

City Beautiful: Revealed Preferences for Amenities and Urban Growth

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Past studies have provided only indirect evidence of the importance of consumer amenities for city growth. In this paper we introduce a new measure of the demand for urban amenities and urban variety that is based on revealed preference by consumers: the number of leisure tourist visits. Leisure tourists are attracted by an area's special traits, such as proximity to the ocean, scenic views, history, architectural beauty, and cultural and recreational opportunities. But these are the same characteristics that attract households to cities when they are looking for a place to make their permanent home. We find that, all else equal, population and employment growth is about 2.5 percentage points higher in a metropolitan area with twice as many tourists. Housing prices also grow faster in "beautiful cities." These results are of critical importance to a growing number of policymakers pursuing urban growth strategies based on historical conservation, city beautification, and the development of spaces for leisure and consumer-oriented "public goods."

Despite agglomeration economies' historical importance to the production side of urban economies, innovations in transportation, production, and communication technologies have sometimes weakened the economic advantage of locating closely related activities near one another. However, the decline in the importance of agglomeration economies to firms does not mean that the clustering of people and jobs, or "demand for density" (Glaeser, Kolko, and Saiz, 2001, hereafter GKS), is no longer important to cities. Urban locations are still important to 21st-century households for both production and consumption reasons.

If consumers prefer a large variety of goods and services and there are substantial economies of scale in providing them, the number of different goods and services offered and consumers' economic welfare will depend on the size of the local market. For example, a number of studies by Waldfogel and his co-authors have shown that larger cities have more and better newspapers and more and better radio and television stations.¹

GKS point out three other ways in which large cities enhance consumption opportunities. Large cities may provide a greater variety of public goods, too, such as specialized schools and trendy public spaces. Furthermore, large cities make it easier for individuals to make wider social contacts and to have a more diverse set of friends. Large cities appeal to younger, more highly educated workers because they facilitate better development of professional and social connections than small cities and rural areas. Finally, large cities may satisfy aesthetic preferences, such as the variety of architecture found in many large cities or the artistic scene in places like New York City.

¹ See Waldfogel (2003), Waldfogel, and George (2003), and Waldfogel and Siegelman (2001).

Regardless of their initial size, some cities may have a comparative advantage in the production of consumer-oriented public goods because of historic character, architectural variety, pleasant public spaces, or natural scenic beauty. Policymakers and private investors are paying increasing attention to the provision of public goods that are oriented toward consumers: museums, waterfront parks, and other public spaces that are pleasurable for families and individuals to enjoy. Baltimore's Inner Harbor and the River Walk in San Antonio, Texas are just two examples.

A greater variety of consumption amenities is especially attractive to households as their wealth increases.² In the 46 years between 1959 and 2005, real per capita income more than doubled in the United States. The rise in real income has led to more demand for goods and services, especially luxury goods, such as meals in gourmet restaurants and live theater, which are more plentiful in large cities.³ Similarly, Rappaport (2007) provides evidence that rising incomes should increase the value that people (especially high-skill individuals) place on amenities, such as good weather. Lee (2004) contends that the demand for variety may increase more than proportionately with income, and argues that high-skill individuals should account for a larger share of the work force in large cities.

Past studies have provided only indirect evidence for the importance of consumer amenities. Typically, studies have relied on implicit prices for urban amenities estimated using a Rosen-Roback reduced-form approach (e.g., Tabuchi and Yoshida, 2000), or using residuals in an urban growth equation (e.g., GKS). In this paper we introduce a

² See, for example, the articles by Brueckner, Thisse, and Zenou (1999); GKS; and Adamson, Clark, and Partridge (2004).

³ One key feature of goods such as these is that it's difficult to transport them. While people can travel to cities offering an abundance of nontraded goods and services, there is little substitute for living in the cities or their environs if people value convenient access to nontraded goods and services.

new measure of the demand for urban amenities that stems from consumer-revealed preferences. This measure of demand for consumption offered by cities is based on the number of leisure tourists visits to about 150 MSAs in 1992. Leisure tourists are attracted by an area's special traits, such as proximity to the ocean, scenic views, history, architectural beauty, and cultural and recreational opportunities. But these are the same characteristics that attract households to cities when they are looking for a place to home.

Our argument is that leisure tourism in MSAs is reflective of consumption-oriented goods and services (both private and public) and other externalities (such as, aesthetic charm) offered to households in these MSAs. While it's straightforward to measure private sector goods that households value (such as restaurants and shopping), it's not as straightforward when trying to measure externalities that draw households to an area (such as the unique ambience of a city). Moreover, it's virtually impossible to include in any study the vast and differing variety of private and public goods that draw people to cities. Typically, researchers choose the types of amenities to include in their study. In addition to being subjective, the set of amenities chosen by a researcher will not be comprehensive.

Instead, in this article we use the number of leisure tourist visits in an MSA as a proxy for private consumption opportunities and for some of the most salient consumption agglomeration economies offered in an MSA. We explore how such consumption opportunities (measured by the total number of leisure tourist visits in 1992) affected MSA population and employment growth during the 1990s. We find that the number of tourist visits in 1992 is positively and significantly affected by both population and employment growth in metropolitan places during the 1990s. The estimates are

highly robust to a variety of alternative specifications of the regression model. Our findings suggest that, all else equal, population and employment growth is about 2.5 percent higher in an MSA with twice as many tourists as another MSA. Tourists' visits vary by more than 5,000 percent across the sample, so the implied gains in population and employment growth are substantial.

II. LITERATURE REVIEW

A number of theoretical papers demonstrate how the equilibrium size and structure of cities is affected by households' preference for variety in consumption (see for example, Ogawa (1998), Fujita (1988), Tabuchi (1988), and Abdel-Rahman (1988)). Empirically, there is a long tradition of using the Rosen-Roback framework to value what mobile workers are willing to pay in terms of some combination of higher rents and lower wages to live in areas offering better quality of life (see, for example, Rosen (1974), Roback (1982), Bloomquist, Berger, and Hoehn (1988), and Gyourko and Tracy (1991)). Recently, a number of studies have used the Rosen-Roback framework to look at the relationship between city size and the level of local wages and rents to determine whether productivity or urban amenities better explains the concentration of people and jobs in cities. As might be expected, the evidence to date is mixed. Tabuchi and Yoshida (2000) used data for just over 100 Japanese cities for 1992 and showed that a doubling of city size is associated with about a 10 percent increase in production costs. If firms are making products for national and international markets, the only way firms in relatively high-cost cities (large cities) can compete with firms in relatively low-cost cities (small cities) is if productivity (that is, agglomeration economies) is sufficiently higher in high-cost cities than in low-cost cities.

But Tabuchi and Yoshida (2000) found that a similar doubling of city size is associated with a 7 percent to 12 percent decrease in real wages (wages adjusted for the cost of living), which they attribute to households' willingness to accept lower real wages in a tradeoff for the greater variety offered in big cities. So, on balance, their results suggest that while productivity is higher in cities, peoples' taste for urban amenities and variety is an important factor accounting for concentration of population in cities.

