Are States with Larger than Average Black Populations Really the Worst Places to live in the USA? A Spatial Equilibrium Approach to Ranking Quality of Life

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Quality-of-life rankings based on location-specific attributes/local amenities could induce elected official and policy makers into incorrectly constructing economic development plans if the ranking scheme was flawed. Hierarchical rankings of states in the USA in terms of quality-of-life that use an explicit amenity accounting method, typically assign lower ranks to states with large Black American populations. We show that these rankings utilize methodologies that are not based on economic theory, and that they arbitrarily construct ranking schemes about what individuals and firms value about the places where they locate. This pick-and-choose amenities accounting approach has its merits; however, we show that this approach introduces a bias into the ranking process. An alternative theoretically tenable and unbiased approach to measuring quality-of-life in particular locations follows from two important notions. First, a significant amount of what individuals and firms value in the places where they locate is unobservable. Secondly, the value of tangible and intangible location specific attributes (amenities) is captured by the difference between amenity-adjusted, housing prices and incomes. We implement a ranking scheme consistent with this notion, and find that when ranking states in the USA in terms of quality-of-life, states with large Black populations move up in the rankings substantially. Additionally, we find that relative to standard explicit amenity accounting quality-of-life measure, our spatial equilibrium measures can better explain the location choices of individuals, as measured by net migration.

Since quality-of-life rankings were introduced in the early 1980s, livable place rankings in the USA of the type that appear in *Places Rated Almanac (*Boyer and Savageau, 1989) and Morgan Quitno Press (Morgan and Morgan, 2008), have captured the attention of policy makers as potential inputs into the economic development and planning process. Even though these popular measures of rating locations lack a firm theoretical grounding and are biased (Douglas and Wall, 1993; Luger 1996), they have become important policy tools used to attract physical and human capital (Deng and Gao, 2013; Rogerson, 1999; Stimson and Marans, 2011). Given that physical and human capital are highly mobile in the long-run, their utilization and employment levels are sensitive to location specific attributes or amenities—which are measured by a variety of quality-of-life indexes. In this context, if quality-of-life rankings are bias, and serve as inputs into the economic development and planning processes, they could lead to decisions that are suboptimal with respect to creating and/or promoting the type of environment believed to be important for attracting highly productive human and physical capital that engenders economic growth.

Typically, quality-of-life rankings employ an arbitrary explicit "amenity" accounting process that generates relative rankings of locations. Morgan Quitno Press (hereafter MQ) ranks the 50 states using this type process. Implicit to this approach is the presumption that researchers can determine a priori, which location specific attributes people value in the places they live. These measures are used extensively in economic research. They have been utilized to examine the extent to which amenities are capitalized into housing prices (Glaeser, Kolko, and Saiz, 2001), rents (Shultz and King, 2001), wages/incomes (Ezzet-Loftstrom, 2004), and whether or not they matter for the location decisions of manufacturing establishments (Granger and Blomquist, 1999).

While studies utilizing these measures produce empirical findings that are consistent with the idea of compensating wage and rent differentials, the quality-of-life measures require a leap of faith to believe that some itemized list of empirically significant amenities can account for central items that individuals value in a particular place. An additional shortcoming of MQ-type quality-of-life rankings is that they presume that across geographic space, amenities are homogeneous and uniformly demanded. This type of homogeneity is rather restrictive, and assumes amenities are equally valued across households. To the extent that this is not true, quality-of-life indexes constructed as such, can suffer from substantial bias. If for example, relative to household A in region 1, household B in region 2 values clean air at a lower rate, an index that provides equal weight for clear air in an amenity index for both regions would result in household B in region 2 having a relatively lower quality-of-life ranking. An unbiased index would assign a weight to clean air based upon how households actually value clean air.

In this paper, we consider Morgan Quitno Press' quality-of-life state rankings, and argue that these types of rankings are based on a methodology that is arbitrary and biased in its approach to accounting for what people value as contributing to their physical and material comfort/wellbeing in the places they live. We rank states with an alternative approach to assessing the quality-of-life for individuals in particular locations. Our estimates of a state's quality-of-life is based on the hypothesis that a significant amount of what individuals value in the places they live is unobservable, but is reflected in the difference between their amenity-adjusted housing cost (what they actually pay to live in a particular place) and their amenity-adjusted incomes.

