Destination Choices of Michigan Micropolitan Outmigrants: Key Determinants and Implications for Community Marketing

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Abstract. As its economy struggled during the last decade, Michigan became the only state to lose population between the 2000 and 2010 Censuses. Michigan's problems were well known and communities in other states sought to attract residents from Michigan. This paper describes the efforts of one Nebraska community, Columbus, to recruit residents from a specific Michigan micropolitan area. We also develop a model of destination choice by outmigrants from Michigan micropolitan areas. We find that counties that offer amenity and real wage advantages have the greatest potential to attract Michigan outmigrants, that differences in unemployment rates do not influence destination choice, and that the potential for attracting workers drops with distance.

1. Introduction

After a decade of economic stagnation, the state of Michigan faces growing difficulty in maintaining its population and workforce. This is evident in the statewide trends. Michigan was the only state in the nation to lose population between the 2000 and 2010 Censuses. While northern states like Michigan face long-term pressure from amenities and job opportunities in Sunbelt regions, periods of economic stagnation may create a growing flow of outmigration to states of all kinds where economic opportunities are stronger. Michigan residents who might normally resist the allure of sunshine in the South and West may be looking for employment opportunities wherever these are found. This is as true for residents of non-metropolitan areas as it is for residents of metropolitan areas. Non-metropolitan communities in northern states in fact face a second secular trend of outmigration to metropolitan areas. And again, in times of economic distress these long-run secular trends may be supplemented by additional out-migrants searching broadly for economic opportunity. These additional migrants who might normally prefer non-metropolitan amenities and lifestyle also may seek greater economic opportunity in similar surroundings.

The implication is that over the last decade a significant group of non-metropolitan Michigan residents may have been searching for opportunities in non-metropolitan areas over a large geographic space, in particular searching for non-metropolitan areas which provide greater economic opportunity and also remind them of home. Business interests and organizations, in fact, have been counting on it. This is because, while Michigan has undergone more than a decade of weak economic growth, other non-metropolitan areas have grown robustly and even faced labor shortages, at least before the onset of the severe recession of 2008 and 2009. Non-metropolitan regions in states such as Nebraska, Iowa, and South Dakota experienced solid manufacturing growth between the two recessions of the last decade. Yet, these non-metropolitan areas continued to face the secular trend of rural to urban migration discussed above, and their states faced secular

trends of migration from north to south and west. The new wave of out-migrants from Michigan provided a potential opportunity for these regions. For example, one such region, in Columbus, Nebraska, organized visits to the Traverse City, Michigan, and surrounding areas in 2007 and 2008 to recruit workers for the numerous manufacturing plants and large health care facilities found in the Columbus region. Economic development officials in Columbus knew that the Traverse City region faced high unemployment rates, but they further reasoned that these micropolitan residents would consider living in the Columbus, Nebraska, area.

This paper examines the Columbus, Nebraska - Traverse City, Michigan, case as an example of such community marketing efforts, that is, direct efforts to market and attract residents to an area. We specifically examine the issue of where community marketers should choose to recruit population. First, we examine the "match" between the Columbus Micropolitan Area and the Traverse City Micropolitan Area according to a group of economic and amenity characteristics. Second, all 17 micropolitan areas in Michigan are examined, to consider whether there are other micropolitan areas offering a good match with Columbus, Nebraska, for population recruiting. Third, we develop a regression model of the destination choices of Michigan migrants from micropolitan areas, to determine which economic and amenity characteristics of destination counties are most likely to attract these migrants. This regression model builds on an established literature on state-to-state and county-to-county migration, which is examined in the next section.

2. Migration, amenities, and distance

Distance and amenities have long been considered factors that influence migration decisions between states and regions. Greenwood (1969), Cushing (1986) and Gunderson and Sorenson (2010) summarize the role of distance in influencing state-to-state migration rates. In his fully specified model, Cushing (1986) found that each 100 mile increase in the distance between two states (measured by the difference between the principal cities in each state) reduced each state's share of outmigrants from the other state by 4%. The relationship was far from strictly linear, however. Cushing (1986) also found that adjacency between states, the presence of cities on the state border, and a history of migration

between the two states also influenced migration rates. These first two factors refined the measurement of distance between two adjacent states while the latter factor influenced the cost of migration between pairs of states.