In contrast, Ottaviano and Peri (2004) found no evidence that cultural diversity (another way to measure local variety) was important for consumers in a sample of 160 U.S. metropolitan areas.⁴ Instead, cultural diversity has a net positive impact on workers' productivity.

Recently, Lee (2004) offered another reason that real wages may differ with city size. If higher skilled (higher income) workers are disproportionately attracted to large cities because of the higher level of amenities and variety offered by larger cities, we expect the demand for variety to increase with an individual's income. That is, we expect to find that high-skill workers account for a larger share of the work force in large cities and a smaller share in small cities and rural areas.

According to Lee, then, it's the composition of the work force and not greater productivity that explains why wages tend to rise with city size. Lee (2004) used data from the health-care industry and found that large cities do, in fact, have more doctors relative to the number of nurses than do small cities. No doubt, both of these forces (greater productivity and greater variety) are at work in cities. The difficulty lies in trying to distinguish the extent to which high-wage (high-skill) workers locate in cities because

⁴ In their study, Ottaviano and Peri (2004) measure cultural diversity in a city as the variety of languages spoken by city residents.

large cities make them more productive or because large cities offer the greater variety that high-wage workers value. This is still an open question.⁵

Although most of the empirical results focus on the tradeoffs between wages and consumption amenities for workers, a recent study by Gabriel and Rosenthal (2004) focused on this tradeoff for firms. They developed both quality-of-life indexes for households and quality-of-business-environment indexes for firms in 37 cities from 1977 to 1995 and considered how much more in wages and rents a firm is willing to pay to locate an additional worker in a city that offers the firm resources for greater productivity relative to a control city. Gabriel and Rosenthal found that many cities attractive to households are unattractive to firms (e.g., Miami, Tampa, and Albany). Similarly, they found that some cities that are attractive to firms are unattractive to households (e.g., Detroit and Washington, D.C.). Finally, a few cities were found to be attractive to both households and firms (e.g., New York, San Francisco, and Los Angeles). If the views expressed in the current article are correct, these cities are poised to do well in the new century.

GKS present a variety of evidence to support the hypothesis that variety in consumption is a source of agglomeration economies. First, they show that reverse commuting has grown at around a 3 percent decadal rate in the 1970s, 1980s, and 1990s, suggesting that people with jobs in the suburbs seem to be willing to incur the higher cost of living in the central city and greater commuting cost to be close to the vast array of

⁵ Similar to Lee (2004), Gyourko, Mayer, and Sinai (2006) also argue that it's the composition of the work force and not necessarily greater productivity or amenities that explains higher housing prices in some locations, referred to as superstar cities and superstar suburbs. In the superstar location framework, as the composition of workers living in these locations shifts in favor of relatively higher income (relatively more productive) workers, this shift draws even more higher income workers as they outbid relatively lower income (relatively less productive) workers for housing leading to exclusivity as more and more high-income workers concentrate together.

consumption opportunities found in the city. They also regressed urban growth on a variety of weather, cultural, and recreational activities. They found that climate, as well as the existence of theater and museums, are positively associated with urban growth.

III. EMPIRICAL MODEL

In this section, we briefly describe the basic growth regression that will be estimated in this paper.

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

Where: $y_{i,t}$ represents either population or employment in year t ; T represents the terminal period (2000), and zero indicates the initial period (1990); i indicates region (MSAs); j indexes the number of parameters to be estimated; and ε_i is the white noise error term.

Our goal is to relate MSA growth (measured in terms of population growth and employment growth) during the 1990s to 1990 (or beginning-of-period) explanatory variables for about 150 MSAs, to mitigate any bias created by endogeneity or reverse causation.⁶ The main explanatory variable is the number of tourist leisure visits to an MSA in 1992. We expect both population and employment growth to be positively related to the number of tourist leisure visits. That is, our hypothesis is that areas rich in amenities people desire (proxied by tourism) will grow faster than areas that are lacking in these amenities. In addition to the tourism variable, the population growth regressions (employment growth regressions) include four demographic variables: the 1990 MSA level of population (employment); the share of an MSA's population with a bachelor's

⁶ In a latter section of this paper we conduct instrumental variables analysis.

degree in 1990; the share of an MSA's 1990 population that's foreign born; and the MSAs 1990 murder rate. The murder rate is included to proxy for urban dis-amenities. Three economic variables are also included in the regressions: income per capita in an MSA in 1990; the MSA unemployment rate in 1990; and the 1990 share of an MSA,s workers in manufacturing. Three geographic variables are included in the regressions: the log of average January temperature (itself averaged over the period 1941-1970); the log the mean relative humidity in July (averaged over the period 1941-1970); and a costal dummy variable equal to unity if an ocean or Great Lake is within 50 km radius of an MSA's boundary, and equal to zero otherwise. Finally, three regional dummies are included in all regressions (the east region represents the base case).

Data

Our data on tourism are proprietary in nature and are provided by D.K. Shifflet and Associates, a firm specializing in consulting and market research to the travel industry.⁷ Among other things, the Shifflet data provide the destinations for individuals who traveled for leisure purposes. We purchased the Shifflet data for two time periods--1992 (the earliest date for which leisure travel data are available) and 2002. Shifflet defines "travel" as any overnight trip or any day-trip greater than 50 miles one way. Each month a questionnaire was mailed to 15,000 different U.S. households in 1992 and to 45,000 different households in 2002. The samples were stratified demographically to match census data. Households were asked to report on travel destinations during the last three months. Annually, questionnaires were mailed to 180,000 households in 1992 and 540,000 households in 2002. Shifflet reports that there were 49,000 traveling households in the 1992 sample and 80,000 traveling households in the 2002 sample (with about two-

⁷ D.K. Shifflet & Associates Ltd., 7115 Leesburg Pike, Suite 300, Falls Church, Virginia 22043.

thirds of the traveling households making leisure trips in either year). Returned samples are demographically re-balanced on five key measures (origin state, age, gender, household size, and household income) to ensure that they are representative of the U.S. population.

Shifflet provided leisure travel data for the top 200 tourist destinations for 1992 and 2002. Thirty of these observations were dropped from our sample because they are not metropolitan areas in nature. For example, data are provided for tourist destinations such as Lake Ozark, MO; Key West, FL; and Yellowstone, WY. In addition, 32 cities were combined into 15 MSAs based on geographic proximity. That is, we grouped for example, Kansas City, MO, and Kansas City, KS, into one MSA rather than include these cities separately.⁸ In keeping with Shifflet, we use the 1999 MSA definitions to construct all of the variables used in the study. This leaves us with a sample of 155 MSAs.