To illustrate the logic of this contention, consider a situation where profit maximizing firms and utility maximizing workers have a choice between two locations. One location is pleasant and the other is harsh. A combined wage and rent differential will materialize between the two locations as the labor and housing markets equilibrate. In the final analysis, the pleasant location will offer a combination of wages and rents, the price, with which the amenities are purchased. The harsh location will offer a combination of wages and rents, a lower price, which compensates for the lack of amenities. The pleasant location might offer lower wages and higher rents. Conceivably, if this combination of wages and rents exist, all else held constant, most workers chose to locate in the pleasant location. Thus, the increased competition for jobs and land, in the pleasant location, would push downward pressure on wages and upward pressure on rents. It is not necessary that wages be lower and rents be higher, but it is necessary that the combination be a net payment (Granger and Blomquist, 1999). We implement a ranking scheme consistent with this notion, and find that states like Mississippi, with a larger than average Black population, that typically ranks as one of the worst places to live, are instead among the best.

Amenities and Spatial Equilibrium

MQ-type quality-of-life rankings typically rank Gulf States (such as Mississippi) at or near the bottom of the list. The status of Mississippi as being one of the least desirable states to live appears to be persistent in Morgan Quitno Press annual rankings. For each year between 1991 and 2012, the highest ranking realized by Mississippi was in 1991, when it ranked 45th among all states. Table 1 reproduces a recent 2008 MQ ranking of the states. The ranking of each state is based upon its weighted score based on 44 factors presumed to be important for an individual's quality-of-life. These factors include for example the percent change in the number of crimes, highway fatality rates, and the percent of the eligible population that votes. In 2008, Mississippi had the distinction of having the lowest ranking. If one takes the MQ rankings seriously, and view them as representing some hierarchical ranking of the states in terms of amenities, New Hampshire would be considered most pleasant, and Mississippi would be most harsh. The fact that we observe people living in Mississippi raises the question, at least metaphorically, why would one voluntarily choose to live in a "most harsh" environment. Moreover, why would people migrate into the state, particularly Black Americans—who comprise a larger than average percentage of the population.

The methodology underlying the MQ rankings does not provide an answer to this question, as it merely accounts for an arbitrarily determined set of factors presumed to account for what constitutes a "pleasant or harsh" place to live. For example, one of the components of the MQ rankings is the percent of the population that votes. As this measure increases, a state's rank increases. Here, presumably individuals value high voter participation; this seems plausible, but it is conceivable that some individuals may devalue it due to a lack of interest in politics and/or political participation.

To the extent that there is no accounting for tastes, accounting for all relevant amenities is an impossible exercise, and rankings of places where individuals live based on explicit amenity accounting methods are likely to result in biased rankings. The MQ rankings could therefore have a bias that slants its ranking toward one state or another simply because it introduced or omitted some observed or unobserved amenity valued by individuals. Capturing the value of both observed and unobserved amenities is possible if we view residential location decisions as representative of a spatial equilibrium as in Roback (1982)[1].

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[1] More formally, Roback (1982) assumes a world of identical individuals and firms across locations, with indirect individual utility given by *V(r,p,s)*. The cost functions of firms producing housing and commodities under constant returns to scale are *G(w,r,s)* and

A spatial equilibrium is a solution to a location problem wherein individuals and firms make optimal choices about the consumption and production of commodities, housing, and amenities. The solution to this problem generates a location specific equilibrium revealing that the value economic agents place on the amenities—which is the difference between the amenity-adjusted housing prices and the amenity-adjusted wages. Thus, whatever amenities an individual values the residual when amenity adjusted housing prices are regressed on amenity-adjusted wages provides an unbiased estimate of the value individuals place on living in a given location.

Given unobserved preferences for amenities, a spatial equilibrium approach to valuing the quality-of-life of a location seems more compelling than an explicit amenity accounting approach that generated the hierarchical ranking of desirable locations as in the MQ rankings in Table 1. Accepting the MQ ranking approach requires one to concede that Mississippi compared to New Hampshire provides a prima facie delineation between a "pleasant vs. harsh" location—regardless of what optimizing individuals prefer in a spatial equilibrium context.

