\rho - \alpha) > 0$. If so, larger cities provide more amenity value. Our prior is that ρ is large: close to one or even above, because more picturesque areas provide greater *variety and choice* to individuals. Our prior is also that α will be substantially smaller, as perceived safety, aesthetics, and public spaces are non-rival and display strong product complementarities and externalities (e.g., positive ensemble effects à la Dixit–Stiglitz). In light of the evidence, our hypothesis is therefore that larger cities do actually provide a higher level of amenities. This effect should be counteracted by higher congestion costs and higher real estate prices in equilibrium.

Nevertheless, the data unequivocally suggest that many other variables beyond city size enter in the production function for urban amenities.

2.3. Does policy matter?

Were local government expenditures on parks and other recreational facilities associated with subsequent urban attractiveness? To address this question, we use data from the Census of Governments in 1977, 1982, and 1987 to obtain average land, equipment, and other capital expenditures on parks and recreation by metro area, expressed in 1987 dollars. This provides an estimate of new investments in the construction of recreational spaces and facilities from the late 1970s to mid-1980s.

Column 2 in Tables 3.a and 3.b, and column 6 in Table 3.a present the augmented regressions. We find that a 10 percent increase in investments in recreational spaces was associated with a 2.3 percent increase in leisure visits and a 1.3 percent increase in employment in the tourism industries. However, lagged expenditures on capital improvements do not seem to increase the number of online photos. It could be that large recreational spaces—such as theatres and museums—tend to generate tourist trips from within the city (e.g., a suburban couple staying in a hotel downtown after a night out) without discernibly adding to the perception of the metro area. Alternatively, the lack of coincidence may reflect an unlucky draw from the data generation process or differences in omitted variable bias across the two models.

But even if we take these results at face value, is the tourism-inducing positive effect of public capital expenditures driven by reverse causality? Locations with more leisure visitors may have mechanically required more spending. To see if that is the case, we control for expenditures in park and recreation *current operations* (column 3 in Table 3.a), and find that there is not a statistically significant relationship between leisure visits in 1992 and the former. However, the coefficient on leisure capital expenditures stays strong.[13] This finding is very difficult to reconcile with a reverse-causation story from leisure trips to required ongoing expenditures. Similarly, we cannot find a relationship between tax revenues and leisure visits either (column 4 in Table 3.a).

Another concern is that forward-looking cities that invest in any type of public capital may tend to receive more leisure visitors, perhaps caused by past or expected city growth. In column 5 in Table 3.a, we present the results of a regression using a placebo variable—average capital expenditures in new public buildings—which turns out to be statistically insignificant. Actually, only capital expenditures on recreational projects were related to subsequent leisure visits.

2.4. Relationship to state-of-the-art QOL estimates

In Figure 3, we display the relationship between the crowdsourced proxy for attractiveness—based on granular density of internet pictures and residualized using log population—and the estimates of urban QOL estimates in 2000 by metro area as estimated by Albouy (2016). The line follows the best-fit OLS equation and suggests a strong positive relationship. Unreported regressions suggest that a one standard deviation

[13] Excluding capital expenditures does not change the zero result on current recreational expenditures.

increase in the number of pictures—adjusted by log population—is associated with a 0.66 standard deviation increase in QOL estimates per Albouy (2016) (with an R-squared of 0.44). While strongly related, the proxy for picturesqueness has the additional advantage of not being directly imputed from local housing prices and wages.

3. CITY ATTRACTIVENESS AND GROWTH

3.1. Main results and robustness checks

The basic growth regressions that we estimate in this section take the form:

$$ln\left(\frac{y_{i,T}}{y_{i,0}}\right) = \alpha + \sum_j \beta_j x_{i,0} + \varepsilon_i, \quad (1)$$

where $y_{i,t}$ represents either population in year *t*; *T* represents the terminal period (2010), and 0 indicates the initial period (1990); *i* indexes the metropolitan area, and *j* the number of parameters to be estimated, and ε_i is an *iid* error term.

In addition to lifestyle amenities, full specifications include demographic lagged variables, all measured in the initial year (1990): log population,[14] share of adults with a bachelor's degree, the murder rate, and the foreign-born share. We regard international migration as an additional *independent* driver of population growth in U.S. cities (Altonji and Card, 1991, Card, 2001, Saiz, 2003, 2007).[15]

Five economic predetermined characteristics are also included: the log income per capita; the unemployment rate; the share of workers in manufacturing; the log of patents per capita (also measured in 1990); and the log of CPI-adjusted average taxes by MSA in

[14] The coefficient of the lagged population variable can be interpreted as a convergence coefficient akin to the income beta-convergence parameter in the economic growth literature. There is a long literature relating initial population size and subsequent growth. The ultimate goal of this literature is to explain the ergodic distribution of city sizes given different assumptions about the dynamics of local productivity shocks. See Eeckhout (2004) for a discussion of this literature and an explanation of the size distribution of cities. Lagged population also acts as a scaling control here.

[15] Immigrants are largely inframarginal to the initial spatial equilibria in the system of cities: They derive positive economic rents from moving to the U.S. There is a very elastic supply of immigrants into the U.S. that is somewhat curtailed by restrictive immigration policies and the costs imposed by legal barriers and border enforcement. Moreover, a long-standing literature demonstrates that their location determinants are mostly related to the existence of ethnic networks and largely insensitive to the economic evolution of U.S. cities (Altonji and Card, 1991, Card, 2001). As a robustness check, instrumenting for immigration in the 1990s with immigration in the 1970s yielded identical results to the ones presented here, because immigration inflows are extraordinarily correlated across decades. Omitting concurrent immigration flows does not change results either, because immigration inflows are conditionally uncorrelated to our measure of city attractiveness.

1977, 1982, and 1987 (Census of Governments). Three geographic variables are controlled for: the log of average January temperature between 1941 and 1970; the log of average annual precipitation between 1961 and 1990; and a costal dummy variable equal to unity if an ocean or Great Lake is within a 50-kilometer radius of a MSA's boundary. Finally, regional dummies are included in all specifications (the Midwest region is omitted). The variables that we include cover "flavors" for most the main explanatory factors of city growth that have been proposed in the previous literature.

Column 1 in Table 4.a presents the results from a benchmarking regression including only the log of population in 1990 plus regional fixed effects as explanatory variables. Somewhat surprisingly, larger metro areas tended to do better throughout the 1990-2010 period. Conditioning on size, Southern and Western metro areas tended to grow faster, and Northeastern ones tended to lag the Midwest (note that these are not population-weighted regressions).

In column 2 in Table 4.a, we include the two revealed-preference proxies for city attractiveness. Both variables can be interpreted as alternative ways to capture a latent variable of interest: lifestyle amenities. As suggested by Lubotsky and Wittenberg (2006), researchers can include all proxies on the right-hand side and interpret the sum of their coefficients as the total effect of the latent variable.

The inclusion of these variables is enough to change the sign of lagged population, opening the possibility that most of the positive effect of city size on growth during the two decades was actually driven by urban amenities.

The web-based measure turns out to be much stronger in predicting recent urban growth. In fact, the travel-based measure—which was the main explanatory variable in Carlino and Saiz (2008)—now becomes insignificant. This result can be rationalized by considering that both tourist and locals post online photos. The latter are more likely to share images from less well-known beautiful locales. Tourist trips, in contrast, may be capturing variation across relatively smaller, more popular parts of each metro area.

We therefore decide to focus on picturesqueness as our main proxy for city lifestyle amenities hereinafter. The concern with this measure is that it may be endogenous to urban growth, since the data are from 2014.[16] Hence, we instrument this

[16] For instance, people in growing cities may have more cameras or a higher likelihood to post online.

variable with imputed log tourism visits in 1992, which could not have been mechanically caused by subsequent demographic growth.[17] As seen in Figure 2, the two variables are very strongly and positively correlated. Both variables are thus likely to represent proxies for a common latent variable. Consequently, imputed tourist visits turn out to be a very strong instrument for online photos, with a first stage Cragg–Donald F-statistic of 108, more than 6 times larger in magnitude than the critical value per Stock and Yogo (2005).

Instrumenting one proxy by another is an alternative to the Lubotsky and Wittenberg (2006) approach and the most widely accepted technique to deal with measurement error in the presence of alternate proxies. The classical errors-in-variables instrumental variable (EIV IV) model is also preferred here because of the aforementioned potential endogeneities. Indeed, if the number of online photos was reverse-caused by recent growth, we would expect the IV approach to mute the relationship between the two variables. However, if both photos and leisure visits were exogenous noisy proxies for a subjacent latent variable—city attractiveness—then we would expect the coefficient to actually increase. Per column 3 in Table 4.a, the data are more consistent with the latter EIV interpretation.

Column 4 introduces the control variables. Note that the coefficient on picturesqueness is mostly unchanged (or even increasing) after adding these controls to the regression, suggesting that impact of other drivers of urban growth in the U.S. is largely orthogonal to that of lifestyle amenities. Quantitatively, the results indicate that doubling picturesqueness is associated with an increase in average city growth of around 12 percentage points.

Column 5 in Table 4.a reports the results of a regression that drops Orlando and Las Vegas, two very idiosyncratic tourist cities, from the sample. Dropping these two metros—as we do in all specifications hereinafter—does not have a significant impact on the estimated values of the coefficients.

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[17] Of course, there is a two-year overlap between the period of the dependent variable and the timing of the measurement, and growth trends are quite persistent; however, we control for lagged growth later, which does not change the coefficients of this IV specification.

An important question is whether the results are driven by the multiplier effect of employment growth in the tourism sector. Many local governments promote the travel and tourism industries as sources of local economic development *per se*, but we are more interested in picturesqueness—instrumented with tourism visits—as a proxy for lifestyle-related consumer private services, public goods, and externalities catering to locals. Therefore, in column 6 in Table 4.a, we display results of a regression that controls for the coetaneous growth in employment in the local travel and tourism industries. Main results do not change significantly. This is perhaps not surprising, since employment in the travel and tourist industry accounted for a very small share of total employment in the typical metro area in our sample (average 3.3 percent in 1990). Moreover, unreported regressions show that the growth in tourist employment displayed substantial mean reversion, and *more attractive cities actually experienced relatively less employment growth in the sector*.

One, perhaps implausible, explanation for the results is that our proxies for lifestyle amenities may be capturing future changes in urban productivity, even after controlling for the other factors. In column 7 in Table 4.a, we control for contemporaneous growth in income (1990-2010). Income growth was positively associated with population growth but leaves the coefficient on the lifestyle amenity proxy mostly unchanged—evidence not consistent with a productivity explanation.

Reverse causality is a more serious challenge. Past growth or future growth expectations may influence the number of posted online photos or leisure visits. And demographic growth is very persistent. For instance, the correlation of growth rates by metro area between the 1980s and 1990-2010 was very high (0.75), as depicted in Figure 4. The regression reported in column 8 in Table 4.a thence controls for the lagged population growth rate between 1980 and 1990, and therefore for permanent latent factors that could be expected to keep driving growth in the period 1990-2010. This is an extremely demanding specification, as we could be over-controlling for fundamentals in city growth in the 1980s that may have already been associated with lifestyle amenities. Yet the coefficient of interest does not decline by much, which is consistent with an interpretation where *consumer lifestyle amenities have experienced growing valuations in more recent times*.

In Table 4.b, we study the quantitative impact of the associations. Column 1 presents the same specification as in column 5 in Table 4.a—that is, excluding Orlando and Las Vegas—with all variables now in standardized form. Coefficients can be thus interpreted as the standard deviation changes in population growth associated with a one standard deviation change in the right-hand-side variables. The four significant predictors of urban growth at the turn of the century were (associated betas in parentheses): the log of tax revenues (-0.90), picturesqueness (0.89), log of July precipitation (-0.39), and immigration density (0.19). These results situate lifestyle amenities as virtually tied with low taxes for the strongest predictor of recent urban growth in America.