Figure 1 shows a plot of the logarithmic tourism data by MSA for 1992. In general, the values of the variables seem reasonable and there is plenty of cross-MSA variation in values of the variables to aid in the estimation process. The most obvious outlier is Anchorage, AK, whose value of tourism is shown by the point in the lower left-hand corner of the graph. Because there are missing values for some of the explanatory variables, it was necessary to drop Anchorage, AK; Baltimore, MD; Flagstaff, AZ; Myrtle Beach, FL; and Naples, FL, from our sample. This leaves us with a sample of 150 MSAs. Table 1 shows MSAs ranked by the main variable of interest, leisure tourism

⁸ We combined the following 32 cities into fifteen 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.

visits in 1992, for metro areas with populations above 500,000 in the 1990 census. To maintain confidentiality of the data, we have suppressed the survey-based data on leisure visits in the table. Leisure visits in these major cities, ranged from a high of about 23 million tourists in Orlando, FL, to a low of 660,000 tourists in Newark, NJ.

One issue is that since Shifflet provided leisure travel data only for the top 200 tourist destinations, these data are left-censored. We have, however, a good deal of information about the censored MSAs, namely they have lower levels of tourism than do the MSAs that comprise in the Shifflet data. The first way we deal with the left-censoring of the data is to assign the log of the minimum observed value for tourist visits for an MSA (-0.4155) to all censored observations. As a result, we observe the following random variable:

$$x^* = \begin{cases} x & \text{if } x \geq f \\ f & \text{if } x < f \end{cases}$$

This assignment adds an additional 155 MSA to the sample and increases the number of observations in our sample to 305 MSAs. We refer to this variable as *the number of tourist visits with left-censored observations*. In addition, in regressions using these 305 observations, we add a dummy variable that takes value one if the observation is left-censored, and zero otherwise.

The second way we deal with left-censoring of the data, and what we consider the best approach, uses information in an employment-based tourism variable and other covariates to impute tourist visits for the left-censored observations. Since employment in an MSA's travel and tourism industries is correlated with leisure tourists visits, this employment measure is a useful variable when imputing values for the left-censored

observations. First, we need to develop a measure of employment in the travel and tourism industry by MSA since travel and tourism is not generally classified as a separate industry in *County Business Patterns*. Following the convention of 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*.⁹ The correlation between the survey-based data (Shifflet data) and employment-based measures for the observations for which both series are available is quite strong (0.6) as illustrated in Figure 2.

The Tobin regression model is used to impute the left-censored observations since the distribution of tourist visits is a combination of the discrete observations and continuous observations:

$$T_i^* = X_i\beta_j + \nu_i$$

where the dependent variable,

T_i^* = observed value of tourism (Shifflet data)

= -0.4155 otherwise

In addition to employment in the travel and tourism industries, our independent variables include the economic variables, the demographic variables, and the geographic variables discussed above, as well as regional fixed effects. Following estimation, the fitted values of Tobit models are used to predict tourist visits for the left-censored MSAs.

⁹ 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 “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 Gardens), and SIC 79 (Amusement and Recreational Services) for 1990, and we built up the corresponding SIC codes for 2000 using the bridge between the 1987 SIC breakdown and 2000 NAICS breakdown.

Thus, the imputed series for leisure visits consists of the 150 uncensored observations plus 155 imputed values of the left-censored observations. This variable is referred to as *the number of tourist visits with imputations*.

Table 2 reports the summary statistics for the variables used in the regression analysis. For the average MSA in our data set, population grew by about 12 percent during the 1990s, while employment increased 20 percent during the decade. Not surprisingly, the mean values for the three alternative measures for tourism used in this research differ markedly. Despite these differences, as we will see, the elasticity of growth with respect to tourism is robust to regression using these alternative definitions of the tourist variable.

Findings

Correlates of Tourism: In this paper we use leisure tourist visits as a proxy variable for the consumption opportunities and amenities that people value. The question is, is this a reasonable proxy? To address this question, we separately regressed the three measures for tourist visits on a variety of explanatory variables that households value for their consumption opportunities.¹⁰ Column one of Table 3 shows the results when the regression analysis is limited to the original 150 observations on tourism. Columns two and three of Table 3 summarized the results when the 155 left-censored observations are added to the regression. Column two shows the results when the minimum value of leisure tourism observed in the survey data is assigned to the left-censored observations,

¹⁰ In addition to the other explanatory variables already introduced, we added a regressor that measures the distance a census block group is to parks and one measuring the distance a census block group is to recreational centers (zoos, museums, amusement parks, etc.). We also included the following as three independent variables: the log of the number of historic places (found in the National Registry of Historic Places); the coastal share within a 10 km Radius of an MSA's boundary; and the mountain land share within a 10 km Radius of an MSA's boundary.

while column three presents the results of a regression when the 155 left-censored observations are imputed. A main finding of Table 3 is that results are quite similar across the three regressions. Bigger, sunnier, metro areas, with more colleges, lower poverty rates, lower manufacturing employment, close accessibility to parks, more historic buildings, and with a higher coastal share within a radius of 10 kilometers of its central city tended to be perceived as better places to visit. Our correlates explain about 55 percent of the variation in the survey-based data, 35 percent of the variation when the minimum value of tourists visits is assigned to the added left-censored observations, and 77 percent of the variation in the dependent variable when the added 155 left-censored observations are imputed.

Population Growth Regressions. We now turn attention to the main focus of the paper: Does leisure tourism, a proxy for consumer agglomeration economies, affect MSA population growth? Table 4 presents the results of three population growth regressions, one for each of the three leisure tourist visit variables developed in this paper. The results presented in the first column of Table 4 are based on the 150 survey-based observations on tourists visits. The results show that MSA population growth is positively and significantly related to the number of tourist leisure visits. Column 2 shows the results when the when the minimum value of leisure tourist visits is assigned to the left-censored observations, while column 3 gives the results when the number of tourist visits with imputations is used as the main explanatory variable. All three approaches yield very similar results. The elasticity of the population growth rate with respect to tourist visits is approximately 0.025. All else equal, the population growth rate is about 2.5 percent higher in an MSA with twice as many tourists as another MSA.

Tourists' visits vary by more than 700 percent across the interquartile range of the full sample (from 0.38 to 2.93 million visits), so the implied gains in population growth are substantial.

In Table 5 we summarize the findings of a number of robustness checks on the results presented so far. Unless otherwise noted, the results presented in the remainder of this paper will be based on the tourism variable comprised of the 150 survey observations plus the imputed values for the 155 left-censored observations because of the similarity of the estimated value among the alternative measures for the tourist visit variables (Table 5).

Column 1 reports the findings from simply regressing the log of population growth on the log tourist visits and the region fixed effects as controls. The coefficient on the tourism variable is positive and highly significant and not appreciably different from the values for this variable reported in Table 5.