While not directly measuring place-to-place migration, Partridge et al. (2007) and Barkley et al. (1996) examined the migration relationship between metropolitan areas and surrounding non-metropolitan regions. The research examined a variety of phenomenon including "backwash." With backwash, rising distance is thought to protect non-metropolitan areas from non-metropolitan to metropolitan migration. Both studies found evidence of backwash in non-metropolitan regions.

A variety of researchers also have found evidence that population migrates towards high amenity regions, as defined by both natural and recreation amenities (Hammond and Thompson, 2009; Cebula and Alexander, 2006; Deller et al., 2001). Rappaport (2004) argues that migration to natural amenities is persistent over multiple decades. Cushing (1987) conducted an extensive study of climate amenity variables and concluded it was critical to consider climate conditions in particular months (summer and winter peaks) rather than utilizing annual averages. Gunderson et al. (2008) found that higher average January temperatures encouraged net inmigration to counties within the four corners states of Arizona, Colorado, New Mexico and Utah.

We will take this approach in the current paper by utilizing an index of climate amenities and other natural amenities such as topography or access to water. We also consider economic factors such as the wage rate, housing rents, and unemployment rate of counties, with the expectation that destination areas with higher unemployment, lower wages, and higher rents will have more difficulty attracting migrants. Gunderson and Sorenson (2010) found that California residents were less likely to migrate to counties with lower per capita income. Relative unemployment rates, however, did not influence migration. Studies of net migration patterns (rather than county-to-county flows) also have found an important influence from economic factors. Cebula and Alexander (2006) found that state net inmigration increased with median family income and previous period employment growth but declined with cost of living. However, Watkins and Yandle (2010) did not find that cost of living or per capita income influenced state net inmigration of domestic population.

3. Columbus, Nebraska, and Traverse City, Michigan

The efforts of the business community in Columbus, Nebraska, to attract workers during 2007 and 2008 provide an interesting example of community marketing. The City of Columbus has a large manufacturing base, persistently low levels of unemployment, and historically weak population growth. Faced with this situation and a growing economy, the Columbus Nebraska Area Chamber of Commerce developed and carried out a broad-based plan to attract new workers and population to the Columbus area. An interesting feature of the effort was a targeted focus on potential migrants from specific local areas in other states. Staff from the Columbus Nebraska Area Chamber of Commerce visited each local area multiple times during 2007 and 2008. The visitation teams promoted these visits, worked with local Department of Labor offices (when appropriate), and described employment opportunities in the Columbus area. Workers in three distinct local areas were targeted:

1) workers from a factory in Red Oak, Iowa, that had recently announced closure
2) graduates from a technical college, engineering school, and military base in Rapid City, South Dakota, and
3) workers in the Traverse City, Michigan, area, a region experiencing sustained, elevated unemployment levels.

The last group is the focus of our analysis, since marketing efforts in Traverse City were motivated by high levels of unemployment rather than an abundance of new labor market entrants, as in Rapid City, South Dakota, or displaced workers from a specific plant, as in Red Oak, Iowa. The state of Michigan was a natural focus given national coverage of the state's troubled automobile industry and persistently high unemployment rate even during the national economic recovery in the mid-2000s. And, while there are a number of high-unemployment regions within Michigan, representatives of the Columbus Nebraska Area Chamber of Commerce indicated that they selected Traverse City, Michigan, because: 1) Traverse City's tourism sector offered a significant amount of part-time employment (relative to full-time employment opportunities in Columbus), and 2) a belief that residents of Traverse City would enjoy living in Columbus and would remain in the area after moving. Indeed, staff members of the Columbus Nebraska Area Chamber of Commerce were able to provide examples of successful moves by households from the Traverse City area to Columbus and placement in the Columbus health care and manufacturing industries, among others.