In column 2, we drop our revealed-preference measure of amenities to see how the other variables fare. We now find that some of the "usual suspects" in urban growth regressions become significant: lagged share of skilled labor (with college degree), January temperature, and manufacturing orientation. Very saliently, lagged population levels now become an important variable. This evidence is consistent with the hypothesis that large cities have been doing well because of their advantage in the provision of lifestyle-oriented amenities, at least in this sample of 1999-defined metropolitan areas.

3.2. Researcher-defined lifestyle amenities

In order to emphasize the appeal of picturesqueness for urban researchers, we also compare its robustness vis-à-vis ad hoc measures of city amenities used in previous research. Specifically, we use the numbers of restaurants, movie theaters, museums, and membership organizations, all measured in logs in the initial year (1990). As in GKS, we have information only for 272 MSAs, because in some of the smaller counties employment information at such a fine level remains confidential.

Column 1 in Table 5 shows the results of a 1990-2010 population growth regression incorporating these variables, together with the other controls (as in column 4 in Table 4.a). Restaurants and membership organizations appear correlated with subsequent growth in this specification, the latter negatively. The signs on the variables are not always consistent with our expectations. Column 2 in Table 5 shows the results when we control for instrumented picturesqueness. Museums now appear to be negatively related to population growth. Nevertheless, the picturesqueness variable holds its own in this reduced sample. In column 3, we show the results of a regression that controls for lagged metropolitan growth in the 1980s. While our lifestyle amenities measure retains some of its predictive power (note the smaller sample), the other ad hoc variables do not. This suggests that those variables may be more subject to endogeneity with regard to past growth: Restaurants—more saliently—are disproportionally located in previously growing metro areas. Metro picturesqueness—as instrumented by leisure visits in 1992—appears to be more robust than the various endogenous amenity variables chosen by researchers' conjectures. In addition, both variables come directly from revealed consumers' preferences.

Finally, in column 4 in Table 5, we add the other explanatory variables that we discussed as potential correlates of city attractiveness in section 2. Their inclusion increases the value of the coefficient of interest but also its standard error. Point estimates of the coefficient are less likely to be reliable here, because we are using a large number of collinear controls. None of the variables that can be described in terms of pure amenities—coastal status, parks, recreation centers, low industrial pollution, historic nature—is either significant or taking the right sign. The share of mountains within 10 kilometers takes on a negative sign, possibly explained by supply elasticity effects (Saiz, 2010). Only social factors appear now as statistically significant: Poverty rates appear as potentially bad for urban growth; finance and insurance industries predict success. We conclude that the use of crowdsourced photos is a sufficient statistic for a number of commonly accepted variables meant to capture city lifestyle amenities.

3.3. What type of growth? education, wages, and housing prices

Earlier, we suggested that the impact of our city attractiveness proxies is unlikely to be driven by job growth in low-skill travel-related industries. In Table 6, we examine *how* growth happens in attractive-lifestyle cities. In column 1, the dependent variable becomes the change in the share of individuals with bachelor's degrees in the metro area. We find very strong evidence that highly skilled workers were disproportionally moving to attractive cities. Moving from bottom to top within the interquartile range of picturesqueness yielded an additional 2.7 percentage point increase in the share of individuals with bachelor's degrees in 2010, compared with 1990.

In columns 2 and 3 in Table 6, the dependent variable becomes the change in the log of average income per census measurements in 1990 and 2010. Different from the analysis in Carlino and Saiz (2008) focusing on the 1990s—which found no effect—we now find the association between lifestyle amenities and average income growth over two decades to be negative. As we have seen, the population in beautiful cities was becoming more skilled: In column 3, we control for the contemporaneous change in the share of persons with bachelor's degrees. As expected—because beautiful cities were attracting high-income skilled labor—this actually strengthens the negative association between amenities and self-reported income. In columns 4 and 5, we repeat the exercises, this time using average worker wages as measured by the Bureau of Economic Analysis. The results here mimic those found with regard to self-reported income.

Findings are consistent with the canonical Rosen–Roback model (Roback, 1982) and with evidence in Lee (2010): Both higher housing prices and relatively lower wages should be expected in areas with very high amenities. This effect should strengthen as amenities become relatively more important. Of course, composition effects could still be driving these results (e.g., workers with poorer work ethics self-selecting into leisure-oriented cities or via faster labor force incorporation of lower-wage women and minorities in attractive cities). Therefore we red-flag them for future research, nonetheless pointing out that selection into attractive cities by unobserved skills could actually be positive (Lee, 2010), which would mean that the actual skill-adjusted wage effects of lifestyle amenities may be even more negative.

The findings reported in column 6 in Table 6 are also consistent with a Rosen–Roback story contemplating growing valuations for urban amenities: Picturesqueness also predicted faster growth of housing values. Our calculations reveal that, all else equal, housing values were rendered 16 percentage points higher while moving from the 25th to the 75th percentile of urban beauty. Note that here we control for initial housing values in 1990, because over medium- to long-run periods—such as the 10-year horizon we are considering—there is strong mean reversion in housing values.

Finally, column 7 in Table 6 shows results of a specification where we study again population growth (1990-2010). This time, we add the contemporaneous growth in the share of persons with bachelor's degrees as a control on the right-hand side. This variable is obviously affected by the treatment of interest. Nevertheless, the descriptive results can be interpreted as partial effects that go above and beyond those mediated by the attraction of highly skilled population (Rosenbaum, 1984). The results suggest that, indeed, part of the effect of city beauty on urban growth may happen through the attraction of skilled labor. However, a larger component of the effect (perhaps more than half) seems to go through direct channels, above and beyond the dynamics of the highly skilled population.

3.4. Housing supply elasticity

The impact of the increasing valuations of city lifestyle amenities on, respectively, population and housing values should be mediated by the local elasticity of housing supply (Saks, 2008). Consider the following equation system of metropolitan housing supply and demand:

(2) $$\Delta P_{i,t} = \pi + \beta_i \Delta Q_{i,t} + \varepsilon_i$$

(3) $$\Delta Q_{i,t} = \alpha - \varphi \Delta P_{i,t} + X_{i,t-1}\Theta + u_i.$$

Equation (2) is a housing supply equation. In the system, P and Q—representing housing prices and the stock of households, respectively—are in logs, and Δ denotes changes over a 10-year period. The subscript *i* indexes metropolitan areas, *t* represents the final year (in our application 2010), and *t*-1 the starting year (which will be set to 2000 here). In the housing supply equation (2), prices depend on quantity growth as mediated by a local inverse-elasticity parameter (β_i) and on a national inflation shock(π). Since the model is in changes, we can safely assume that metropolitan-specific intercepts pertaining to local housing supply have been differenced out.

Equation (3) is the city/housing demand equation. Under the assumption that the growth of housing units is proportional to the growth of population, this equation effectively captures urban demographic dynamics, allowing for results to be comparable across specifications. This is a convenient but innocuous assumption, as the correlation between *changes* in population and *changes* in the number households in the period was 0.95. By taking the change in the log population as the effective magnitude for $\Delta Q_{i,t}$, equation (3) becomes a growth equation similar to the earlier equations estimated, except we add a generic demand elasticity for urban living (φ). Note that this demand elasticity does not correspond to the usual one—focusing on the intensive margin of housing consumption—but rather indicates how sensitive population changes are to local housing prices—the extensive margin of housing demand at the metro level.

The equilibrium changes in log prices and quantities imply:

(4) $$\Delta P_{i,t} = \pi + \frac{\beta_i}{1+\varphi\beta_i}\left\{\alpha - \varphi\pi + X_{i,t-1}\Theta\right\} + \frac{\beta_i u_i + \varepsilon_i}{1+\varphi\beta_i}$$

(5) $$\Delta Q_{i,t} = \frac{1}{1+\varphi\beta_i}\left\{\alpha - \varphi\pi + X_{i,t-1}\Theta\right\} + \frac{u_i - \varphi\varepsilon_i}{1+\varphi\beta_i} \quad .$$

We do not identify the supply and demand elasticity parameters here, and rely on previous estimates. Individual estimates of inverse elasticities β_i are obtained from Saiz (2010), and an estimate of the demand elasticity (-0.5) is from Saiz (2008). We can then infer the relevant demand shock parameters Θ by estimating (4) and (5) simultaneously. We have to impose the constraint that the parameters be the same across the price and quantity equations. Given the covariance between the errors of the two reduced-form equations, the constrained system is estimated using seemingly unrelated regression equations (SURE) model.

We decide to focus on changes in housing prices and population between 2000 and 2010 for this exercise. We do this because elasticity estimates in Saiz (2010) were estimated using data from the period 1970-2000. It would not thus be surprising for such parameters to fit well for data on changes in prices and population from an overlapping period (1990-2000), as they were partially derived to do so. Thus, we are effectively using Saiz (2010) estimates out of sample.

The results of the constrained SURE model are presented in Table 7, under suggestion that city attractiveness has a simultaneous impact on prices and demographic growth. The coefficients are strongly significant. For instance, if the supply elasticity equals one, then the estimated demand impact of amenities will be evenly divided into population and housing price growth: 50 percent, respectively.

There is support in the data for the simultaneous impact of lifestyle amenities on population growth and housing prices to be mediated by metro-specific supply elasticities. Using the Akaike criterion, the model with individual metro supply elasticities is preferred to an alternative unreported model where we assume a common supply parameter across metros and equal to their average in Saiz (2010).

Of course, unconstrained separate models for prices and population would fit the data better. Yet it is remarkable how well a single equation performs. This can be seen in Figures 5.a and 5.b. The first graph illustrates the relationship between median house price predictions from constrained SURE estimates—on the horizontal axis—and their actual growth by metro between 2000 and 2010. Figure 5.b repeats the exercise with regard to population growth. To reiterate, predictions use the common estimates of the parameters Θ—as reported in Table 7—and plug in *past* (out-of-sample) estimates for β_i and φ. As the Figures 5.a and 5.b show, common shocks that make cities more attractive, such as lifestyle amenities, tend to both spur demographic growth and—if housing supply is inelastic—push up local home values in ways that are consistent with basic economic theory.

4. CENTRAL RECREATIONAL DISTRICTS (CRDs)

We now shift our attention to the relationship between lifestyle amenities and economic development within metropolitan areas. Despite the popular discussion about the comeback or revival of central cities, the evidence generally points to a continuation of their relative decline, both in terms of population and economic outcomes in the two decades between 1990 and 2010.

Most conceptual and empirical research in urban economics has taken accessibility to the CBD as the main geographic characteristic of urban locations (e.g., McMillen, 2003, Lee and Lin, 2017). Instead, we propose that access to a CRD is an important determinant of demographic change and economic evolution of city neighborhoods. Conceptually, the CRD will be defined as the set of locations within a metropolitan area that is close to recreational and lifestyle amenities. Operationally, we use several geographic accessibility measures to define neighborhoods in the CRD.

Our first measure of access to recreational opportunities and aesthetic externalities is based on the distance of each census tract in an MSA to its central city's tourism information offices. Since the measure is relevant only in cities where leisure visits are substantial, we focus on the top 100 tourist destinations, 88 of which are metropolitan in nature. This covers a substantial proportion of the most populated areas: 70 percent of all metropolitan census tracts are included in calculating this measure. To do so, we obtained and geocoded addresses of all tourism offices in the central city of reference. We then calculated the distance of each census tract to the closest one. “Beautiful areas” within the city are then defined in terms of distance to the closest tourism center. Specifically, we create three dummies for census tracts within 1-kilometer, 1- to 2-kilometer, and 2- to 3-kilometer rings of the city’s tourist center.