Ranking Quality-of-Life from a Spatial Equilibrium Perspective

Empirically**,** Glaeser, Kolko, and Saiz (2001) have considered a spatial equilibrium approach to measuring amenities. They did not rank locations by quality-of-life; however, they did find a positive correlation to exist between population growth and the residual of an Ordinary Least Squares (OLS) regression of median housing prices on median incomes. To the extent that this residual measures local amenities, their finding supports the contention that amenity-maximizing individuals would migrate toward locations with high levels of amenities. Winter (2010) recently considered a variation of this approach. Here too, the results seem to be consistent with location decisions being influenced by local amenities. Building on this work, we estimate an OLS residual that comprises our approximated spatial equilibrium "amenity index."

As an econometric specification, an OLS model provides parameter estimates of the effect of amenity-adjusted incomes regressed on amenity-adjusted housing prices in a given state across its counties.[2] The equilibrium relationship is amenity-adjusted housing =

$C(w,r,s)$ respectively, where p is the cost of housing (h), r is the rental cost of land, w is the wage rate, and s the quantity of some location-specific amenity. In a spatial equilibrium, for individual consumers, wages and rents equalize utility and for firms, unit production costs equal the cost of producing land and housing. Let V_s be the partial derivative of indirect utility with respect to a change in location-specific amenity s ($V_s > 0$), and V_w be the partial derivative of indirect utility with respect to a change in the wage ($V_w > 0$). In equilibrium, the demand for amenities or how individuals value location-specific amenities is p^*_s, which via Roy's identity is:

$$p^*_s \equiv V_s/V_w = h(dp/ds) - dw/ds$$

where $h(dp/ds)$ is the housing premium induced by the location-specific amenities, and dw/ds is the wage premium induced by the location-specific amenities. Thus, in a spatial equilibrium, the value of all amenities for an individual in a given location is the difference between amenity-adjusted housing prices and amenity-adjusted wages/incomes.

[2] The residual from a misspecified amenity-adjusted housing price model is a result from elementary econometrics. Suppose we specify:

amenity-adjusted incomes + demand for (i.e., value of) amenities. This follows from Roback (1982). An OLS parameter estimate of this specification that omits amenities generates an error term that contains the value of local amenities. It approximately captures the value of the amenity-bundle in a given location, which is presumably the difference between the amenity-adjusted cost of housing and amenity-adjusted income/wages (ibid).

We implement this spatial equilibrium approach to estimate the value of amenities with census data on county-level median housing prices and incomes in 2000. Our data consist of county level median house prices and county level median household incomes from the 2000 U.S Census. The residuals from an OLS regression of the log of county median housing prices on the log of county median income generate our measure of the value of amenities in a given state. The log-linear specification seemed appropriate after examining the residuals from our regression models. We use this measure to construct our quality-of-life ranking for states in the USA. For each state, we then proceed to measure its amenities by capturing the mean and median value of the residual error term obtained by regressions across each county in a given state. The state's rank is determined by these two measures of central tendency. To benchmark our results, we compare our ranking with the MQ 2000 state rankings in Table 2.

Table 3 reports the ranking of the states based on a state's mean measure of amenities. Based on our measure of amenities, Hawaii achieved the highest rank, in contrast to its MQ rank of being in the bottom half of all states. For Mississippi, the contrast with its standing in the MQ rankings is less dramatic than in the case of Hawaii, but its ranking improves substantially to the 29th position. In general, while Texas falls in position relative to its MQ rank, the Gulf States (Alabama, Florida, Mississippi, and Texas) improve their average rank in Table 3. If for a given state, the amenity distribution across counties is skewed, the rankings in Table 3 could be biased. In Table 4, we control for this possibility by ranking states based on median county amenities. Allowing for skewness across counties does not appear to substantially matter, as the rankings in Table 4 are approximately similar at the top and bottom of the state rankings.