In column 2 we report the findings of a broader regression adding many of the other covariates used in previous regressions, except we now control for the contemporaneous immigration impact (defined as the number of new immigrants divided by total population at the start of the period (Saiz, 2003)), instead of the share of the foreign born population. Previous literature has shown that international immigration is relatively insensitive to the evolution of local economies and mostly driven by the existence of previous ethnic communities (Altonji and Card, 1991, Card, 2001). There is a very elastic supply of immigrants into the US that is effectively curtailed by restrictive immigration policies and the costs imposed by legal barriers and border enforcement. In this sense, immigrants could be thought of as inframarginal to the local spatial

equilibrium of “immigrant cities.” This may be problematic if immigrant cities also tend to be cosmopolitan cities that attract tourists. However, controlling for contemporaneous “immigration shocks” does not change the relevant coefficient. The elasticity of population growth with respect to tourism is 0.024, which is remarkably similar to the results reported in Table 4, where the share of the population that’s foreign born is used in the regression instead of the number of new immigrants per capita.

Column 3 in Table 5 reports the results of a regression that drops Orlando and Las Vegas, two very idiosyncratic tourist cities, from the sample. Dropping these two MSAs does not have much impact on the estimated values of the coefficients. In column 4 we report the results of a regression that controls for creativity in the city by using the log of patents in 1990. Once again the elasticity of population growth with respect to tourism is 0.022.

A reasonable question is whether the results are driven by the multiplier effect of employment growth in the tourism sector. Looking at the effect of employment growth in the local travel and tourism industry on MSA population growth seems like a reasonable exercise given that many local governments promote the travel and tourism industry as a source of local economic development *per se*. Column 5 of Table 5 shows that our parameter estimates are robust to inclusion of employment growth in the local travel and tourism industry. The estimated coefficient on the travel and tourism industry variable is positive and significant at the 5 percent level. That is, employment growth in the industry does affect aggregate population growth for the average MSA in our sample, but the effect is small. Our estimates suggest that employment growth in the industry would need to triple to bring about a 1 percent acceleration in overall population growth

in the typical MSA. This meager effect is not surprising since employment in the travel and tourism industry accounts for a very small share of total employment for the typical MSA in our sample. Finally, column (6) of Table 5 presents the results of a regression that controls for contemporaneous changes in income. Once again, our parameter estimates are robust to controlling for contemporaneous income growth.

IV Estimation. Until now we have assumed that $E(X'\varepsilon) = 0$. If, however, $E(X'\varepsilon) \neq 0$ then OLS estimation will produce biased and inconsistent parameter estimates for the regressor that are contemporaneously correlated with the error term. There are three reasons why this might happen: measurement error, simultaneity, and omitted variables. Since our main variable of interest (log of the imputed value for leisure) is estimated for about one-half of the observations, we need to address the measurement error issue in the paper. Similarly, since our regression estimates the effects of leisure visits on population growth, we need to directly address the possibility of reverse causation—population growth might affect leisure visits.

One solution is to add lagged population growth (population growth during the 1980s) to the base regression. The inclusion of a lagged dependent variable among the set of regressor should capture the influence of omitted variables and reduce omitted variable bias. Column (7) of Table 5 reports the results of a regression that adds lagged population growth to the list of covariates. Although the estimated value of the elasticity of population growth with respect to tourist visits falls slightly (to 0.021) when we control for lagged population growth, this estimate is not appreciably different from the parameter estimate in the regression when we exclude lagged population growth from the regression--see column (5).

We deal with measurement error and simultaneity using an instrumental variable (IV/2SLS) estimation procedure. To do so, we must find an instrument(s) for our tourism variable that meets two conditions. A good instrument must be correlated with the endogenous explanatory variable (instrument relevance), and the instruments must be contemporaneously uncorrelated with the residuals (instrument exogeneity). Our instruments include the number of designated historic places per capita within an MSA (historic places), and the coastal share within a 10 km radius of an MSA's boundary. It's likely that historic places would be highly correlated with leisure tourism. Historic attributes of a city such as its buildings, neighborhoods, and landmarks tend to draw special interest from tourists because of their educational value and because historic districts within cities tend to be welcoming to tourists with a blend of attractions and amenities that are readily accessible. Coastal locations have always attracted leisure tourists. Other things equal, close proximity to an ocean will tend to draw more leisure tourists than MSA lacking reasonable commutes to an ocean. Thus, our instruments seem relevant.

What about instrument exogeneity? It's possible that our instruments could be correlated with population growth if they are correlated with production externalities and production externalities are correlated with growth. For example, the coastal share instrument could pick up the existence of ports in an MSA. If geographic proximity to ports improve production efficiency, and this increased productivity leads to relatively faster employment and population growth, then our coastal variable would not pass the instrument exogeneity requirement. To deal with this issue, we include a coastal fixed effects dummy variable (taking on a value of one if any part of the MSA is within 50

miles of the coast, and zero otherwise) in the second-stage in all of the IV regressions. Effectively, our coastal share instrumental variable exploits the cross-sectional variation in coastal share within a 10 km radius of an MSA's boundary. In addition to the two instruments just described, the other right-hand-side variables in our base regressions are included as instruments for imputed value of the log of leisure visitors.

Stock and Yogo (2004) have stressed the need to test for weak instruments. One way to do this in the context of models with one endogenous regressor is to construct the F -statistic testing the hypothesis that the coefficients on the excluded instruments (coastal share and historic places per capita) is zero. The F -statistic of the hypothesis that our instruments can be excluded from the regression equals 8.76. Applying the rule of thumb suggested by Staiger and Stock (1997) that the F -statistic for the excluded instruments should be at least 10, we concluded that our instruments appear to be marginally weak.¹¹ When the instruments are weak, Stock and Yogo suggest using LIML estimation. Before discussing these results, we should note that Stock and Yogo point out that the Staiger-Stock rule of thumb is less useful from the perspective of size distortion (the probability that the test rejects the weak instrument null when the null is true).¹² Our first-stage F -statistic of 8.76 for the excluded instruments exceeds the critical value of 8.68 (nominal 5 percent Wald test that the maximum size is no more than 10 percent) found in Table 4 of

¹¹ To test for the weakness of the instruments Stock and Yogo (2004) conducted simulations to provide useful rules of thumb (critical values) based on F -statistics of the instrumental variables. One test, for weak instruments, referred to as a "bias" test, is proposed when the number of instrumental variables exceeds two. The bias test tests the hypothesis that the small samples bias associated with IV estimation is small relative to the endogeneity bias associated with OLS estimation. This test is not available when there are two or fewer instrument variables. In this case, the Staiger-Stock rule of thumb is applied.

¹² Stock and Yogo (2004) also suggest a "size" test for weak instruments based on the performance of the Wald test for the coefficient of the endogenous regressors. If the instruments are weak, the Wald test tends to reject the weak instruments null too often. Stock-Yogo propose a test based on a rejection rate the researcher is willing to tolerate (10 percent, 20 percent, etc.) when the true rejection rate is the standard 5 percent rate.

Stock and Yogo (2004). Thus, based on the bias and size tests, we conclude that our instruments are only borderline weak.

Column 1 of Table 6 reports the results for the IV under a robust LIML estimation. The estimated coefficient on the log of the number of leisure tourists visits increases to 0.041 in the 2SLS regression, but standard errors are now larger too, which does not allow us to rule out the possibility that the OLS and IV estimates are realizations of the same parameter distribution. Furthermore, the Hausman and the Hausman-Wu tests do not identify systematic differences between the OLS and IV coefficients in these regressions. Therefore, we will revert to OLS regressions in what follows.