Our second set of measures is based on accessibility to historic sites and recreation centers. We obtain the geographic coordinates of all historically designated sites from the National Register of Historic Places and calculate their distance to all census tracts. We then generate a gravity measure at the census tract level that is based on average accessibility to historic places. Concretely, we calculate $G_m^H = \sum_{\forall n} \frac{1}{d_{mn}^2}$, which is the “historic gravity” of a census tract *m*, defined by the sum of the number of historic places in the MSA weighted by the inverse of the square distance between the tract and each of the historic places (*n*). We then create a dummy variable taking value one for neighborhoods in the top five percentiles of this measure across all metropolitan tracts.

The exact same procedure is undertaken for proximity to other recreational areas. We use proprietary GIS data identifying “recreational places” contained in the ESRI Data and Maps DVD. The data identify the location of museums, local attractions, zoological and botanical gardens, golf clubs, major theatrical and opera venues, parks, and other major centers of leisure as classified and itemized by TeleAtlas, the original point of interest (POI) data provider.

Two dummy variables therefore characterize the top historic and recreational areas in the full set of metropolitan tracts. Out of 51,466 metropolitan tracts, 2,573 correspond to the 5 percent of tracts that are deemed “historic,” and the same number is classified as “recreational.” Of these, 1,201 were classified as both; there is a very strong correlation between historic and recreational gravities. It is important to note that 85 percent and 89 percent of tracts deemed as highly historical or recreational, respectively, are located in central cities.

There are 388 census tracts within 1 kilometer of a tourism information center (380 of them in central cities). The 1- to 2-kilometer ring consists of 904 tracts (871 in central cities) and the 2- to 3-kilometer ring of 1,094 tracts (1,013 in central cities).

It is encouraging that our first two sets of measures, which we constructed independently, are strongly coincident. A simple linear regression where top historic and recreational status dummies are the dependent variables and the three proximity-to-tourism-center rings appear on the right-hand side displays strong and monotonic relationships between the two sets of variables (see Table 1 in the Appendix).

A third measure of lifestyle amenities is based on the number of Panoramio photos, which we geolocated to each census tract in the U.S. We then selected the top 5 percent of census tracts with the most photos. This approach is similar to the one used in Ahlfeldt (2013) for Berlin and London, but it is extended to all metropolitan areas in the U.S.

In Table 8, we follow the economic and demographic evolution of beautiful neighborhoods in the 1990s (1990-2000). The regressions in panel A use distance to information centers in high-tourism cities (70 percent of all metropolitan tracts), while the regressions in panel B use dummies for top historical, recreational, and picturesque tracts as applied to the whole metropolitan sample. All regressions include controls for metro fixed effects (the variance is exclusively within metro) and for a central city dummy. In column 1, we can see that population did not increase in beautiful neighborhoods and in fact may have decreased. Similar results accrue in column 2 with respect to the number of housing units. Since these are areas in which new real estate development is difficult, this is perhaps not surprising. We will revisit this issue later.

Column 3 in both panels (Table 8) shows that the share of highly educated individuals in CRDs increased. The relationship with respect to distance to tourist centers is decreasingly monotonic, a pattern that holds for all findings henceforth. Similarly, column 4 shows that average income increased in CRDs. This evidence contrasts with the general evolution of the central city: Beautiful areas bucked the trend of worsening educational attainment and incomes of American central cities in the 1990s. While central cities in general became denser with minorities, CRDs—on the contrary—became more non-Hispanic white (column 5).

Next, we measure the changes in the marginal willingness to pay (MWTP) for beautiful areas by examining the evolution of rents (column 6). We focus on changes in the log of average rents between 1990 and 2000 as a summary of the residential valuation of the neighborhoods. Changes in rental prices in these neighborhoods deviated upward substantially from their central city's trend. Neighborhoods in the CRDs had been increasingly considered by the market as more attractive places to live.

It is important to contrast these findings with the evolution of neighborhoods that were close to the CBD. We do so in column 7 by controlling by the log of distance to the CBD. This variable turns out to be insignificant or even positive on panel B. The patterns are very clear: Accessibility to the CRD was more important quantitatively than distance to the CBD in explaining the evolution of rental prices in the 1990s. While areas proximate to the CBD fell with the rest of the central city, the CRD truly represented the comeback of the central city in popular and policymaker discussions.

In columns 8 and 9 in Table 8, we revisit population and rental growth, this time conditioning on predetermined characteristics of each census tract. Specifically, we control for the log of income, unemployment rate, share of residents in families with kids, share of those older than 65, high-school dropout share, share of non-Hispanic white, and share of foreign-born residents, all measured at their initial values in 1990. The results reinforce our previous conclusions. Given their initial characteristics, neighborhoods in the CRD strongly surmounted the negative trends of similar areas within the city. These CRD neighborhoods had lower initial average incomes, higher unemployment, a lower share of people living in families with kids, higher elderly shares, higher dropout rates, higher minority shares, and higher foreign-born shares than other neighborhoods in the central city in 1990 (the differences are statistically significant). All these characteristics would have predicted a very strong negative evolution of population and rents in the CRDs that did not happen.

Table 9 displays identical specifications for the decade from 2000 through 2010. The results are similar but with interesting quantitative differences. Broadly speaking, the impact of lifestyle attractiveness was stronger on rents in the 1990s than in the 2000s. Conversely, population was growing faster, and more housing units were built in the CRDs in the 2000s than in the 1990s. These findings are consistent with a lagged supply response. Indeed, some of these areas may have displayed housing prices that were below construction costs early on. As homes prices rise in these areas, it may have paid off to build anew in central areas that were convenient to lifestyle amenities. Alternatively, it may have taken time for developers to respond to the emerging demand trends in CRDs.

Regardless, it is clear that lifestyle amenities and consumption externalities seem to define the areas within a central city that are coming back in the contemporaneous American urban milieu. The classical discussion in urban economics about the importance of distance to CBD seems to have become less relevant.

5. CONCLUSION

The provision of amenities for the enjoyment of leisure, improved lifestyles, and aesthetic purposes has always been an important part of the role of cities. In America, the City Beautiful movement advocated for city beautification as a way to improve the living conditions and civic virtues of the urban dweller in the beginning of the 20th century. Parks, museums, recreational spaces, and architecturally appealing public buildings—such as train stations, courts, and town halls—are some of the legacies of that movement, which had petered out by the Great Depression.

Today, urban scholars and policymakers are coalescing into a different modern perspective of the importance of city beautification and the provision of amenities geared to the enjoyment of leisure. Cities around the world—such as Barcelona and Bilbao in Spain; Glasgow in Scotland; and in the U.S., Oklahoma City, OK; Camden, NJ; and San Antonio, TX—have leveraged public and private investments in leisure spaces and beautification to spur demographic change and economic development. Urban economists have hypothesized that consumption amenities, especially geared toward the enjoyment of leisure and improved lifestyles, are becoming more important in explaining urbanization and the location of individuals. In this modern view of leisure and lifestyle-based urban development, people locate in attractive cities, and jobs follow. But, do cities that are perceived as attractive places for leisure activities and better perceived lifestyles really grow at a relatively faster pace?

In this paper, we provide two measures of the demand for urban amenities stemming from revealed preferences by the consumers of these activities: the number of photos of picturesque locations online, and the number of incoming leisure trips by metropolitan area.

Photo takers and leisure visitors are attracted by an area's special traits, such as proximity to the ocean, scenic views, historic districts, architectural beauty, and cultural and recreational opportunities. But these are some of the very characteristics that attract households to cities as locations for their permanent homes.

Using the number of crowdsourced picturesque locations in 2014 instrumented by leisure visits in 1992, we directly explore how lifestyle amenities affected metro population and employment *growth* during the 1990s and 2000s. Our findings suggest that, all else equal, population and employment growth was about 10 percentage points higher in a metro area with twice as many picturesque locations as in another one. Results are not driven by employment growth in the tourism sector. Lifestyle amenities are tied with low taxes as the top predictor of contemporaneous urban growth.

To dispel concerns about reverse causation, we include lagged growth rates in our specifications. While thus addressing endogeneity, we demonstrate that a number of amenity measures that have been previously used do seem to suffer from reverse causation problems.

Beautiful cities disproportionally attracted highly educated individuals and experienced faster housing price appreciation, especially in supply-inelastic housing markets. Local government investments in new public recreational areas were associated with increased city attractiveness as measured by tourist visits but not as measured by crowdsourced photos.

Finally, within metropolitan areas, we define CRDs in terms of access to recreational sites and aesthetic externalities. Despite worse initial economic conditions, CRDs managed to grow faster than comparable areas. Rents, incomes, and educational attainment increased faster in urban beautiful neighborhoods but at the cost of minority displacement. Distance to CBD is mostly irrelevant to the recent economic and demographic changes of urban neighborhoods in the U.S. once we control for access to lifestyle amenities. While the American central city generally did not come back in the 1990s and 2000s, the beautiful city within flourished.