What explains the dramatic differences between the MQ rankings and the results from our spatial equilibrium approach? Our approach recognizes that in a spatial

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$$housing\ price^{*} = \beta_o + \beta_1\, income^{*} + u \qquad (1)$$

where an asterisk denotes the variable is adjusted for amenities in a given location and u is a random error term. Let the true model be:

$$housing\ price^{*} = \beta_o + \beta_1\, income^{*} + \beta_2\, location\ amenity + v \qquad (2)$$

where v is a random error term. The residual error from the OLS parameter estimates of (1) is:

$$u = \beta_2\, location\ amenity + v$$

If we assume that the expected value of v is zero ($E[v] = 0$), then the residual error from OLS parameter estimates of the misspecified model in (1) is an unbiased estimate of unobserved location-specific amenities.

equilibrium, the quality-of-life in a location is determined by the difference between the amenity-adjusted housing premium and the amenity-adjusted wage/income premium. If many of the amenities that individuals value in a location are unproductive in the sense that they are costly for firms to produce (Roback, 1982), then in equilibrium, wage/incomes vary inversely with amenities. Our results are perhaps reflecting this, as southern states, which have low wages/incomes relative to northern states, move up in ranking significantly in our rankings. In general, our ranking approach suggests that one reason why wages/incomes are relatively lower in southern states is that amenities are relatively higher. This also suggests that the MQ rankings, based on an approach that attempts to explicitly identify relevant amenities, omit a large portion of unproductive amenities that people value resulting in downwardly biased measure of a state's quality-of-life. We suspect that unlike the explicit amenity accounting approaches that informs the MQ rankings, our spatial equilibrium approach captures all relevant and unobservable location-specific amenities as capitalized in housing prices and wages/incomes—and wages/incomes adjust downward for those amenities that are unproductive for profit-maximizing firms but valued by individuals.

Similar to the approach of the MQ rankings, our rankings in Table 3 and 4 ignores heterogeneity in the valuation and demand/supply of amenities across the 50 states. Of course, this need not be the case, for example; the rate to which individuals are willing to exchange a unit reduction in wages for a unit improvement of clean air—conditional on all other amenities—may be a function of wealth and/or income. If this were the case, the demand for an unproductive amenity like clean air would be income and wealth elastic and its valuation and demand would be higher in wealthier and/or high-income states. If this is the case, our rankings in Tables 3 and 4 may be biased. We address this possibility by generating the value of amenities in a state from residuals of quartile regression parameter estimates of the log of median county housing prices on median county household income. Quantile regression (Buchinksy, 1998; Koenker and Hallock, 2001; Mello and Perrelli, 2003) allows one to condition parameter estimates on the position a dependent variable occupies in a distribution (e.g. percentiles). This allows for differences in how the dependent variable is conditioned by the independent variable—parameter heterogeneity. In the case of amenities across the 50 states, a quartile regression will permit a determination as to how, wealth/income matters—as captured through the distribution of housing prices across the states—for the valuation of amenities.

Table 5 reports our ranking when the amenity values are generated by the residuals from quantile regression parameter estimates. Our implementation of the quantile regressions proceeded first by identifying the percentile distribution of housing prices across the 50 states. We identified 9 percentiles, and then proceeded to estimate quantile regressions for the 1st, 5th, 10th, 25th, 50th, 75th, 90th, 95th and 99th percentiles. The regression for each percentile resulted in significant parameters in every instance. The residual amenity index was then computed by using the parameter estimates corresponding to the median housing price percentile each county in a state occupied. The state of West Virginia emerged as the most desirable state, and Mississippi now ranks 5nd among all states in terms of quality-of-life, and the average rank of the Gulf States increased substantially.

The rank of New Hampshire, the top-ranked state in the MQ rankings, is now 35th, with Rhode Island having the status as the least desirable state. The effects of possible heterogeneity in the valuation of amenities are quite dramatic at the top and bottom of the ranking distribution. Of the top ten ranked states in Table 4, only four remain in Table 5 (Arizona, Hawaii, Oregon, and Louisiana). Of the bottom ranked states in Tables 4, only three remain in Table 5 (Kansas, North Dakota, and South Dakota). The possible importance of heterogeneity in the valuation and demand for amenities by individuals is illustrated by the dramatic change in rank of the three Gulf States of Alabama, Louisiana, and Mississippi, along with West Virginia. All four of these states move up substantially relative to their rank in Table 4.