Employment Growth. Returning to Table 5, we now examine the impact of leisure tourism on employment growth. Are the previous results driven exclusively by residential growth (such as college students and retirees)? This is not the case, as seen in column 8 of Table 5; the effects of tourism on MSA employment growth appear to be roughly of the same order of magnitude as the effect of tourism on MSA population growth. Finally, the regression summarized in the last column of Table 5 shows the results of adding employment growth in the travel and tourism industry to the list of regressors. This is quite a demanding specification if one thought that the tourism variable simply captures the dynamics of employment in the tourism and travel-related industries. The results strongly suggest that this is not the case.

Other variables: We have suggested earlier that the impact of our city attractiveness variable is unlikely to be driven by job growth in low-skilled travel and tourism related industries. In Table 7, we examine how growth happens in “beautiful cities.” In fact, column 1 in Table 7 shows that it’s highly skilled workers who are

disproportionally moving to attractive cities. The share of individuals with bachelors degrees increased in those cities. Moving from bottom to top within the interquartile range of tourism visits yielded a share of the highly educated population that is 1.4 percentage points larger due to the extra growth associated with our main independent variable. These results are consistent with the idea that policies directed to investing in consumer and environmental amenities and providing attractive public spaces could be successful in attracting high-skilled individuals to a city.

Interestingly, in column 2 of Table 7 we don't see much of an effect of tourism on average income; the estimate is positive but not significant, consistent with a relatively small composition effect with respect to high-skilled workers and a lack of differential productivity growth in "beautiful cities," conditional on other variables. It is thus very difficult to make a case that the tourism variable is just capturing the impact of omitted productive inputs or the growth of factor productivity once we include the other covariates.

If inherent beauty, as perceived by leisure travelers, attracts individuals to a city and the housing supply is inelastic, we would expect some of the impact to be on housing rents and prices. In fact, with totally inelastic housing supply, we could see full capitalization of the increased valuation for such amenities, without much change in population levels.

In column 3 and 4 we find that the number of tourist visits positively affects rent growth and the growth of housing values. All else equal, the growth rate of rents is about 1.0 percent higher and the growth rate of housing values is about 2.5 percent higher in an MSA with twice as many tourists as another MSA. If tourism in an MSA is partially

reflective of the extent of consumption externalities offered in an MSA, then our findings of positive and significant effects of tourism on the growth of rents and housing values *partially* capture the importance of consumption externalities in metropolitan areas.

Recent literature has emphasized the inefficiency and predictability of housing markets. Over medium to long-run periods, such as the 10-year span we are considering, there is strong mean reversion in housing values, which is consistent with a model with economic convergence (Glaeser and Gyourko, 2006). We therefore include in column 5 initial 1990 housing values as an additional control. Indeed, the evidence is consistent with strong mean-reversion. The coefficient of city attractiveness is somewhat reduced, but we cannot reject similar impacts as in the earlier estimate.

Of course, the impact of increasing valuation of city “beauty” on, respectively, population and housing values should be mediated by the local elasticity of housing supply (Glaeser, Gyourko, Saks, 2006).

IV CONCLUSION

This paper introduces a new measure of the demand for urban amenities that represents a revealed preference by consumers. This measure of demand for consumption of amenities offered by cities is based on the number of leisure tourist visits to about 150 MSAs in 1992. It’s highly likely that leisure tourists are attracted by an area’s special traits, such as proximity to the ocean, scenic views, and cultural and recreational opportunities--the very characteristics that attracted households to cities. All else equal, we find that the elasticity of either population or employment growth with respect to tourism ranges from 0.02 to 0.03. These estimates are shown to be robust to

model specification (OLS and IV regressions), to changes in the list of explanatory variables, and to corrections for spatial dependence. Our findings suggest that the population/employment growth rate for a typical MSA in our sample increases between 0.2 percent and 0.3 percent with each doubling of leisure tourism. Given the substantial variation in leisure trips across MSAs, this suggests that the implied gains in population growth from urban amenities that attract leisure tourist can be substantial. If tourism in an MSA is reflective of the extent of consumption externalities offered in an MSA, then our findings of positive and significant effects of tourism on growth is reflective of the importance of consumption externalities in metropolitan areas.

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Figure 3: Correlation between Population Growth and Leisure Tourism