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Figure 1

Employment in Tourism Correlates with Tourist Visits

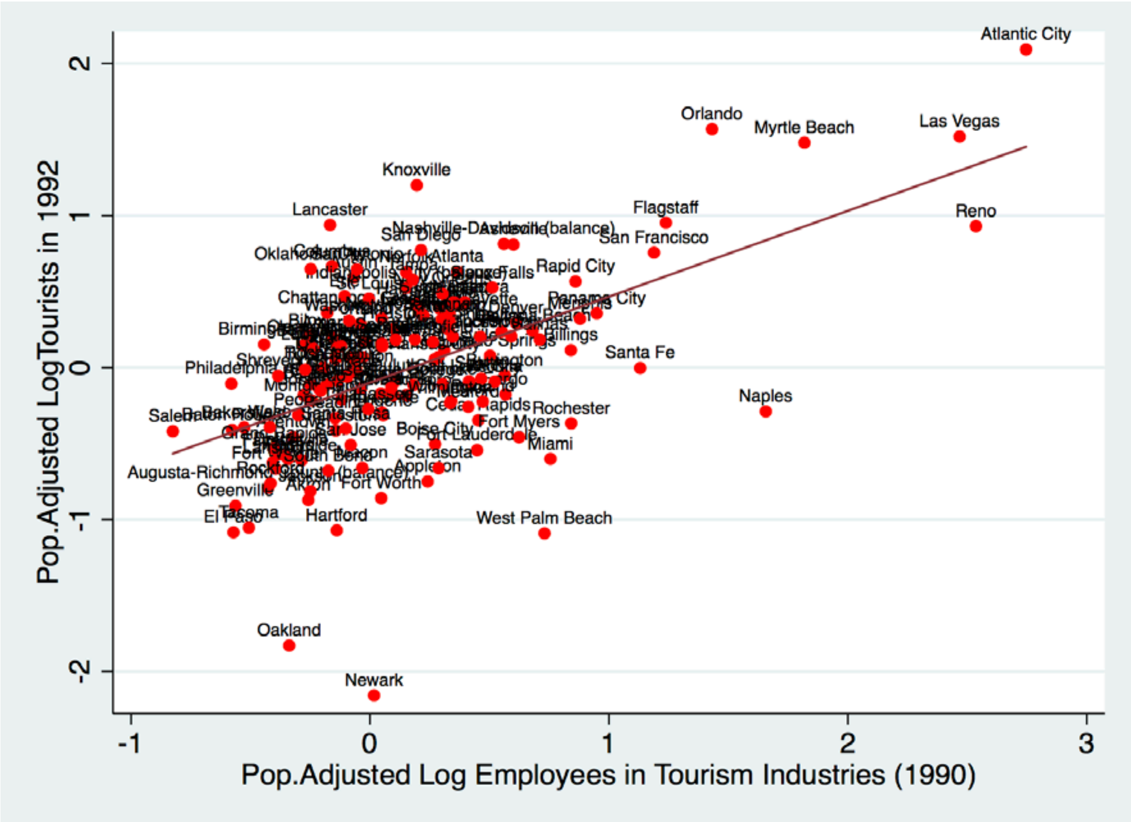

Figure 2

Tourism Correlates with Online Photo Postings

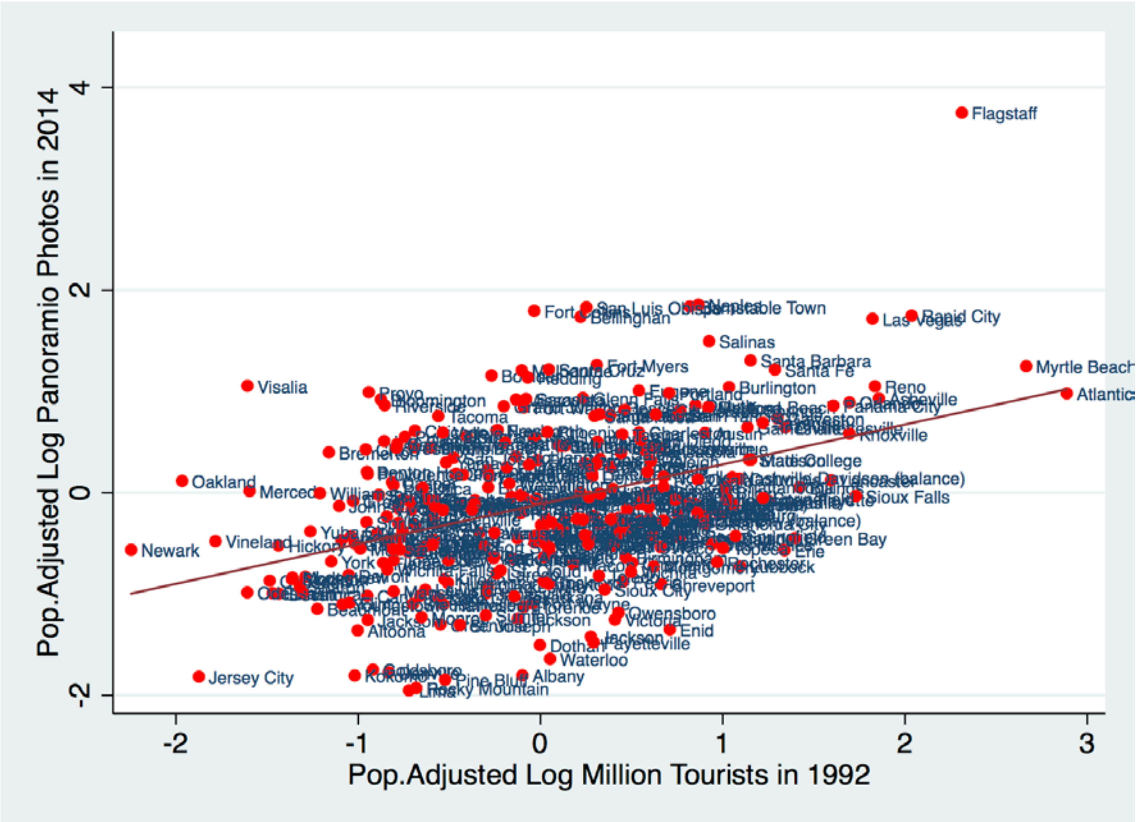

Figure 3

Online Photo Postings Correlate with Albouy (2016) QOL

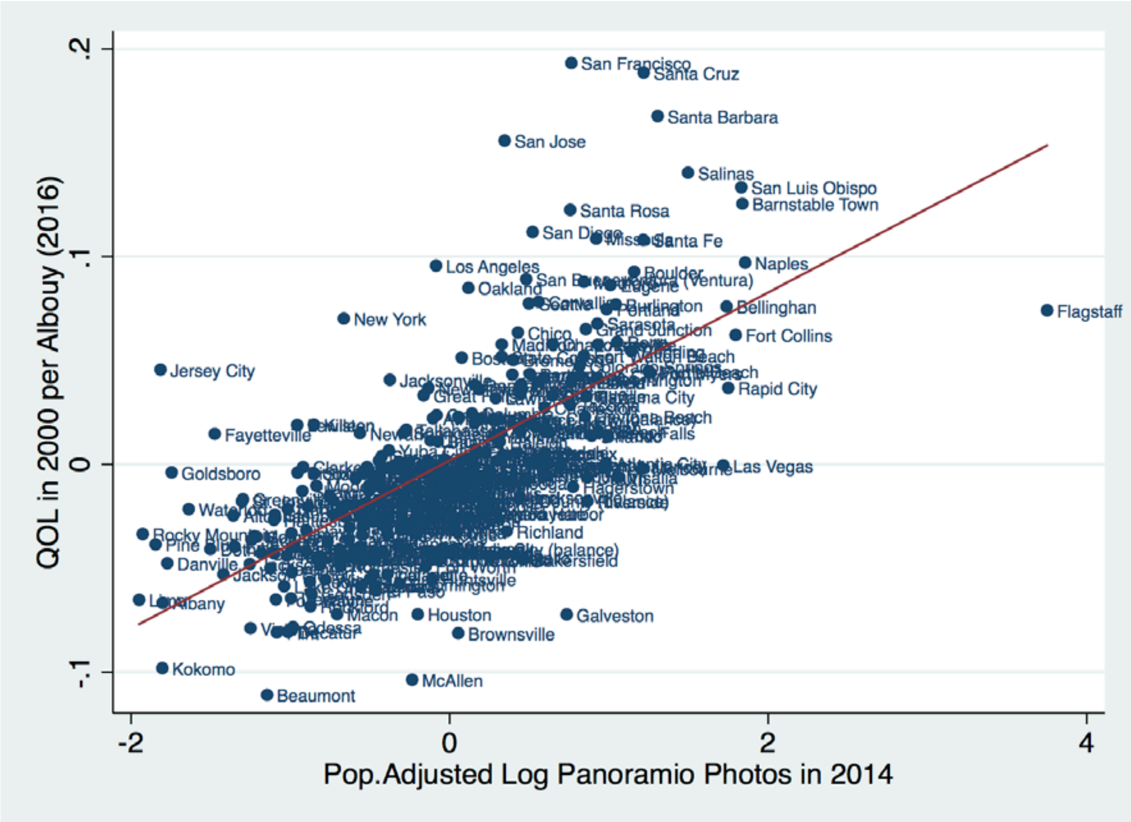

Figure 4

Persistent Urban Growth: 1980-1990 vs. 1990-2010

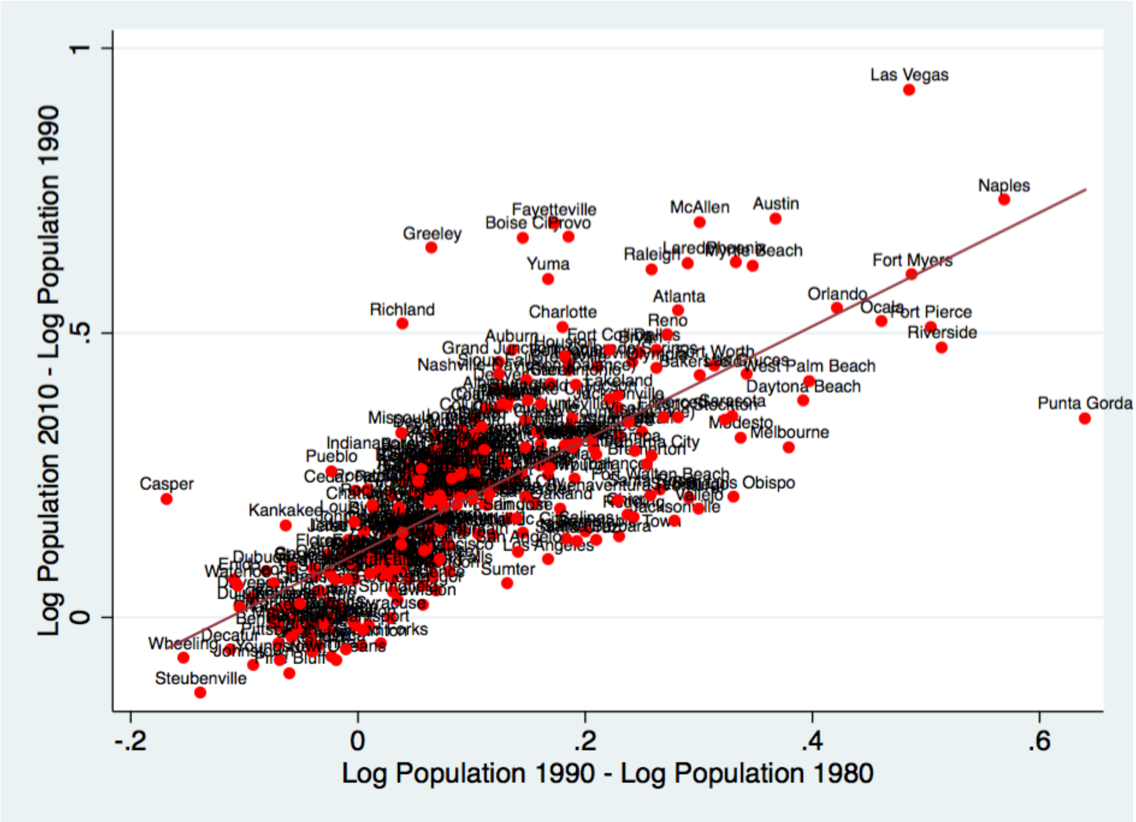

Figure 5.a

Predictions from Constrained SURE: Prices 2000-2010

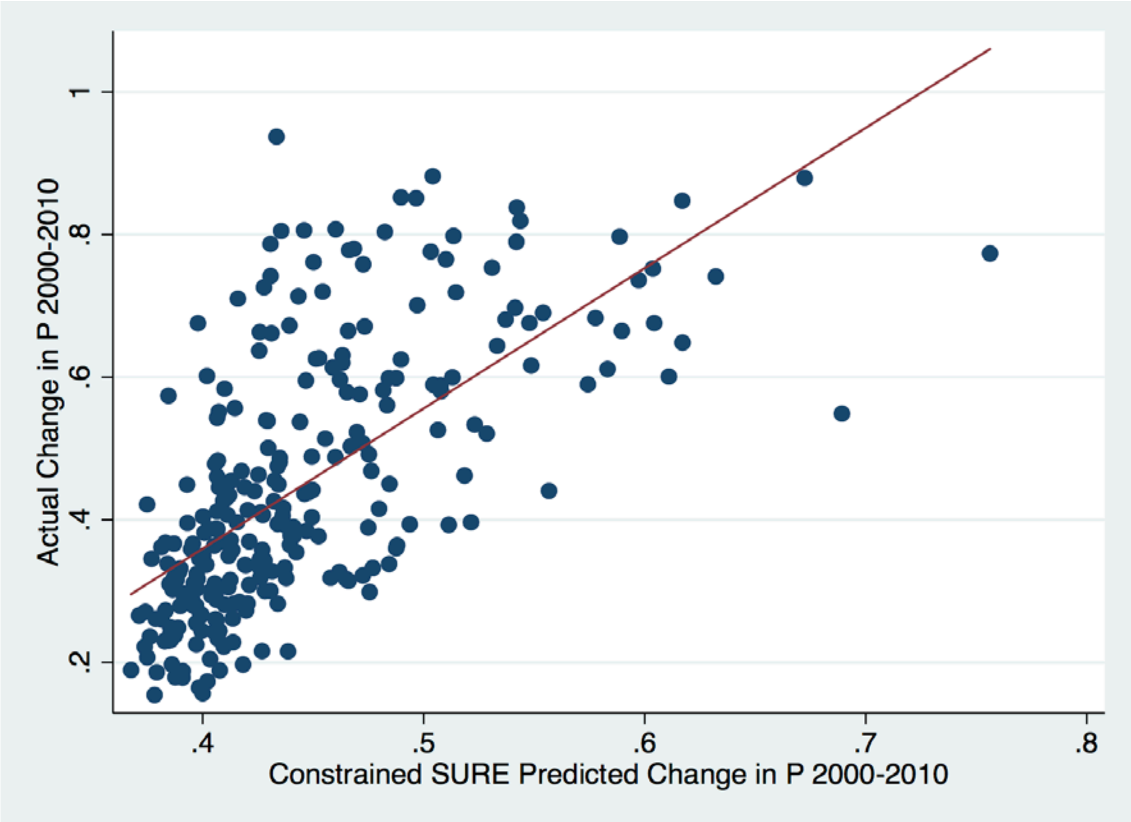

Figure 5.b

Predictions from Constrained SURE: Population 2000-2010

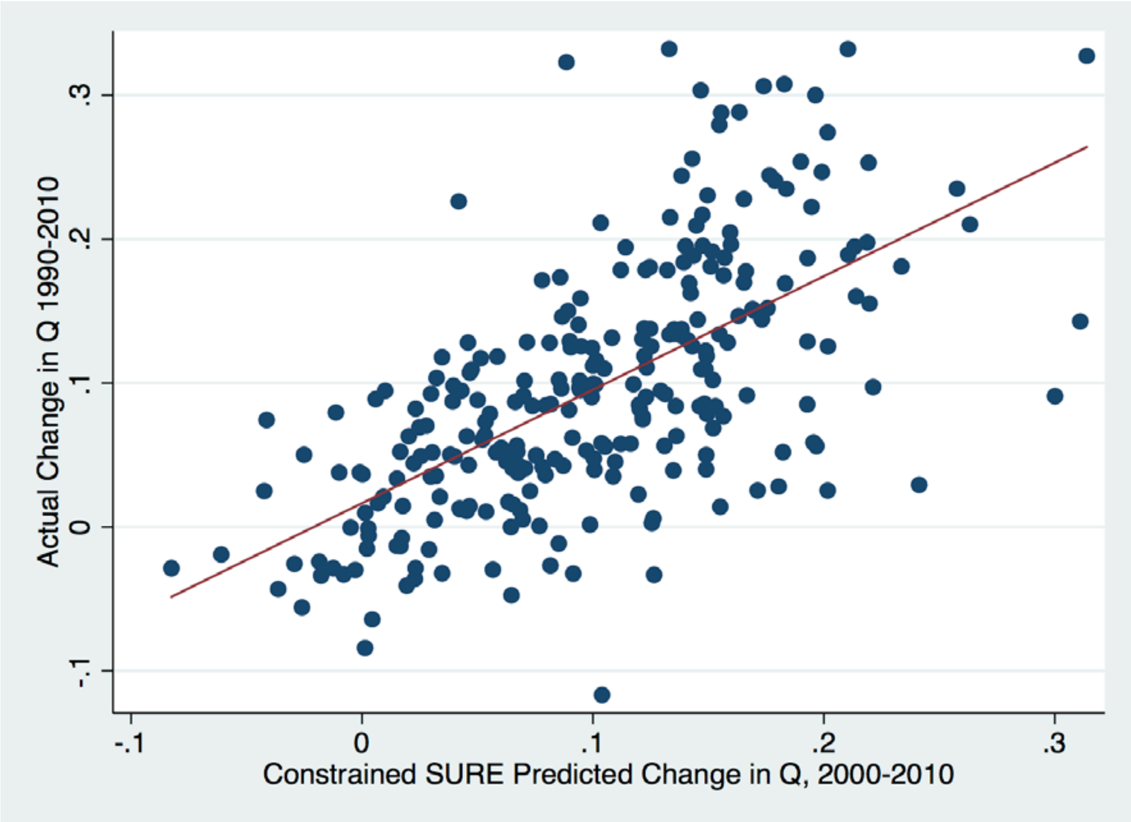

TABLE 1

Leisure Visits in US Metro Areas (Population in 1990> 500,000)

MSA Name	Number of Tourist Visits 1992 (millions)	Population (1990)	Housing Supply Elasticity (Saiz,	MSA Name	Number of Tourist Visits 1992 (millions)	Population (1990)	Housing Supply Elasticity (Saiz,
Orlando, FL	22.3	1,240,724	1.15	Milwaukee-Waukesha, WI	4.56	1,435,303	0.86
Las Vegas, NV-AZ	17.95	869,735	1.93	Birmingham, AL	4.5	841,820	1.80
New York, NY	15.99	8,561,431	0.64	Rochester, NY	4.32	1,065,156	1.21
San Diego, CA	14.05	2,512,365	0.68	Tucson, AZ	4.24	668,844	1.05
Los Angeles-Long Beach, CA	13.41	8,878,157	0.57	Salt Lake City-Ogden, UT	3.97	1,077,594	0.81
Atlanta, GA	13.22	2,981,321	1.95	Omaha, NE-IA	3.91	641,659	2.84
Chicago, IL	11.6	7,430,187	0.74	Albuquerque, NM	3.88	592,272	1.62
Washington, DC-MD-VA-WV	11.32	4,240,124	1.30	Riverside-San Bernardino, CA	3.6	2,630,471	0.93
San Francisco, CA	11.17	1,604,192	0.59	Greensboro-Winston-Salem-High Point, NC	3.59	1,055,058	2.42
Knoxville, TN	10.83	588,026	1.40	Tulsa, OK	3.52	711,089	3.03
Tampa-St. Petersburg-Clearwater, FL	10.56	2,077,857	1.04	Albany-Schenectady-Troy, NY	3.5	863,388	1.43
St. Louis, MO-IL	10.17	2,496,963	2.11	Dayton-Springfield, OH	3.32	951,931	2.91
Houston, TX	9.58	3,344,722	2.04	Syracuse, NY	3.26	743,951	1.94
Columbus, OH	9.42	1,351,279	1.88	Little Rock-North Little Rock, AR	3.24	514,495	2.73
Nashville, TN	9.42	989,789	2.02	Miami, FL	3.15	1,943,717	0.57
Norfolk-Virginia Beach-Newport News, VA-NC	9.36	1,450,909	0.78	San Jose, CA	3.05	1,498,307	0.75