Table 1 summarizes the very different economic situation that prevailed in the Columbus, Nebraska, and Traverse City, Michigan, Micropolitan Areas during the 2000s. Both micropolitan areas experienced rising unemployment during the 2001 recession. However, unemployment peaked in Columbus in 2003 and fell steadily to sit at just 2.4% in 2007 and 2.8% in 2008, at the onset of the severe recession of 2008 and 2009. By contrast, the Traverse City Micropolitan Area failed to recover significantly during expansion years in the middle of the decade. The unemployment rate only declined in 2005 and by 2007 stood at 6.6%, a full 4.2% percentage points above the unemployment rate in the Columbus Micropolitan Area.

By 2007, Traverse City appeared to be a region with significant slack in its labor market while Columbus had very little slack. Intercensal population estimates for the Columbus Micropolitan Area show slow growth in population, at least until the late 2000s when manufacturing employment began to improve and the unemployment rates plummeted. Population in the Columbus Micropolitan Area declined in the early part of the decade. While the Traverse City Micropolitan Area was one area of Michigan that added rather than lost population during the decade of the 2000s (for example, the population of Grand Traverse County grew by 8,000 during the 2000 to 2010 period), manufacturing employment declined during the decade. Further, as is evident in Table 1, manufacturing employment per capita is much larger in the Columbus Micropolitan Area than in the Traverse City Micropolitan Area.

The Traverse City area economy, in fact, may be more of an amenity-based economy than a manufacturing-based economy. Strong population growth in the absence of industrial growth or low unemployment is certainly a characteristic of an amenity-based economy. Direct measures also indicate that the Traverse City area is a higher-amenity area. In particular, the U.S. Department of Agriculture, through its Economic Research Service, has developed an aggregate amenity score (based on a 1 to 7 scale) for all U.S. counties as well as assessments for individual amenities such as climate (average January temperature, average January sunshine,

Table 1. Unemployment, population and manufacturing trends in the Columbus and Traverse City micropolitan areas.

Year	Columbus, Nebraska			Traverse City, Michigan		
	Unemployment Rate	*Population*	*Manufacturing Employment*	*Unemployment Rate*	*Population*	*Manufacturing Employment*
2000	2.80%	31,518	-	3.60%	132,029	-
2001	3.50%	31,391	5,743	4.90%	134,722	7,780
2002	4.40%	31,059	5,388	5.90%	136,138	7,041
2003	4.80%	30,911	5,178	6.50%	137,816	7,100
2004	4.30%	30,867	5,326	6.60%	138,922	6,980
2005	3.80%	31,121	5,296	6.10%	139,881	6,866
2006	2.70%	31,415	5,743	6.20%	141,103	6,854
2007	2.40%	31,805	6,380	6.60%	141,843	6,710
2008	2.80%	32,001	6,442	7.60%	142,319	6,407
2009	4.20%	32,515	5,701	11.60%	142,350	5,230

Source: Bureau of Labor Statistics, U.S. Department of Labor and Bureau of Economic Analysis, U.S. Department of Commerce

average June temperature, and average June humidity), topography, and percent of surface area covered by water. Grand Traverse County, the core county of the Traverse City Micropolitan Area, had an aggregate amenity score of 4.[1] This is an above average score for Michigan (see Table 2) and is higher than the amenity score for Platte County, Nebraska, which is the only county in the Columbus Micropolitan Area. The primary difference is water access in the Traverse City Micropolitan Area. Traverse City and Columbus have similar scores for climate, and Columbus has a more favorable score for topography. However, the Traverse City Micropolitan Area has a much higher score for the water amenity due to its location along Lake Michigan. This is also one factor which makes Traverse City a tourism and second home destination. This is a key quality of life issue that cannot be matched in the Columbus area.