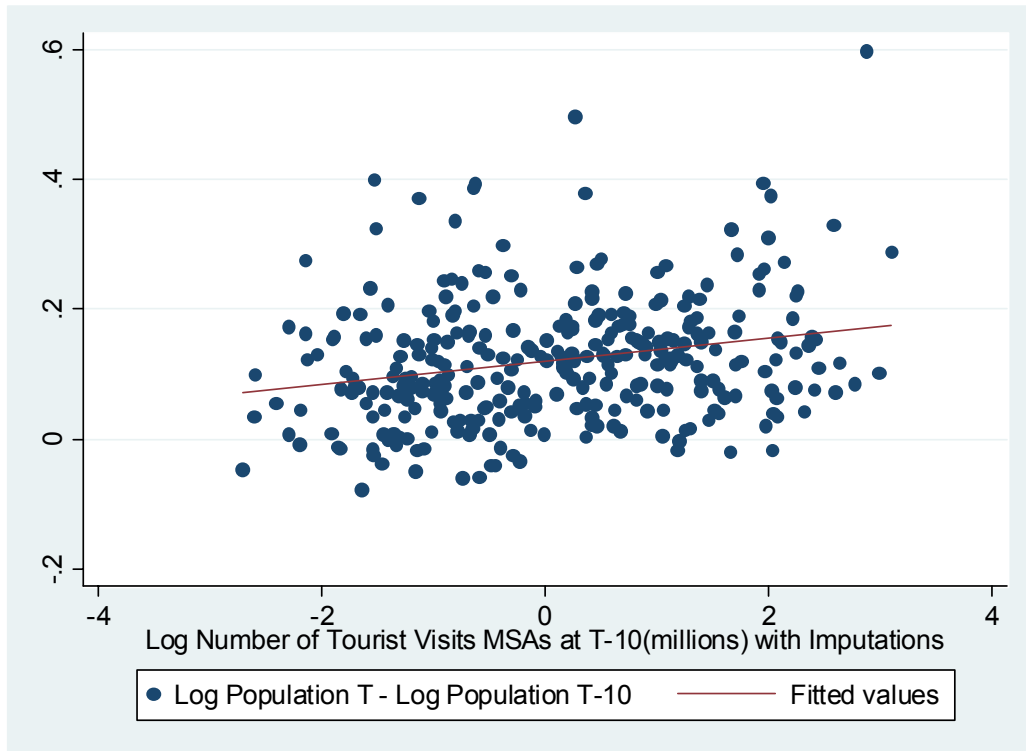


TABLE 1
MSAs Rank by Leisure Tourist Visits, 1992

MSA Name	Population (1990)	Housing Supply elasticity (Saiz, 2008)	MSA Name	Population (1990)	Housing Supply elasticity (Saiz, 2008)
Orlando, FL	1,240,724	1.15	Milwaukee-Waukesha, WI	1,435,303	0.86
Las Vegas, NV-AZ	869,735	1.93	Birmingham, AL	841,820	1.80
New York, NY	8,561,431	0.64	Rochester, NY	1,065,156	1.21
San Diego, CA	2,512,365	0.68	Tucson, AZ	668,844	1.05
Los Angeles-Long Beach, CA	8,878,157	0.57	Salt Lake City-Ogden, UT	1,077,594	0.81
Atlanta, GA	2,981,321	1.95	Omaha, NE-IA	641,659	2.84
Chicago, IL	7,430,187	0.74	Albuquerque, NM	592,272	1.62
Washington, DC-MD-VA-WV	4,240,124	1.30	Riverside-San Bernardino, CA	2,630,471	0.93
San Francisco, CA	1,604,192	0.59	Greensboro-Winston-Salem-High Point, NC	1,055,058	2.42
Knoxville, TN	588,026	1.40	Tulsa, OK	711,089	3.03
Tampa-St. Petersburg-Clearwater, FL	2,077,857	1.04	Albany-Schenectady-Troy, NY	863,388	1.43
St. Louis, MO-IL	2,496,963	2.11	Dayton-Springfield, OH	951,931	2.91
Houston, TX	3,344,722	2.04	Syracuse, NY	743,951	1.94
Columbus, OH	1,351,279	1.88	Little Rock-North Little Rock, AR	514,495	2.73
Nashville, TN	989,789	2.02	Miami, FL	1,943,717	0.57
Norfolk-Virginia Beach-Newport News, VA-NC	1,450,909	0.78	San Jose, CA	1,498,307	0.75
San Antonio, TX	1,327,601	2.31	Charleston-North Charleston, SC	508,851	1.38
Dallas, TX	2,693,669	1.88	Toledo, OH	614,637	1.94
Indianapolis, IN	1,386,718	3.37	Fort Lauderdale, FL	1,263,301	0.71
Philadelphia, PA-NJ	4,929,536	1.11	Wilmington-Newark, DE-MD	515,650	1.48
Minneapolis-St. Paul, MN-WI	2,549,860	1.19	Grand Rapids-Muskegon-Holland, MI	942,397	1.93
Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH	5,691,924	0.65	Bakersfield, CA	549,535	1.41
Oklahoma City, OK	960,538	2.59	Allentown-Bethlehem-Easton, PA	596,817	1.54
New Orleans, LA	1,285,014	0.83	Baton Rouge, LA	529,787	1.87
Pittsburgh, PA	2,396,165	1.00	Fort Worth-Arlington, TX	1,368,701	2.28
Cincinnati, OH-KY-IN	1,529,523	2.14	Fresno, CA	761,427	1.32
Phoenix-Mesa, AZ	2,249,116	1.32	Greenville-Spartanburg-Anderson, SC	834,102	2.69
Cleveland-Lorain-Elyria, OH	2,204,280	0.90	Hartford, CT	1,125,047	1.17
Denver, CO	1,630,347	1.17	Akron, OH	658,654	1.90
Austin-San Marcos, TX	851,898	2.44	West Palm Beach-Boca Raton, FL	871,560	0.99
Portland-Vancouver, OR-WA	1,527,639	1.00	Tacoma, WA	590,519	0.95
Charlotte-Gastonia-Rock Hill, NC-SC	1,169,236	2.63	El Paso, TX	595,350	1.56
Memphis, TN-AR-MS	1,010,474	1.18	Oakland, CA	2,115,483	0.65
Jacksonville, FL	913,575	1.07	Newark, NJ	1,917,837	0.91
Baltimore, MD	2,390,543	0.86	Gary, IN	605,781	1.59
Kansas City, MO-KS	1,587,276	2.85	Jersey City, NJ	554,289	1.16
Seattle-Bellevue-Everett, WA	2,049,195	0.77	New Haven-Bridgprt-Stamfrd-Danbry-Wtrbry, CT	1,634,226	0.86
Raleigh-Durham-Chapel Hill, NC	865,467	1.51	Providence-Warwick-Pawtucket, RI	918,468	0.97
Buffalo-Niagara Falls, NY	1,190,943	1.50	Scranton-Wilkes-Barre-Hazleton, PA	639,405	1.32
Harrisburg-Lebanon-Carlisle, PA	589,969	1.26	Springfield, MA	603,765	1.14
Detroit, MI	4,268,223	1.04	Ventura, CA	670,117	0.73
Louisville, KY-IN	950,904	2.01	Youngstown-Warren, OH	601,462	2.13
Richmond-Petersburg, VA	870,317	2.20			

TABLE 2
Summary Statistics

	N	Mean	St.Dv	Min	Max
ΔLog Population (1990-2000)	305	0.12	0.10	-0.08	0.60
Log Number of Tourist Visits 1990 (millions) - Survey Data	149	1.18	0.76	-0.42	3.10
Log Number of Tourist Visits 1990 (millions)-Left Censored Obs.	305	0.37	0.96	-0.42	3.10
Log Number of Tourist Visits 1990 (millions) with Imputations	305	0.07	1.32	-2.74	3.10
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	305	8.72	1.33	6.48	12.43
Log Number of Tourist Visits 1990 (millions) with Imputations	305	0.07	1.32	-2.74	3.10
Log Population in 1990	305	12.65	1.04	10.95	16.00
Share with Bachelors 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
l=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
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*Metropolitan Correlates of Tourism Visits*

	Log Number of Observed Tourist Visits (millions) ^a	Log Number of Tourist Visits with left-censored observations (millions) ^b	Log Number of Tourist Visits with imputations (millions) ^b
Log population	0.479 (0.113)***	0.757 (0.152)***	0.607 (0.0862)***
Log number of colleges	0.147 -0.114	0.29 (0.148)*	0.31 (0.086)***
Poverty rate	-4 (1.76)**	-4.516 (1.808)**	-4.449 (1.168)***
Log January Average Temperature (Average 1941-1970)	0.214 (0.225)	0.146 (0.285)	-0.486 (0.171)
Log Average Annual Precipitation (1961-1990)	-0.306 (0.149)**	-0.43 (0.201)**	-0.302 (0.118)***
Share with Bachelors degree	-1.52 (0.882)*	0.129 (1.245)	0.792 (0.634)
Share workers in manufacturing	-4.77 (1.149)***	-6.974 (1.359)***	-6.545 (0.798)***
Share workers in Finance, Insurance, and Real Estate	-5.155 (2.95)*	-3.591 (4.440)	-3.873 (2.357)*
Average Block-Group distance to Park	0.005 -0.012	-0.026 (0.013)**	-0.019 (0.007)***
Average Block-Group Distance to Recreation Sites	-0.004 (0.004)	-0.004 (0.005)	-0.006 (0.002)***
Log Historic Places per Capita	0.22 (0.085)**	0.305 (0.111)***	0.17 (0.0636)***
Coastal Share within a 10 km Radius	0.806 (0.376)**	1.166 (0.559)**	1.004 (0.359)***
Mountain Land Share within a 10 km Radius	0.034 0.524	-0.613 (0.625)	-0.495 (0.340)
Northeast	-0.098 -0.169	-0.447 (0.228)*	-0.327 (0.136)**
South	-0.024 (0.186)	0.257 (0.256)	0.263 (0.149)*
West	-0.383 (0.220)	-0.48 (0.302)	-0.42 (0.177)**
Constant	-1.49 -1.47	-4.419 (1.820)**	-3.73 (1.08)***
R-Squared	0.5449		0.769
Pseudo R-Squared		0.351	
Observations	150	305	305

^aOLS regression^bTobit regression with left-censoring by assigning the minimum observed value to all censored observations.