San Antonio, TX	9.15	1,327,601	2.31	Charleston-North Charleston, SC	2.97	508,851	1.38
Dallas, TX	8.49	2,693,669	1.88	Toledo, OH	2.86	614,637	1.94
Indianapolis, IN	8.27	1,386,718	3.37	Fort Lauderdale, FL	2.72	1,263,301	0.71
Philadelphia, PA-NJ	8.02	4,929,536	1.11	Wilmington-Newark, DE-MD	2.43	515,650	1.48
Minneapolis-St. Paul, MN-WI	8.01	2,549,860	1.19	Grand Rapids-Muskegon-Holland, MI	2.39	942,397	1.93
Boston-Worcester-Lawrence-Lowell-Brocktn, MA-NH	7.97	5,691,924	0.65	Bakersfield, CA	2.13	549,535	1.41
Oklahoma City, OK	7.87	960,538	2.59	Allentown-Bethlehem-Easton, PA	2.08	596,817	1.54
New Orleans, LA	7.67	1,285,014	0.83	Baton Rouge, LA	2.06	529,787	1.87
Pittsburgh, PA	7.63	2,396,165	1.00	Fort Worth-Arlington, TX	2.06	1,368,701	2.28
Cincinnati, OH-KY-IN	7.59	1,529,523	2.14	Fresno, CA	2.02	761,427	1.32
Phoenix-Mesa, AZ	7.56	2,249,116	1.32	Greenville-Spartanburg-Anderson, SC	1.55	834,102	2.69
Cleveland-Lorain-Elyria, OH	7.2	2,204,280	0.90	Hartford, CT	1.52	1,125,047	1.17
Denver, CO	7.08	1,630,347	1.17	Akron, OH	1.44	658,654	1.90
Austin-San Marcos, TX	7.02	851,898	2.44	West Palm Beach-Boca Raton, FL	1.32	871,560	0.99
Portland-Vancouver, OR-WA	6.84	1,527,639	1.00	Tacoma, WA	1.14	590,519	0.95
Charlotte-Gastonia-Rock Hill, NC-SC	6.81	1,169,236	2.63	El Paso, TX	1.11	595,350	1.56
Memphis, TN-AR-MS	5.81	1,010,474	1.18	Oakland, CA	0.96	2,115,483	0.65
Jacksonville, FL	5.65	913,575	1.07	Newark, NJ	0.66	1,917,837	0.91
Baltimore, MD	5.52	2,390,543	0.86	Gary, IN	Left-censored	605,781	1.59
Kansas City, MO-KS	5.51	1,587,276	2.85	Jersey City, NJ	Left-censored	554,289	1.16
Seattle-Bellevue-Everett, WA	5.47	2,049,195	0.77	New Haven-Bridgprt-Stamfrd-Danbry-Wtrbry, CT	Left-censored	1,634,226	0.86
Raleigh-Durham-Chapel Hill, NC	5.3	865,467	1.51	Providence-Warwick-Pawtucket, RI	Left-censored	918,468	0.97
Buffalo-Niagara Falls, NY	5.27	1,190,943	1.50	Scranton-Wilkes-Barre-Hazleton, PA	Left-censored	639,405	1.32
Harrisburg-Lebanon-Carlisle, PA	4.95	589,969	1.26	Springfield, MA	Left-censored	603,765	1.14
Detroit, MI	4.72	4,268,223	1.04	Ventura, CA	Left-censored	670,117	0.73
Louisville, KY-IN	4.71	950,904	2.01	Youngstown-Warren, OH	Left-censored	601,462	2.13
Richmond-Petersburg, VA	4.6	870,317	2.20				