These results suggest a mixed picture for Traverse City as a target for population recruitment efforts in Columbus, Nebraska. Traverse City has a relatively large population for a micropolitan area and has an elevated unemployment rate. This suggests a substantial pool of workers comfortable with micropolitan living and available for recruitment. This is also true because Traverse City was shedding manufacturing employment, a type of worker in demand for the Columbus economy. However, data

suggests that Traverse City has not been a hub of manufacturing activity during its recent history. Further, while data from the 2000 Census indicates that Grand Traverse County had 24.4% of its work force working less than 40 hours a week, Columbus, Nebraska had 21.5% of its workforce working less than 35 hours per week. Thus, the recreation activity in the Traverse City Micropolitan Area did not lead to an exceptionally high level of part-year work, although it did lead to modestly elevated levels of part-year and part-time employment.

This mixed picture raises a natural question: What would be an appropriate approach for targeting another region for community marketing? A large population has an obvious appeal given the costs of visiting and advertising to recruit in a city. This may seem especially sensible if a region is experiencing elevated unemployment, as was true in Traverse City. However, the similarity of industry structure and occupation structure of the two micropolitan areas, and the types of natural amenities or recreation opportunities in the two areas also could be key considerations. Finally, an ideal target area for community marketing might be an area with even greater economic distress than the Traverse City Micropolitan Area, including higher levels of unemployment. With these issues in mind, we compare the Traverse City Micropolitan Area with all of the other micropolitan areas in the state of Michigan.

[1] Benzie and Leelanau Counties within the Traverse City Micropolitan Area also had an aggregate amenity score of 4, while Kalkaska County had an amenity score of 3.

4. A comparison with other Michigan micropolitan areas

Table 2 shows a comparison of statistics for the Columbus, Nebraska, Micropolitan Area and the 17 micropolitan areas in the state of Michigan. The table includes data on a variety of economic and amenity factors including total population, the unemployment rate, change in the unemployment rate from 2000 to 2006, manufacturing's share of employment, amenity score, arts, entertainment, and

recreation employment per capita, and accommodations and food services employment per capita. Data are presented for the year 2006, the year when Columbus area manufacturing employment began to surge and the year before visits to the Traverse City area. We do not include information on the distance between Columbus, Nebraska, and these micropolitan areas since all areas of Michigan are located at a substantial distance, more than 500 miles, from Columbus.

Table 2. Comparison of Columbus, Nebraska, and Michigan micropolitan areas (2006).

		Unemployment Level and Growth				Employment Per Capita by Industry	
Micropolitan Area	**Population**	*Level*	*Growth Rate 2000-2006*	**Manufacturing's Share of Jobs**	**Amenity Score***	*Arts, Entertainment, Recreation*	*Accommodation and Food Services*
Nebraska							
Columbus	31,415	2.70%	-0.10%	24.60%	3	0.80%	4.10%
Michigan							
Adrian	101,249	7.30%	3.60%	17.20%	2	0.70%	2.70%
Allegan	112,414	6.00%	3.20%	22.90%	3	1.20%	2.90%
Alma	42,326	8.50%	4.00%	11.00%	2	0.60%	2.80%
Alpena	29,807	7.50%	2.00%	10.60%	4	0.60%	3.20%
Big Rapids	42,160	7.30%	3.00%	9.20%	3	0.90%	3.30%
Cadillac	46,623	7.90%	2.80%	18.40%	3	0.70%	4.10%
Coldwater	46,326	7.30%	3.50%	14.60%	2	0.60%	2.10%
Escanaba	37,703	7.10%	1.80%	13.60%	3	0.90%	4.00%
Houghton	37,159	6.90%	2.00%	4.30%	3	0.60%	4.10%
Iron Mountain	31,959	5.80%	1.70%	13.00%	2	0.80%	5.30%
Marquette	65,129	6.00%	1.70%	2.50%	3	0.80%	5.30%
Midland	82,802	5.50%	2.30%	14.10%	2	1.20%	3.00%
Mount Pleasant	66,538	5.10%	1.80%	37.40%	2	0.10%	1.60%
Owosso	72,211	8.00%	4.10%	10.50%	2	0.50%	2.10%
Sault Ste. Marie	38,585	8.40%	2.10%	3.30%	3	0.70%	3.90%
Sturgis	62,337	6.40%	3.00%	31.40%	2	0.50%	2.20%
Traverse City	141,103	6.20%	2.60%	7.50%	4	1.50%	5.60%