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 4*Tourism Visits and Metropolitan Growth in the 90s*

	$\Delta\text{Log Population}$		
	(1)	(2)	(3)
Log Number of Tourist Visits 1990 (millions)	0.023 (0.012)*		
Left-Censored Log Number of Tourist Visits 1990 (millions)		0.025 (0.012)**	
Dummy=1 if Observation Contains Left-Censored Tourism Data		-0.008 (0.017)	
Log Number of Tourist Visits 1990 (millions) with Imputations			0.025 (0.007)***
Log Population in 1990	-0.019 (0.013)	-0.012 (0.009)	-0.018 (0.010)*
Share with Bachelors degree in 1990	-0.073 (0.211)	0.334 (0.126)***	0.309 (0.127)**
Log January Average Temperature (Average 1941-1970)	0.067 (0.029)**	0.052 (0.018)***	0.054 (0.018)***
Log July Mean Relative Humidity (Average 1941-1970)	-0.137 (0.039)***	-0.102 (0.030)***	-0.104 (0.030)***
Share foreign born in 1990	0.076 (0.116)	0.222 (0.143)	0.246 (0.142)*
Share workers in manufacturing in 1990	-0.085 (0.114)	0.06 (0.081)	0.114 (0.082)
Log Income in 1990	0.172 (0.084)**	0 (0.061)	-0.005 (0.061)
Unemployment rate in 1990	-0.993 (0.525)*	0.064 (0.488)	0.032 (0.481)
Murders per 100 inhabitants in 1990	-2.285 (1.328)*	-2.474 (0.980)**	-2.03 (1.015)**
1=Distance to Ocean/Great Lake 50 Km or less	-0.009 (0.014)	0.012 (0.010)	0.009 (0.010)
Northeast	-0.056 (0.015)***	-0.05 (0.011)***	-0.047 (0.011)***
South	0.053 (0.025)**	0.044 (0.016)***	0.042 (0.016)***
West	0.009 (0.030)	0.016 (0.022)	0.02 (0.023)
Constant	-0.929 (0.730)	0.407 (0.531)	0.531 (0.541)
Observations	149	305	305
R-squared	0.48	0.43	0.44

Robust standard errors in parentheses.

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

TABLE 5
Tourism Visits and Metropolitan Growth in the 90s: Robustness

	ΔLog Population (1990-2000)							ΔLog Employment	
	(1)	(2)	(3) [⊥]	(4)	(5)	(6)	(7)	(8)	(9)
Log Number of Tourist Visits 1990 (millions) with Imputations	0.017 (0.004)***	0.024 (0.005)***	0.023 (0.005)***	0.022 (0.005)***	0.024 (0.004)***	0.025 (0.005)***	0.021 (0.004)***	0.027 (0.006)***	0.03 (0.006)***
Log Population in 1990		-0.03 (0.007)***	-0.029 (0.007)***	-0.053 (0.009)***	-0.056 (0.008)***	-0.056 (0.009)***	-0.048 (0.008)***	-0.064 (0.011)***	-0.069 (0.011)***
Share with Bachelors degree in 1990		0.188 (0.081)**	0.217 (0.082)***	0.034 (0.090)	0.007 (0.078)	0.073 (0.086)	0.038 (0.070)	0.04 (0.103)	-0.003 (0.103)
Log January Average Temperature (Average 1941-1970)		0.026 (0.014)*	0.026 (0.014)*	0.023 (0.015)	0.023 (0.013)*	0.017 (0.015)	-0.009 (0.016)	-0.006 (0.019)	-0.007 (0.018)
Log July Mean Relative Humidity (Average 1941-1970)		-0.064 (0.020)***	-0.063 (0.020)***	-0.058 (0.019)***	-0.056 (0.015)***	-0.053 (0.017)***	-0.054 (0.016)***	-0.046 (0.023)**	-0.043 (0.022)*
Immigration Impact (1990-2000)		1.838 (0.150)***	1.77 (0.156)***	1.79 (0.149)***	1.794 (0.109)***	1.788 (0.148)***	1.252 (0.140)***	1.365 (0.161)***	1.374 (0.165)***
Share workers in manufacturing in 1990		0.139 (0.072)*	0.143 (0.072)**	0.024 (0.075)	0.005 (0.064)	0.025 (0.063)	0.128 (0.057)**	-0.13 (0.078)*	-0.161 (0.076)**
Log Income in 1990		-0.085 (0.031)***	-0.084 (0.031)***	-0.116 (0.031)***	-0.104 (0.030)***	-0.12 (0.032)***	-0.085 (0.026)***	-0.222 (0.042)***	-0.199 (0.041)***
Unemployment rate in 1990		-0.687 (0.234)***	-0.617 (0.237)***	-0.578 (0.230)**	-0.529 (0.193)***	-0.604 (0.230)***	-0.276 (0.229)	-0.934 (0.273)***	-0.851 (0.273)***
Murders per 100 inhabitants in 1990		-1.337 (0.745)*	-1.351 (0.749)*	-0.586 (0.733)	-0.765 (0.809)	-0.686 (0.712)	0.19 (0.601)	-2.021 (0.886)**	-2.326 (0.836)***
1=Distance to Ocean/Great Lake 50 Km or less		0.006 (0.007)	0.007 (0.007)	0.004 (0.007)	0.004 (0.008)	0.004 (0.007)	-0.008 (6.000)	0.001 (0.008)	0 (0.008)
Log Patents Issued in 1990				0.022 (0.006)***	0.022 (0.006)***	0.023 (0.006)***	0.017 (0.005)***	0.033 (0.007)***	0.033 (0.007)***
Tourism employment Growth					0.026 (0.009)***	0.029 (0.011)**	0.033 (0.007)***		0.046 (0.013)***
ΔLog Income (1990-2000)						-0.172 (0.085)**			
ΔLog Population (1980-1990)							0.342 (0.034)***		
Regional Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.08 (0.007)***	1.42 (0.301)***	1.374 (0.301)***	1.942 (0.315)***	1.847 (0.301)***	2.067 (0.334)***	1.606 (0.262)***	3.238 (0.403)***	3.05 (0.392)***
Observations	305	305	303	305	305	305	305	305	305
R-squared	0.33	0.7	0.68	0.72	0.72	0.73	0.81	0.61	0.63