Relative to MQ-type rankings, our ranking scheme provides different orderings for states in terms of their quality-of-life, and hence desirability. Ultimately such rankings can only be convincing if they also capture the relative attractiveness of a location in terms of optimizing agents—firms or individuals—making migration decisions, and bringing with them their physical and human capital endowments on the basis of relative attractiveness. Douglas (1997) for example, provides an alternative place-ranking measure that is based on all pair-wise migration between all states, with the quality-of-life rank of a state being the increasing function of its ability to attract population from other states. Such a measure captures the idea that migration from one location to another by individuals is response to differential living standards. Thus, quality-of-life measures should indeed reflect living standards and/or amenities that influence individuals' migration decisions.

To explore the explanatory power of our state level quality-of-life ranking process relative to that of MQ, we consider to which extent a state's 1995–2000 net migration rank reported in Table 6 is explained by its quality-of-life-rank reported in Tables 2 through 5. The results, based on an Ordinary Least Squares regression specification and Spearman's rank correlation coefficient are reported in Table 7. Column 1 reports the results for the MQ state ranks. Both the OLS parameter estimates and Spearman's rank correlation coefficient reveal a very small positive, but statistically insignificant relationship between a state's net migration rank and MQ quality-of-life rank. This suggests that MQ-type measures of quality-of-life are not consistent with optimal migration behavior, and as such are poor measures of a state's quality-of-life. For our spatial equilibrium quality-of-life measures, the results reported in columns 2 through 4 reveal a positive and statistically significant relationship between a state's net migration rank and quality-of-life rank. This suggests that our spatial equilibrium quality-of-life measures are consistent with optimal migration behavior, and support our hypothesis governing how individuals value the places they live.

That the correlations on our spatial equilibrium quality-of-life measures are significant, positive, and larger in magnitude relative to the MQ measure suggest that our approach to ranking quality-of-life is more compelling theoretically. Additionally, they are consistent with the findings of Jordan (2009) on the role of amenities as a population attractor. The positive and significant correlations between a state's net migration and quality-of-life rank are consistent with optimizing individuals migrating based on quality-of-life differentials. These outcomes are consistent with the notion that individuals are making location choices based on preferences for desirable public and private amenities (Tiebout, 1956). Presumably, migration represents "voting with one's feet" in response to quality-of-life differentials across locations (Douglas and Wall, 1993; Douglas, 1997). Thus, in a spatial equilibrium, quality-of-life and net migration should be proportional—which holds for each of our state quality-of-life measures.

The largest regression coefficient and Spearman's rank correlation coefficient is for our amenity measure that accounts for heterogeneity in the valuation and demand/supply of amenities across states. The R^2 for the specification in column 4 is the largest suggesting that relative to the specification in columns 1 through 3 (which assume amenities are valued equally across the states) have better explanatory power. This suggests that the assignment of equal weights in quality-of-life measures is inappropriate, and leads to biases in ranking quality-of-life across geographic locations. The dramatic changes in state quality-of-life ranks reported in Table 5 suggest that these biases are substantial. For example, West Virginia moves to the top rated spot when accounting for heterogeneity in the valuation and demand/supply of amenities. This is in contrast to its MQ rank of 49, and a rank of 15 in our spatial measures that do not account for amenity heterogeneity. To explore the explanatory power of our state level quality-of-life ranking process relative to that of MQ, we consider the extent to which a state's 1995-2000 net migration rank (reported in Table 6) is explained by its quality-of-life rank (reported in Tables 2 through 7).

Conclusions and Policy Implications

This paper introduced an alternative quality-of-life measure compared to those based on explicit amenity accounting methods. We find that our approach overcomes biases inherent to MQ type rankings and is theoretically coherent. It was not necessary to construct weights for amenities or to assume individuals valued amenities identically. Our measures based on amenity adjusted housing prices and incomes in a spatial equilibrium, ranked states accordingly. For the year 2000, we found that in contrast to the MQ quality-of-life rankings, Gulf States were generally among the highest in the rankings. The MQ rankings typically find states with larger than average Black populations, such as Mississippi or in general, Gulf States to be among the lowest ranked in the United States. We find that if one takes seriously the economic theory of why people choose to live in a particular location, Gulf states with a larger than average Black population are among the best places to live. Consistent with Forgerd (2011) our rankings of the states, base quality-of-life on how individuals value all amenities that are important to their wellbeing, most of which are unobserved, and are not considered in the explicit amenity accounting approach that motivates MQ-type quality-of-life rankings.