TABLE 2

Summary Statistics

	N	Mean	St.Dv	Min	Max
Change in Log Population (1990-2010)	305	0.12	0.10	-0.08	0.60
Log Tourist Visits 1992 (millions) - No Imputations	149	1.18	0.76	-0.42	3.10
Log Tourist Visits 1992 (millions) with Imputations	305	0.07	1.32	-2.74	3.10
Log Panoramio Photos in 2014	305	7.45	1.29	1.29	11.07
Log number of Colleges	305	1.45	1.03	0.00	4.77
Poverty Rate	305	0.14	0.05	0.06	0.42
Log Average Annual Precipitation (1961-1990)	305	3.59	0.48	1.58	4.84
Share Workers in Finance, Insurance, and Real Estate 1990	305	0.06	0.02	0.03	0.16
Average Block-Group Distance to Park	305	6.85	7.24	0.38	54.20
Average Block-Group Distance to Recreation Sites	305	13.05	17.67	1.96	116.78
Log Historic Places per Capita	305	-8.21	0.77	-10.99	-6.40
Coastal Share within a 10 km Radius	305	0.05	0.11	0.00	0.71
Mountain Land Share within a 10 km Radius	305	0.07	0.12	0.00	0.63
Log Total Employment in Tourism-Related Activities (1990)	305	8.72	1.33	6.48	12.43
Log Population in 1990	305	12.65	1.04	10.95	16.00
Share with Bachelor's Degree in 1990	305	0.20	0.06	0.09	0.44
Log January Average Temperature (Average 1941-1970)	305	3.51	0.41	1.37	4.21
Log July Mean Relative Humidity (Average 1941-1970)	305	4.01	0.33	2.94	4.38
Share Foreign Born in 1990	305	0.05	0.06	0.00	0.45
Immigration Impact (1990-2000)	305	0.03	0.04	-0.01	0.21
Share Workers in Manufacturing in 1990	305	0.17	0.07	0.04	0.46
Log Income in 1990	305	9.78	0.17	9.14	10.36
Unemployment Rate in 1990	305	0.06	0.02	0.02	0.22
Murders per 100 Inhabitants in 1990	305	0.01	0.01	0.00	0.03
1=Distance to Ocean/Great Lake 50 Km or Less	305	0.30	0.46	0.00	1.00
Log Patents Issued in 1990	305	4.09	1.64	0.00	8.64
Log Tax Revenues (1977-1987)	305	18.59	1.25	16.29	23.01
Tourism Employment Growth	305	0.69	0.35	-1.11	2.30
ΔLog Income	305	0.40	0.06	0.17	0.75
ΔLog Population (1980-1990)	305	0.12	0.10	-0.08	0.60
ΔLog Employment (1980-1990)	305	0.20	0.10	-0.01	0.60
ΔShare BA/BS (1990-2000)	305	0.04	0.02	-0.01	0.10
ΔLog Rent (1990-2000)	305	0.31	0.08	0.11	0.56
ΔLog Housing Value (1990-2000)	305	0.42	0.18	-0.11	0.88
Northeast	305	0.14	0.35	0.00	1.00
South	305	0.41	0.49	0.00	1.00
West	305	0.20	0.40	0.00	1.00

TABLE 3.a

Metropolitan Correlates of Leisure Visits

	Log Number of Leisure Visits (millions)--1992†					Log Employment in Tourism-Related Activities
	(1)	(2)	(3)	(4)	(5)	(6)
Log Population	0.779	0.507	0.567	0.829	0.548	0.903
	(0.143)***	(0.174)***	(0.219)***	(0.277)***	(0.181)***	(0.072)***
Log Number of Colleges (Peterson's)	0.285	0.279	0.279	0.251	0.274	0.094
	(0.140)**	(0.137)**	(0.138)**	(0.138)*	(0.138)**	(0.054)*
Poverty Rate	-4.383	-4.091	-4.115	-4.011	-3.957	-3.211
	(1.729)**	(1.716)**	(1.716)**	(1.699)**	(1.728)**	(0.668)***
Log January Average Temperature (Average 1941-1970)	0.093	0.169	0.154	0.154	0.157	0.144
	(0.27)	(0.26)	(0.27)	(0.26)	(0.26)	(0.11)
Log Average Annual Precipitation (1961-1990)	-0.475	-0.441	-0.452	-0.457	-0.441	-0.264
	(0.193)**	(0.191)**	(0.193)**	(0.190)**	(0.191)**	(0.081)***
Share with Bachelor's degree	0.379	-0.243	-0.214	-0.148	-0.217	0.77
	(1.18)	(1.19)	(1.19)	(1.19)	(1.19)	(0.49)
Share Workers in Manufacturing	-5.41	-4.92	-4.958	-4.836	-4.947	-1.823
	(1.333)***	(1.320)***	(1.322)***	(1.311)***	(1.323)***	(0.527)***
Share workers in Finance, Insurance, and Real Estate	-2.484	-2.904	-2.691	-1.613	-2.976	0.036
	(4.11)	(4.08)	(4.10)	(4.15)	(4.09)	(1.81)
Average Distance to Park	-0.037	-0.035	-0.035	-0.034	-0.034	-0.0004
	(0.013)***	(0.013)***	(0.013)***	(0.013)***	(0.013)***	(0.0044)
Average Distance to Recreational Center	-0.006	-0.007	-0.007	-0.007	-0.009	-0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Average Distance to EPA-Hazardous Industries	0.353	0.351	0.352	0.343	0.345	0.173
	(0.102)***	(0.100)***	(0.100)***	(0.100)***	(0.100)***	(0.042)***
Average Distance to Golf Course	-0.008	-0.008	-0.008	-0.008	-0.008	-0.001
	(0.004)**	(0.004)**	(0.004)**	(0.004)**	(0.004)**	(0.00)
Average Distance to Airport	-0.017	-0.016	-0.016	-0.017	-0.014	-0.007
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.004)*
Log Historic Places per Capita	0.246	0.296	0.296	0.305	0.309	0.089
	(0.107)**	(0.108)***	(0.108)***	(0.108)***	(0.109)***	(0.042)**
Coastal Share within a 10 km Radius of CC	1.147	1.023	1.054	1.175	1	0.854
	(0.522)**	(0.517)**	(0.521)**	(0.526)**	(0.518)*	(0.237)***
Mountain Land Share within a 10 km Radius of CC	-0.631	-0.543	-0.52	-0.466	-0.506	0.085
	(0.59)	(0.58)	(0.58)	(0.59)	(0.58)	(0.23)
Northeast	-0.377	-0.237	-0.26	-0.187	-0.237	0.017
	(0.213)*	(0.22)	(0.22)	(0.22)	(0.22)	(0.09)
South	0.348	0.324	0.315	0.198	0.322	0.036
	(0.24)	(0.24)	(0.24)	(0.25)	(0.24)	(0.10)
West	-0.652	-0.699	-0.701	-0.779	-0.683	-0.309
	(0.287)**	(0.284)**	(0.283)**	(0.289)***	(0.285)**	(0.120)**
Log Public Recreation Capital Expenditures		**0.23**	**0.259**	**0.266**	**0.241**	**0.132**
		(0.090)**	(0.109)**	(0.093)***	(0.091)***	(0.035)***
Log Public Recreation Operating Expenditures			-0.086			
			(0.187)			
Log Tax revenues				-0.314		
				(0.210)		
Log Public Building Capital Expenditures					-0.037	
					(0.042)	
Constant	-5.544	-5.343	-5.106	-3.916	-5.373	-3.883
	(1.808)***	(1.785)***	(1.859)***	(2.018)*	(1.786)***	(0.750)***
Observations	305	305	305	305	305	305

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
†Based on Shifflet data supplemented with the left-censored observations

TABLE 3.b

Metropolitan Correlates of Picturesqueness

	Log Number of Photos on Panoramio (Google Maps)				
	(1)	(2)	(3)	(4)	(5)
Log Population	1.121	1.093	1.041	1.082	1.13
	(0.065)***	(0.081)***	(0.101)***	(0.126)***	(0.084)***
Log Number of Colleges (Peterson's)	-0.101	-0.101	-0.1	-0.1	-0.103
	(0.062)	(0.062)	(0.062)	(0.062)	(0.061)*
Poverty Rate	-2.734	-2.7	-2.711	-2.698	-2.571
	(0.754)***	(0.757)***	(0.758)***	(0.759)***	(0.759)***
Log January Average Temperature (Average 1941-1970)	0.262	0.269	0.286	0.269	0.253
	(0.125)**	(0.126)**	(0.128)**	(0.126)**	(0.126)**
Log Average Annual Precipitation (1961-1990)	-0.183	-0.18	-0.168	-0.179	-0.18
	(0.092)**	(0.092)*	(0.093)*	(0.093)*	(0.092)*
Share with Bachelor's degree	2.832	2.784	2.728	2.78	2.809
	(0.545)***	(0.552)***	(0.556)***	(0.554)***	(0.551)***
Share Workers in Manufacturing	-2.296	-2.244	-2.243	-2.245	-2.26
	(0.590)***	(0.598)***	(0.598)***	(0.599)***	(0.596)***
Share workers in Finance, Insurance, and Real Estate	-6.429	-6.451	-6.723	-6.499	-6.409
	(2.049)***	(2.052)***	(2.077)***	(2.093)***	(2.046)***
Average Distance to Park	-0.021	-0.021	-0.021	-0.021	-0.021
	(0.005)***	(0.005)***	(0.005)***	(0.005)***	(0.005)***
Average Distance to Recreational Center	0.000	0.000	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Average Distance to EPA-Hazardous Industries	0.386	0.388	0.388	0.389	0.376
	(0.047)***	(0.048)***	(0.048)***	(0.048)***	(0.048)***
Average Distance to Golf Course	0.000	-0.001	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Average Distance to Airport	-0.002	-0.002	-0.002	-0.002	-0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Log Historic Places per Capita	0.174	0.176	0.176	0.176	0.184
	(0.048)***	(0.048)***	(0.048)***	(0.048)***	(0.048)***
Coastal Share within a 10 km Radius of CC	1.683	1.67	1.641	1.665	1.63
	(0.267)***	(0.268)***	(0.270)***	(0.271)***	(0.269)***
Mountain Land Share within a 10 km Radius of CC	0.575	0.583	0.575	0.581	0.599
	(0.255)**	(0.255)**	(0.256)**	(0.256)**	(0.255)**
Northeast	0.164	0.175	0.193	0.173	0.172
	(0.101)	(0.103)*	(0.105)*	(0.104)*	(0.102)*
South	-0.063	-0.066	-0.063	-0.061	-0.063
	(0.113)	(0.113)	(0.113)	(0.120)	(0.113)
West	0.197	0.19	0.187	0.193	0.214
	(0.135)	(0.136)	(0.136)	(0.138)	(0.136)
Log Public Recreation Capital Expenditures		0.022	-0.002	0.021	0.027
		(0.040)	(0.049)	(0.041)	(0.040)
Log Public Recreation Operating Expenditures			0.073		
			(0.085)		
Log Tax revenues				0.012	
				(0.097)	
Log Public Building Capital Expenditures					-0.032
					(0.020)
Constant	-5.636	-5.621	-5.813	-5.682	-5.609
	(0.848)***	(0.850)***	(0.879)***	(0.987)***	(0.847)***
R^2	0.87	0.87	0.87	0.87	0.87
N	305	305	305	305	305

TABLE 3.c

Standardized Impact of Measurable Variables on City Attractiveness

	Log Number of Leisure Visits (1992)	Log Employment in Tourism-Related Activities (1990)	Log Number of Photos on Panoramio (Google Maps)
Log Population	**0.34**	**0.72**	**0.89**
Log Number of Colleges (Peterson's)	**0.19**	**0.07**	**-0.07**
Poverty Rate	**-0.13**	**-0.12**	**-0.11**
Log January Average Temperature (Average 1941-1970)	**0.04**	**0.05**	**0.09**
Log Average Annual Precipitation (1961-1990)	**-0.14**	**-0.10**	**-0.08**
Share with Bachelor's degree	**-0.01**	**0.04**	**0.13**
Share Workers in Manufacturing	**-0.23**	**-0.10**	**-0.12**
Share workers in Finance, Insurance, and Real Estate	**-0.04**	**0.00**	**-0.07**
Average Distance to Park	**-0.16**	**0.00**	**-0.11**
Average Distance to Recreational Center	**-0.08**	**-0.02**	**0.01**
Average Distance to EPA-Hazardous Industries	**0.19**	**0.11**	**0.25**
Average Distance to Golf Course	**-0.10**	**-0.02**	**-0.03**
Average Distance to Airport	**-0.07**	**-0.04**	**0.00**
Log Historic Places per Capita	**0.14**	**0.05**	**0.12**
Coastal Share within a 10 km Radius of CC	**0.08**	**0.07**	**0.14**
Mountain Land Share within a 10 km Radius of CC	**-0.04**	**0.01**	**0.08**
Log Public Recreation Capital Expenditures	**0.23**	**0.16**	**0.00**
Northeast	**-0.05**	**0.00**	**0.09**
South	**0.10**	**0.01**	**-0.02**
West	**-0.18**	**-0.09**	**0.04**