Robust standard errors in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%
[⊥] Excludes Las Vegas and Orlando

TABLE 6

Tourism Visits and Metropolitan Growth in the 90s: LIML IV Estimation

	2nd Stage	1st Stage
	ΔLog Population	Log Number of Tourist
Log Number of Tourist Visits 1990 (millions) with Imputations	0.041 (0.023)*	
Log Population in 1990	-0.068 (0.021)***	0.849 (0.090)***
Share with Bachelors degree in 1990	0.058 (0.089)	-1.361 (1.066)
Log January Average Temperature (Average 1941-1970)	0.028 (0.015)*	-0.100 (0.153)
Log July Mean Relative Humidity (Average 1941-1970)	-0.058 (0.019)***	-0.044 (0.221)
Immigration Impact (1990-2000)	1.804 (0.139)***	0.242 (1.496)
Share workers in manufacturing in 1990	0.136 (0.141)	-6.0 (0.794)***
Log Income in 1990	-0.118 (0.033)***	-0.082 (0.416)
Unemployment rate in 1990	-0.397 (0.317)	-9.374 (2.557)***
Murders per 100 inhabitants in 1990	-0.522 (0.719)	1.135 (9.767)
1=Distance to Ocean/Great Lake 50 Km or less	0.006 (0.008)	-0.271 (0.110)**
Log Patents Issued in 1990	0.02 (0.006)***	0.151 (0.070)**
Northeast	-0.022 (0.012)*	-0.348 (0.148)**
South	0.028 (0.013)**	0.123 (0.140)
West	0.009 (0.018)	-0.302 (0.182)
Log Historic Places per Capita	<i>excluded</i>	0.217 (0.065)***
Coastal Share within a 10 km Radius	<i>excluded</i>	1.626 (0.567)***
Constant	2.115 (0.416)***	-6.279 (4.275)
Observations	305	305
R-squared	-	0.76
Partial R-Squared of Instruments		0.070
Partial F-statistic of Instruments		8.76

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

TABLE 7

Tourism Visits and Qualities of Growth in the 1990s

	ΔShare with BA	ΔLog Income	ΔLog Rent	ΔLog Housing Value	
	(1)	(2)	(3)	(4)	(5)
Log Number of Tourist Visits 1990 (millions) with Imputations	0.002 (0.001)**	0.003 (0.004)	0.010 (0.004)**	0.024 (0.009)**	0.015 (0.008)**
Log Population in 1990	-0.002 (0.002)	0.000 (0.009)	-0.029 (0.009)***	-0.059 (0.018)***	-0.030 (0.014)**
Share with Bachelors degree in 1990	0.070 (0.021)***	0.398 (0.092)***	0.086 (0.092)	0.093 (0.203)	0.813 (0.140)***
Log January Average Temperature (Average 1941-1970)	-0.007 (0.003)**	-0.036 (0.009)***	-0.005 (0.015)	-0.052 (0.034)	-0.040 (0.022)*
Log July Mean Relative Humidity (Average 1941-1970)	0.006 (0.004)	0.014 (0.018)	-0.044 (0.022)**	-0.023 (0.047)	0.130 (0.036)***
Immigration Impact (1990-2000)	0.011 (0.032)	-0.036 (0.153)	0.319 (0.131)**	-0.025 (0.246)	0.640 (0.203)***
Share workers in manufacturing in 1990	0.019 (0.014)	0.129 (0.084)	0.203 (0.068)***	0.561 (0.153)***	0.556 (0.103)***
Log Income in 1990	0.013 (0.009)	-0.099 (0.034)***	-0.241 (0.033)***	-0.333 (0.072)***	0.106 (0.076)
Unemployment rate in 1990	-0.127 (0.050)**	-0.467 (0.217)**	-1.060 (0.243)***	-1.054 (0.421)**	-0.467 (0.343)
Murders per 100 inhabitants in 1990	-0.296 (0.138)**	0.579 (0.725)	0.478 (1.058)	-1.766 (1.826)	-1.714 (1.592)
1=Distance to Ocean/Great Lake 50 Km or less	0.002 (0.002)	0.002 (0.007)	0.003 (0.009)	-0.016 (0.019)	0.030 (0.015)**
Log Patents Issued in 1990	0.002 (0.001)	0.004 (0.006)	0.022 (0.006)***	0.029 (0.012)**	0.018 (0.009)**
Northeast	-0.003 (0.002)	-0.027 (0.009)***	-0.048 (0.011)***	-0.281 (0.029)***	-0.139 (0.026)***
South	0.001 (0.003)	0.014 (0.010)	0.024 (0.013)*	-0.059 (0.026)**	-0.040 (0.021)*
West	0.002 (0.004)	0.009 (0.018)	0.034 (0.019)*	0.008 (0.042)	0.253 (0.033)***
Log median house value in 1990					-0.469 (0.036)***
Constant	-0.075 -0.083	1.340 (0.340)***	3.122 (0.344)***	4.597 (0.713)***	4.271 (0.653)***
Observations	305	305	305	305	305
R-squared	0.51	0.29	0.44	0.52	0.74

Robust Standard errors in parentheses

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

Appendix: Table 1
Fitting Left-Censored Data: Model

	Log Number of Tourist Visits	
	(1)	(2)
Log Total Employment in Tourism-Related Activities(1990)	0.938 (0.123)***	0.972 (0.121)***
Log population	-0.267 (0.182)	-0.385 (0.175)**
Log number of colleges	0.212 (0.126)*	0.249 (0.124)**
Poverty rate	-0.099 (1.590)	-0.118 (1.597)
Log January Average Temperature (Average 1941-1970)	0.014 (0.247)	-0.148 (0.239)
Log Average Annual Precipitation (1961-1990)	-0.11 (0.178)	-0.017 (0.172)
Share with Bachelors degree	-0.343 (1.070)	0.029 (1.068)
Share workers in manufacturing	-3.249 (1.220)***	-3.14 (1.231)**
Share workers in Finance, Insurance, and Real Estate	-2.296 (3.815)	-2.484 (3.846)
Average Block-Group distance to Park	-0.022 (0.011)**	-0.025 (0.012)**
Average Block-Group Distance to Recreation Sites	-0.005 (0.004)	-0.006 (0.004)
Log Historic Places per Capita	0.204 (0.097)**	
Coastal Share within a 10 km Radius	0.238 (0.491)	
Mountain Land Share within a 10 km Radius	-0.557 (0.544)	-0.5 (0.550)
Northeast	-0.361 (0.195)*	-0.282 (0.193)
South	0.177 (0.220)	0.249 (0.221)
West	-0.276 (0.262)	-0.166 (0.260)
Constant	-1.559 (1.584)	-1.897 (1.591)
Pseudo R-Squared	0.417	0.411
Observations	305	305

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