To the extent that regional planners and public policymakers prioritize and make the case for public investments in education, infrastructure, and other public goods on the basis of a region's amenities, our results suggest that locales which have larger than average Black population may warrant more public investment in the future. Given the Black populations reverse migration south (Frey, 2004); and there appears to be no correlation between a state's quality-of-life ranking and employment growth (Hsing and Budden, 2010, Rappaport 2009), any shortfalls in public investment that contributed to the high quality-of-life could lead to a decrease in their wellbeing (Gabriel, Mattey and Wascher, 2003). This of course is contingent upon the extent to which public investments quality-of-life are complementary over time.

Our results provide elected officials, researchers, and public policy analysts with an unbiased theoretically coherent tool appropriate for evaluating the effectiveness of various policy initiatives. Our methodology for ranking states based on its quality-of-life/amenities can be useful in evaluating the efficacy of publicly funded projects aimed at promoting economic growth and improving the human condition. Cross-state regressions of amenity residuals, conditioned on pre and post existence of suitable proxies for public projects can produce additional insights when evaluated using our approach. Conceivably, projects aimed at pollution abatement, education reform, improving public health, infrastructure improvement, workforce development, etc., could be objectively evaluated in a theoretically sound manner. If for example, the creation of an enterprise zone is found to have a positive and significant effect on a political jurisdiction's amenity residuals, then that would suggest that the project improved the jurisdiction's quality-of-life.

Table 1. MQ 2008 Quality of Life State Rankings
(*Explicit Amenity Accounting Method)*

State	Rank	State	Rank
New Hampshire	1	Illinois	26
Utah	2	Delaware	27
Wyoming	3	Florida	28
Minnesota	4	Alaska	29
Iowa	5	California	30
Nebraska	6	Indiana	31
New Jersey	7	Oklahoma	32
Vermont	8	New Mexico	33
Idaho	9	Pennsylvania	34
North Dakota	10	Nevada	35
Connecticut	11	Arizona	36
Virginia	12	Texas	37
Massachusetts	13	Michigan	38
Colorado	14	Missouri	39
South Dakota	15	Georgia	40
Maryland	16	Ohio	41
Kansas	17	North Carolina	42
Washington	18	West Virginia	43
Montana	19	Alabama	44
Maine	20	Louisiana	45
Hawaii	21	Arkansas	46
Oregon	22	Tennessee	47
Wisconsin	23	Kentucky	48
New York	24	*South Carolina*	49
Rhode Island	25	Mississippi	50

Source: State Rankings 2008, Morgan Quitno Press, Lawrence, KS.

Table 2. MQ 2000 Quality of Life State Rankings
(*Explicit Amenity Accounting Method)*

State	Rank	State	Rank
Minnesota	1	Nevada	26
Iowa	2	Texas	27
Colorado	3	Michigan	28
Utah	4	Illinois	29
New Hampshire	5	Georgia	30
Kansas	6	Rhode Island	31
Wisconsin	7	Kentucky	32
Virginia	8	Montana	33
Nebraska	9	Pennsylvania	34
Massachusetts	10	North Carolina	35
South Dakota	11	California	36
Vermont	12	Oklahoma	37
Connecticut	13	New York	38
North Dakota	14	Arizona	39
Maine	15	Florida	40
New Jersey	16	Alaska	41
Delaware	17	Alabama	42
Maryland	18	Hawaii	43
Indiana	19	South Carolina	44
Wyoming	20	Arkansas	45
Oregon	21	Tennessee	46
Washington	22	New Mexico	47
Missouri	23	Louisiana	48
Idaho	24	West Virginia	49
Ohio	25	Mississippi	50

Source: State Rankings 2006, Morgan Quitno Press, Lawrence, KS.