TABLE 4.a

Picturesqueness and Metropolitan Growth in the US: 1990-2010

		ΔLog Population (1990-2010)						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Log Online Crowdsourced Photos (Panoramio 2014)		**0.078**	**0.105**	**0.12**	**0.106**	**0.122**	**0.13**	**0.095**
		(0.013)***	(0.022)***	(0.031)***	(0.032)***	(0.032)***	(0.031)***	(0.029)***
Log Number of Leisure Visits 1992 (millions)[†]		0.012						
		(0.011)						
Log Population in 1990	0.016	-0.071	-0.086	0.027	0.031	0.015	0.011	-0.045
	(0.008)**	(0.014)***	(0.023)***	(0.040)	(0.039)	(0.039)	(0.038)	(0.029)
Share with Bachelor's Degree in 1990				0.219	**0.324**	0.235	0.009	0.223
				(0.179)	**(0.182)***	(0.183)	(0.182)	(0.153)
Log January Average Temperature (Average 1941-1970)				0.039	0.037	0.041	0.049	-0.02
				(0.030)	(0.029)	(0.029)	(0.029)*	(0.025)
Log Average Annual Precipitation (1961-1990)				-0.203	**-0.193**	-0.186	-0.184	-0.144
				(0.035)***	**(0.035)*****	(0.035)***	(0.034)***	(0.030)***
Share Immigrant 1990				0.574	**0.537**	0.581	0.444	0.248
				(0.179)***	**(0.177)*****	(0.177)***	(0.177)**	(0.163)
Share Workers in Manufacturing in 1990				0.143	0.135	0.161	0.249	0.341
				(0.173)	(0.170)	(0.170)	(0.164)	(0.132)***
Log Income in 1990				0.051	0.038	0.066	0.259	-0.048
				(0.072)	(0.071)	(0.071)	(0.082)***	(0.062)
Unemployment Rate in 1990				-0.696	-0.515	-0.448	-0.374	-0.334
				(0.461)	(0.459)	(0.460)	(0.449)	(0.386)
Murders per 100 Inhabitants in 1990				2.092	1.661	2.305	2.63	2.983
				(2.165)	(2.151)	(2.145)	(2.086)	(1.759)*
Log Patents Issued in 1990				-0.002	0.000	-0.001	-0.007	-0.003
				(0.013)	(0.013)	(0.013)	(0.013)	(0.011)
Log Tax Revenues (1977-1987)				-0.126	**-0.119**	-0.12	-0.124	-0.036
				(0.025)***	**(0.025)*****	(0.025)***	(0.024)***	(0.024)
1=Distance to Ocean/Great Lake 50 Km or Less				-0.037	-0.028	-0.037	-0.053	-0.056
				(0.022)	(0.023)	(0.023)	(0.022)**	(0.018)***
Tourism employment Growth (1990-2010)						0.061	0.039	0.063
						(0.021)***	(0.021)*	(0.018)***
ΔLog Income (1990-2010)							0.457	
							(0.103)***	
ΔLog Population (1980-1990)								0.694
								(0.100)***
Northeast	-0.078	-0.097	-0.108	-0.092	**-0.089**	-0.096	-0.102	-0.078
	(0.029)***	(0.027)***	(0.027)***	(0.025)***	(0.024)***	(0.024)***	(0.024)***	(0.021)***
South	0.124	0.112	0.109	0.031	0.039	0.026	0.01	0.042
	(0.021)***	(0.020)***	(0.020)***	(0.031)	(0.030)	(0.030)	(0.030)	(0.026)
West	0.191	0.111	0.082	-0.104	**-0.089**	-0.11	-0.144	-0.084
	(0.025)***	(0.028)***	(0.033)**	(0.041)**	(0.041)**	(0.041)***	(0.040)***	(0.036)**
Constant	-0.069	0.476	0.475	1.454	1.448	1.2	-1.153	1.664
	(0.105)	(0.152)***	(0.150)***	(0.702)**	(0.688)**	(0.695)*	-0.876	(0.576)***
R^2	0.28	0.39	0.39	0.51	0.5	0.5	0.53	0.65
EIV IV	**NO**		**YES**					
N	305	305	305	305	303	303	303	303

Robust Standard Errors. * significant at 10%; ** significant at 5%; *** significant at 1%

Columns 5 through 7 exclude Las Vegas and Orlando.

Table 4.b

Standardized Predictors of American Urban Growth: 1990-2010

Log Online Crowdsourced Photos (Panoramio 2014)	**0.89**	
	(0.23)* **	
Log Population in 1990	**0.16**	**0.80**
	(0.24)	**(0.18)*** **
Share with Bachelor's Degree in 1990	**0.08**	**0.16**
	(0.07)	**(0.06)** **
Log January Average Temperature (Average 1941-1970)	**0.09**	**0.13**
	(0.07)	**(0.074)***
Log Average Annual Precipitation (1961-1990)	**-0.39**	**-0.40**
	(0.07)* **	**(0.07)*** **
Share Immigrant 1990	**0.19**	**0.14**
	(0.06)* **	**(0.06)** **
Share Workers in Manufacturing in 1990	**0.06**	**-0.12**
	(0.07)	**(0.05)** **
Log Income in 1990	**0.05**	**0.06**
	(0.07)	**(0.07)**
Unemployment Rate in 1990	**-0.09**	**-0.06**
	(0.06)	**(0.06)**
Murders per 100 Inhabitants in 1990	**0.06**	**-0.07**
	(0.06)	**(0.06)**
Log Patents Issued in 1990	**-0.02**	**0.12**
	(0.12)	**(0.12)**
Log Tax Revenues (1977-1987)	**-0.90**	**-0.94**
	(0.18)* **	**(0.19)*** **
1=Distance to Ocean/Great Lake 50 Km or Less	**-0.10**	**0.03**
	(0.06)	**(0.05)**

Table 5

Alternative Measurements Are Subjective and Potentially Endogenous

Picturesqueness v. Ad Hoc Variables

	ΔLog Population (1990-2010)			
	(1)	**(2)**	**(3)**	**(4)**
Log Restaurants in 1990	0.104	0.082	0.002	0.052
	(0.032)***	(0.032)**	(0.027)	(0.029)*
Log Movie Theaters in 1990	0.007	-0.007	0.009	-0.006
	(0.023)	(0.022)	(0.019)	(0.021)
Log Museums in 1990	-0.013	-0.026	-0.015	-0.038
	(0.015)	(0.015)*	(0.013)	(0.014)***
Log Membership Organizations in 1990	-0.135	-0.085	-0.005	-0.036
	(0.033)***	(0.038)**	(0.029)	(0.034)
Log Online Crowdsourced Photos (Panoramio 2014)		0.086	0.057	0.146
		(0.037)**	(0.034)*	(0.054)***
Log Number of Colleges (Peterson's)				-0.001
				(0.015)
Poverty Rate in 1990				-1.454
				(0.391)***
Share workers in Finance, Insurance, and Real Estate in 1990				1.482
				(0.400)***
Average Distance to Park				-0.001
				(0.001)
Average Distance to Recreational Center				0.001
				(0.000)
Average Distance to EPA-Hazardous Industries				-0.035
				(0.025)
Average Distance to Golf Course				0.001
				(0.000)
Average Distance to Airport				0.000
				(0.001)
Log Historic Places per Capita				-0.02
				(0.013)
Coastal Share within a 10 km Radius of CC				-0.16
				(0.097)
Mountain Land Share within a 10 km Radius of CC				-0.36
				(0.066)***
R^2	0.48	0.52	0.67	0.64
N	272	272	272	272
Other Variables in Table 4.a column 4	yes	yes	yes	yes
ΔLog Population (1980-1990)	no	no	yes	no
* p<0.1; ** p<0.05; *** p<0.01				

TABLE 6

Leisure Visits and Qualities of Growth: 1990-2010

	ΔShare with BA	ΔLog Income		ΔLog Wage		ΔLog Housing Value	ΔLog Pop
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log Online Crowdsourced Photos (Panoramio 2014)	0.014	-0.032	-0.049	-0.023	-0.037	0.084	0.063
	(0.005)***	(0.019)*	(0.021)**	(0.016)	(0.018)**	(0.031)***	(0.035)*
ΔShare with Bachelor's Degree			1.184		0.996		1.658
			(0.289)***		(0.241)***		(0.473)***
Log Median Rent in 1990							
Log Median House Value in 1990						-0.188	
						(0.042)***	
Other Variables in Table 5, column 3	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
R^2	0.54	0.43	0.43	0.45	0.47	0.57	0.51
N	303	303	303	303	303	303	303

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 7

Parameters in Constrained SURE: ΔP and ΔQ, 1990-2010

Log Online Crowdsourced Photos (Panoramio 2014)	0.06
	(0.009)***
Log Population in 1990	0.047
	(0.023)**
Share with Bachelor's Degree in 1990	-0.154
	(0.122)
Log January Average Temperature (Average 1941-1970)	-0.007
	(0.025)
Log Average Annual Precipitation (1961-1990)	-0.035
	(0.017)**
Immigration Impact (1990-2000)	0.581
	(0.134)***
Share Workers in Manufacturing in 1990	-0.328
	(0.106)***
Log Income in 1990	0.143
	(0.055)***
Unemployment Rate in 1990	-0.403
	(0.340)
Murders per 100 Inhabitants in 1990	1.201
	(1.436)
1=Distance to Ocean/Great Lake 50 Km or Less	-0.015
	(0.014)
Log Patents Issued in 1990	-0.002
	(0.010)
Log Tax Revenues (1977-1987)	-0.091
	(0.020)***
α (Intercept in Quantity Equation)	-0.157
	(0.541)
π (Intercept in Price Equation)	0.384
	(0.010)***
Region Fixed Effects (Equation Dependent)	*yes*

TABLE 8

Evolution of "Beautiful" Neighborhoods: 1990-2000

PANEL A	ΔLog Population	ΔLog Housing Units	ΔShare with BA	ΔLog Income	ΔShare Non-Hispanic White	ΔLog Rent	ΔLog Rent	ΔLog Population	ΔLog Rent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1st Ring: <1Km. from Tourism Information Cer	0.003	0.011	0.026	0.119	0.05	0.087	0.081	0.089	0.079
	(0.016)	(0.014)	(0.004)***	(0.010)***	(0.006)***	(0.009)***	(0.010)***	(0.015)***	(0.009)***
2nd Ring: 1-2Km. from Tourism Information C	-0.055	-0.056	0.017	0.096	0.043	0.069	0.067	0.017	0.068
	(0.010)***	(0.009)***	(0.002)***	(0.006)***	(0.004)***	(0.006)***	(0.006)***	(0.009)*	(0.006)***
3rd Ring: 2-3Km. from Tourism Information Ce	-0.075	-0.079	0.011	0.093	0.037	0.045	0.043	-0.008	0.046
	(0.008)***	(0.008)***	(0.002)***	(0.006)***	(0.003)***	(0.005)***	(0.005)***	-0.008	(0.005)***
Central City	-0.103	-0.114	-0.013	-0.022	-0.022	-0.01	-0.011	-0.026	0
	(0.003)***	(0.003)***	(0.001)***	(0.002)***	(0.001)***	(0.002)***	(0.002)***	(0.003)***	(0.002)
Log Distance to CBD							-0.002		
							(0.001)		
MSA Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other 1990 Census Tract Controls	No	No	No	No	No	No	No	Yes	Yes
R-squared	0.12	0.11	0.09	0.12	0.1	0.21	0.2	0.2	0.22
Observations (Census Tracts)	35,493	35,413	35,489	35,348	35,493	35,202	34,887	35,362	35,174
PANEL B	ΔLog Population	ΔLog Housing Units	ΔShare with BA	ΔLog Income	ΔShare Non-Hispanic White	ΔLog Rent	ΔLog Rent	ΔLog Population	ΔLog Rent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Top 5% Historic Gravity	-0.026	-0.036	0.004	0.041	0.021	0.031	0.032	0.021	0.034
	(0.006)***	(0.005)***	(0.001)***	(0.004)***	(0.002)***	(0.004)***	(0.004)***	(0.006)***	(0.004)***
Top 5% Recreational Gravity	-0.036	-0.029	0.016	0.056	0.034	0.05	0.052	0.007	0.053
	(0.006)***	(0.006)***	(0.001)***	(0.004)***	(0.002)***	(0.004)***	(0.004)***	(0.006)	(0.004)***
Top 5% Photo Number	0.005	0.019	0.018	0.036	0.023	0.03	0.031	0.02	0.03
	(0.005)	(0.005)***	(0.001)***	(0.004)***	(0.002)***	(0.003)***	(0.003)***	(0.005)***	(0.003)***
Central City	-0.107	-0.117	-0.015	-0.03	-0.03	-0.016	-0.014	-0.034	-0.007
	(0.002)***	(0.002)***	(0.001)***	(0.002)***	(0.001)***	(0.001)***	(0.002)***	(0.003)***	(0.002)***
Log Distance to CBD							0.002		
							(0.001)*		
MSA Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other 1990 Census Tract Controls	No	No	No	No	No	No	No	Yes	Yes
R-squared	0.13	0.13	0.11	0.11	0.14	0.22	0.22	0.21	0.23
Observations (Census Tracts)	50,969	50,855	50,963	50,765	50,969	50,594	48,499	50,786	50,557