Table 3. MQ 2000 Quality of Life State Rankings
(Spatial Equilibrium Method: Mean County Amenities)

State	Rank	State	Rank
Hawaii	1	Connecticut	26
California	2	New Jersey	27
Massachusetts	3	Nevada	28
Washington	4	Mississippi	29
Colorado	5	Maryland	30
Oregon	6	Georgia	31
Arizona	7	New York	32
New Mexico	8	New Hampshire	33
Idaho	9	Pennsylvania	34
Utah	10	Michigan	35
North Carolina	11	Ohio	36
Rhode Island	12	Arkansas	37
Maine	13	Wisconsin	38
Alabama	14	Alaska	39
West Virginia	15	Missouri	40
Florida	16	Indiana	41
Delaware	17	Minnesota	42
Wyoming	18	Oklahoma	43
Tennessee	19	Illinois	44
Virginia	20	Iowa	45
Vermont	21	Texas	46
Montana	22	Nebraska	47
Kentucky	23	South Dakota	48
South Carolina	24	Kansas	49
Louisiana	25	North Dakota	50

Source: State Rankings 2006, Morgan Quitno Press, Lawrence, KS.

Notes: Rankings are based on the equilibrium value of amenities as measured by the size of the residuals from an Ordinary Least Squares (OLS) Regression of the log of median home prices on the log of median income. Data are from the 2000 U.S. Census. The estimated regression model is:

log (median housing price) = -3.51 + 1.412 log(median income)
N = 3138, R2 = .58 (.222) (.021)

where N is the number of observations, and R2 is the coefficient of determination. The standard errors are in parentheses, and indicate statistical significance for each parameter.

Table 4. MQ 2000 Quality of Life State Rankings
(*Spatial Equilibrium Method: Median County Amenities)*

State	Rank	State	Rank
Hawaii	1	Wyoming	26
California	2	Connecticut	27
Washington	3	Georgia	28
Oregon	4	Mississippi	29
Massachusetts	5	Maryland	30
Colorado	6	New Hampshire	31
Arizona	7	Pennsylvania	32
Rhode Island	8	New Jersey	33
Utah	9	Ohio	34
New Mexico	10	Alaska	35
Idaho	11	Michigan	36
North Carolina	12	Arkansas	37
Delaware	13	Wisconsin	38
Nevada	14	New York	39
West Virginia	15	Missouri	40
Maine	16	Indiana	41
Vermont	17	Minnesota	42
Montana	18	Oklahoma	43
Florida	19	Iowa	44
Tennessee	20	Illinois	45
Louisiana	21	Texas	46
Alabama	22	Nebraska	47
Virginia	23	South Dakota	48
Kentucky	24	Kansas	49
South Carolina	25	North Dakota	50

Notes: Rankings are based on the equilibrium value of amenities as measured by the size of the residuals from an Ordinary Least Squares (OLS) Regression of the log of median home prices on the log of median income. Data are from the 2000 U.S. Census. The estimated regression model is:

log (median housing price) = -3.51 + 1.412 log (median income)
N = 3138, R2 = .585 (.222) (.021)

where N is the number of observations, and R2 is the coefficient of determination. The standard errors are in parentheses, and indicate statistical significance for each parameter.

Table 5. MQ 2008 Quality of Life State Rankings
(*Spatial Equilibrium Method with Amenity Heterogeneity)*

State	Rank	State	Rank
West Virginia	1	Pennsylvania	26
Alabama	2	Virginia	27
New Mexico	3	Delaware	28
Arizona	4	Massachusetts	29
Mississippi	5	Michigan	30
Montana	6	New York	31
Oregon	7	Oklahoma	32
Louisiana	8	Ohio	33
Hawaii	9	Wisconsin	34
Tennessee	10	New Hampshire	35
Colorado	11	Nevada	36
Kentucky	12	Indiana	37
Idaho	13	Texas	38
South Carolina	14	Minnesota	39
Washington	15	Iowa	40
North Carolina	16	Nebraska	41
California	17	Illinois	42
Maine	18	South Dakota	43
Florida	19	Maryland	44
Georgia	20	Kansas	45
Arkansas	21	North Dakota	46
Utah	22	Alaska	47
Missouri	23	New Jersey	48
Wyoming	24	Connecticut	49
Vermont	25	Rhode Island	50

Notes: Rankings are based on the equilibrium value of amenities as measured by the size of the residual generated by the parameter estimates of a quartile regression specification of the log of county median home prices on the log of county median household income. Data are from the 2000 U.S. Census. The quartile regression parameter estimates, with standard errors in parentheses for the 9 relevant quartiles (τ) are:

τ = .01: log (median housing price) = - 8.95 + 1.872 log(median income)
N = 3138, Pseudo-R2 = .3241 (3.98) (.382)
τ = .05: log (median housing price) = - 7.98 + 1.79 log (median income)
N = 3138, Pseudo-R2 = .3566 (.559) (.053)
τ = .10: log (median housing price) = - 7.05 + 1.72 log (median income)
N = 3138, Pseudo-R2 = .3512 (.386) (.037)
τ = .25: log (median housing price) = -4.45 + 1.48 log (median income)
N = 3138, Pseudo- (.268) (.026)
τ = .50: log (median housing price) = - 1.97 + 1.27 log (median income)
N = 3138, Pseudo-R (.233) (.022)
τ = .75: log (median housing price) = - 1.21 + 1.20 log (median income)

N = 3138, Pseudo-R2 = .3857 (.258) (.025)

τ = .90: log (median housing price) = - 2.53 + 1.35 log (median income)

N = 3138, Pseudo-R2 = .3793 (.258) (.025)

τ = .95: log (median housing price) = - 3.86 + 1.49 log (median income)

N = 3138, Pseudo-R2 = .3738

Table 6. State Rankings: Net Migration 1995 – 2000

State	Rank	State	Rank
Nevada	1 (151.5)	Rhode Island	26 (3.4)
Arizona	2 (74.3)	Maine	27 (3.1)
Georgia	3 (48.6)	Wisconsin	28 (1.5)
North Carolina	4 (48.4)	Kansas	29 (-3.1)
Florida	5 (44)	Maryland	30 (-4.1)
Colorado	6 (43.9)	Montana	31 (-6.1)
South Carolina	7 (37.2)	West Virginia	32 (-6.3)
Idaho	8 (29.7)	Massachusetts	33 (-9.4)
Tennessee	9 (28.7)	Nebraska	34 (-9.7)
New Hampshire	10 (25)	Michigan	35 (-10.0)
Delaware	11 (24.9)	Ohio	36 (-11.0)
Oregon	12 (24.5)	Pennsylvania	37 (-11.4)
Arkansas	13 (17.4)	Iowa	38 (-12.1)
Washington	14 (14.4)	South Dakota	39 (-17.6)
Utah	15 (13)	New Mexico	40 (-17.8)
Virginia	16 (12)	Louisiana	41 (-18.1)
Mississippi	17 (10.4)	Connecticut	42 (-20.6)
Kentucky	18 (9.2)	New Jersey	43 (-23.6)
Missouri	19 (9.0)	California	44 (-24.6)
Texas	20 (8.1)	Wyoming	45 (-26.7)
Minnesota	21 (6.5)	Illinois	46 (-29.7)
Alabama	22 (6.3)	North Dakota	47 (-40.6)
Oklahoma	23 (5.4)	New York	48 (-48.8)
Vermont	24 (4.0)	Alaska	49 (-51.0)
Indiana	25 (3.9)	Hawaii	50 (-65.4)

Notes: Net migration rate, defined as the difference between the In-migration and Out-migration rate, is reported in parentheses. Source: State-to-State Migration Flows: 1995 – 2000, Census 2000 Special Report, August 2003, US Census Bureau.

Table 7. The Effect of Quality-of-Life Rank on Net Migration Rank

Specification:	*(1)*	*(2)*	*(3)*	*(4)*
Regressand: Net Migration Rate Rank (Table 6)				
Regressors:				
M-Q Rank: (Table 2)	.002 (.144)			
State Spatial Amenity Rank (Table 3):		.261 (139)[b]		
State Spatial Amenity Rank (Table 4)			.317 (.137)[a]	
State Spatial Amenity Rank (Table 5):				.363 (.134)[a]
Constant	25.45 (4.23)[a]	18.85 (4.08)[a]	17.39 (4.01)[a]	16.24 (3.94)[a]
Number of Observations:	50	50	50	50
R^2	.00001	.067	.101	.132
ρ_s	.002	.261[b]	.317[b]	.363[a]

Notes: a is Significant at the .01 level; b is Significant at the .05 level; ρs is Spearman's rank correlation coefficient. Significance is determined based on the standardized normal test statistic z = ρs × (n – 1).50 (Tamhame and Dunlop, 2000).

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