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Controls include: log of income, unemployment rates, share of residents in families with kids, share of residents who are older than 65, share of residents over 25 who are high school dropouts, share non-Hispanic white, and share foreign-born residents, all measured at the tract level in 1990.

TABLE 9

Evolution of "Beautiful" Neighborhoods: 2000-2010

PANEL A	ΔLog Population	ΔLog Housing Units	ΔShare with BA	ΔLog Income	ΔShare Non-Hispanic White	ΔLog Rent	ΔLog Rent	ΔLog Population	ΔLog Rent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1st Ring: <1Km. from Tourism Information Center	0.108	0.134	0.038	0.117	0.047	0.038	0.021	0.144	0.052
	(0.015)***	(0.014)***	(0.004)***	(0.012)***	(0.005)***	(0.018)**	(0.019)	(0.014)***	(0.018)***
2nd Ring: 1-2Km. from Tourism Information Center	0.018	0.018	0.03	0.08	0.048	0.047	0.035	0.054	0.037
	(0.009)*	(0.009)*	(0.002)***	(0.007)***	(0.003)***	(0.011)***	(0.012)***	(0.009)***	(0.011)***
3rd Ring: 2-3Km. from Tourism Information Center	-0.034	-0.007	0.025	0.062	0.047	0.048	0.039	0.005	0.024
	(0.008)***	-0.008	(0.002)***	(0.007)***	(0.003)***	(0.010)***	(0.010)***	-0.008	(0.010)**
Central City	-0.121	-0.107	-0.001	-0.027	0.015	0.037	0.031	-0.051	0.012
	(0.003)***	(0.003)***	(0.001)*	(0.002)***	(0.001)***	(0.003)***	(0.004)***	(0.003)***	(0.004)***
Log Distance to CBD							-0.007		
							(0.002)***		
MSA Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other 2000 Census Tract Controls	No	No	No	No	No	No	No	Yes	Yes
R-squared	0.14	0.12	0.06	0.11	0.11	0.08	0.08	0.19	0.11
Observations (Census Tracts)	35,685	35,604	35,683	35,485	35,685	35,126	34,811	35,550	35,095

PANEL B	ΔLog Population	ΔLog Housing Units	ΔShare with BA	ΔLog Income	ΔShare Non-Hispanic White	ΔLog Rent	ΔLog Rent	ΔLog Population	ΔLog Rent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Top 5% Historic Gravity	-0.007	-0.008	0.014	0.044	0.024	0.022	0.017	0.021	0.012
	(0.006)	(0.006)	(0.002)***	(0.005)***	(0.002)***	(0.007)***	(0.007)**	(0.006)***	(0.007)
Top 5% Recreational Gravity	0.002	-0.009	0.021	0.068	0.038	0.032	0.027	0.022	0.037
	(0.006)	(0.006)	(0.002)***	(0.005)***	(0.002)***	(0.007)***	(0.008)***	(0.006)***	(0.008)***
Top 5% Photo Number	0.058	0.069	0.008	0.029	0.012	0.007	0.007	0.055	0.025
	(0.005)***	(0.005)***	(0.001)***	(0.004)***	(0.002)***	(0.006)	(0.006)	(0.005)***	(0.006)***
Central City	-0.112	-0.103	-0.006	-0.041	0.004	0.025	0.021	-0.05	0.003
	(0.002)***	(0.002)***	(0.001)***	(0.002)***	(0.001)***	(0.003)***	(0.003)***	(0.003)***	(0.003)
Log Distance to CBD							-0.005		
							(0.002)***		
MSA Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other 2000 Census Tract Controls	No	No	No	No	No	No	No	Yes	Yes
R-squared	0.14	0.14	0.07	0.12	0.11	0.07	0.08	0.19	0.1
Observations (Census Tracts)	51,192	51,072	51,189	50,899	51,192	50,432	48,358	51,001	50,386

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Controls include: log of income, unemployment rates, share of residents in families with kids, share of residents who are older than 65, share of residents over 25 who are high school dropouts, share non-Hispanic, white, and share foreign-born residents, all measured at the tract level in 1990

Appendix

1. Appendix Table 1

The table displays the relationship between distance to the tourism information center and the probability that a 2000-defined Census tract will be cataloged as a top 5 percent historical or recreational tract. The sample is limited to metropolitan areas with substantial tourism inflows (see Section 2.1). Census tracts are unlikely to be classified as such, although being in the central city increases the probability somewhat. In contrast, neighborhoods that are within 1 kilometer of tourism centers display approximately 67 percent chance of being classified as a top historical or recreational tract. The probability is still high, but declining, at the 1-2-kilometer, and 2-3-kilometer distance rings.

Appendix Table 1

Validating Distance to Tourism Information Centers

	(1)	**(2)**
	1=Top 5 Percentiles in Historic Gravity	1=Top 5 Percentiles in Recreational Gravity
1st Ring: <1Km. from Tourism Information Center	0.697	0.64
	(0.011)***	(0.011)***
2nd Ring: 1-2Km. from Tourism Information Center	0.463	0.483
	(0.007)***	(0.007)***
3rd Ring: 2-3Km. from Tourism Information Center	0.265	0.266
	(0.006)***	(0.006)***
Central City	0.034	0.042
	(0.002)***	(0.002)***
Constant	0.012	0.006
	(0.001)***	(0.001)***
Observations	35,709	35,709
R-squared	0.3	0.29

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

2. Data Appendix: Sources

Variable	Source	Details
Number of Tourist Visits 1990 (millions) with No Imputations	Shifflet Ltd.	See text for details
Number of Tourist Visits 1990 (millions) with Imputations	Shifflet Ltd. and authors' imputations	See Appendix Table 1
Number of Photos by MSA, NECMA, and Census Tract	Panoramio API	Processed by the authors to match metro or census tract boundaries
Average Block Group Distance to Park	Carlino and Saiz (2008), calculated using ESRI Data and Maps DVD	Authors averaged the distances by block group within an MSA
Average Block Group Distance to Recreation Sites	Carlino and Saiz (2008), calculated using ESRI Data and Maps TM	Authors averaged the distances by block group within an MSA
Average Distance to EPA-Hazardous Industries	Carlino and Saiz (2008), calculated using ESRI Data and Maps TM	Authors averaged the distances by block group within an MSA
Average Distance to Golf Course	Carlino and Saiz (2008), calculated using ESRI Data and Maps TM	Authors averaged the distances by block group within an MSA
Average Distance to Airport	Carlino and Saiz (2008), calculated using ESRI Data and Maps TM	Authors averaged the distances by block group within an MSA
Historic Places	National Register of Historic Places: National Park Service	Authors aggregated at the 1999 MSA/NECMA level
Coastal Share Within a 10-km Radius	Saiz (2008)	Obtained using GIS software: see source

Mountain Land Share within a 10-km Radius	Saiz (2008)	Obtained using GIS software: see source
Share of Persons 25 or Older with Bachelor's Degrees	HUD State of the Cities Data System (Census)	
Population	HUD State of the Cities Data System (Census)	
Poverty Rate	HUD State of the Cities Data System (Census)	
Share of Workers in Finance, Real Estate, and Insurance	HUD State of the Cities Data System (Census)	Employment in FIRE over total employment
Share of Workers in Manufacturing	HUD State of the Cities Data System (Census)	Employment in manufacturing over total employment
Unemployment Rate	HUD State of the Cities Data System (Census)	Unemployment over labor force
Family Income	HUD State of the Cities Data System (Census)	
Median House Value	HUD State of the Cities Data System (Census)	
Median Rent	HUD State of the Cities Data System (Census)	
Colleges	Peterson's College Guide	Authors matched the college zip code with the pertinent county and then assigned counties to MSA using 1999 MSA/NECMA Definitions
Average Precipitation	County and City Data	Authors matched MSAs

(1961-1990)	Book, 1994	to the corresponding major city
Immigrant Share in 1990	HUD State of the Cities Data System (Census)	Foreign Born 1990 (Population 1990)
Distance to Ocean/Great Lake 50 km or Less (dummy)	Rappaport and Sachs (2003)	Takes value one if any portion of the counties in an MSA is within 50 km or less of an ocean/great lake
Log July Mean Relative Humidity (Average 1941-1970)	Natural Amenities Scale: U.S. Department of Agriculture Economic Research Service (ERS)	Original data at the county level: authors aggregated to MSA
Public Recreation Capital Expenditures	Census of Governments (1977, 1982, 1997)	
Log Public Recreation Operating Expenditures	Census of Governments (1977, 1982, 1997)	
Tax Revenues	Census of Governments (1977, 1982, 1997)	
Public Building Capital Expenditures	Census of Governments (1977, 1982, 1997)	
Log Total Employment in Tourism-Related Activities	County Business Patterns (1980, 1990, 2000)	
Employment	BEA Regional Economic Information System (REIS)	
Wages	Bureau of Economic Analysis	Average wage and salary disbursements per worker
Murders per 1,000 Population	National Archive of Criminal Justice Data	Originally from FBI; by county, authors generated data by MSA
Museums	County Business Patterns	

	(1980, 1990)	
Eating and Drinking Establishments Per Capita	County Business Patterns (1980, 1990)	
Motion Picture Establishments Per Capita	County Business Patterns (1980, 1990)	
Amusement and Recreational Service Establishments	County Business Patterns (1980, 1990)	
Membership Organizations	County Business Patterns (1980, 1990)	
Per Diem Rates (1990)	U.S. Department of Defense: Per Diem, Travel, and Transportation Allowance Committee (originally from Government Services Administration)	Authors discarded observations from military bases and calculated average per diem within counties; to calculate MSA averages, authors weighted county data by population
Patents per Worker	U.S. Patent and Trademark Office	
Census Tracts: Distance to Tourist Offices	Geocoded using Yahoo Maps TM	Authors obtained tourist office addresses from local queries
Historic Gravity	National Register of Historic Places	Calculated by authors using points and haversine formula
Recreational Gravity	ESRI Data and Maps TM	Calculated by authors using points and haversine formula
Other Census Tract Controls	U.S. Census Tabulations	