Note: Amenity Score (1=Lowest, 7=Highest)
Source: U.S. Department of Labor and U.S. Department of Commerce

How does the Traverse City area compare with other areas of Michigan as a place to recruit workers? Results in Table 2 show that there are several other micropolitan areas in Michigan with: 1) population over 50,000, 2) a larger manufacturing employment share than the Traverse City Micropolitan

Area, and 3) a similar or a higher unemployment rate. Two micropolitan areas, Adrian and Allegan, also had a larger percentage point increase in the unemployment rate. Sturgis is another micropolitan area with a substantial manufacturing presence and a large percentage point increase in unemployment.

These three areas appear to offer a potentially better match, in terms of manufacturing worker availability, than the Traverse City area, though the Travis City area does have an elevated level of part-time and part-year workers, as noted earlier.

The Columbus Micropolitan Area also offers a higher natural amenity score than either Adrian or Sturgis, and the same ranking as Allegan. Further, the Columbus area exceeds those micropoltian areas in terms of hospitality and recreation opportunities per person, though the larger Adrian and Allegan areas would offer more overall arts, entertainment, and recreation or accommodation and food services opportunities than Columbus.

Overall, the choice of the Traverse City Micropolitan Area is sensible given its large population, substantial increase in the unemployment rate during the decade, and elevated levels of part-year and part-time employment. The concern, however, is whether Traverse City area residents would find sufficient recreation opportunities compared to their current location along Lake Michigan and the resulting tourism opportunities that have arisen in the area. There also may be a limited number of workers with an appropriate background for the manufacturing industry. This suggests that there may have been other areas within Michigan with at least as much potential for population recruiting as the Traverse City area, in particular the Adrian, Allegan, and Sturgis Micropolitan Areas.

5. Migration patterns of Michigan micropolitan area residents

In this section, we build on the analysis in Table 2 by developing a model of the migration choices of residents living in micropolitan areas in the state of Michigan, looking specifically at the types of destination counties chosen by outmigrants from these micropolitan areas. The model examines the influence of proximity, unemployment rates, wages, rents, and amenities on destination choice.

The most recent, complete information on these migration trends is available from the 2000 Census. The Bureau of Census provided detailed information of county-to-county gross migration from 1995 to 2000 based on the Census. This time period is less than ideal since it does not include our period of interest during the mid-to-late 2000s. However, micro level data from the American Community Survey, while available for appropriate years during the 2000s, does not provide information on the specific county of migration, providing instead information on migration to specific metropolitan areas and non-metropolitan areas overall in each state. Annual gross migration flows from the Internal Revenue Service are another potential source for county-to-county migration flows. However, the IRS data provides county-to-county flows only for counties with at least 10 migrant households (at least 10 tax returns indicating movement from one county to another). Data for all other counties with fewer than 10 migrant households are aggregated up to the 4 major Census regions of the country (Northeast, Midwest, South, and West). This would exclude a significant share of the county-to-county migration data.

As a result, we utilize the detailed county-to-county migration data from 1995 to 2000 that was generated based on the 2000 Census. That is the most recently available comprehensive data set. Further, the period also contains years with elevated unemployment in the Traverse City Micropolitan Area and in many communities throughout Michigan. The unemployment rate was 6.3% in the Traverse City Micropolitan Area in 1995. The rate dropped during the 1995 to 2000 period (see Table 2) but remained elevated for part of that period. Thus, the 1995 to 2000 period contains years when there would have been a substantial number of potential economic outmigrants from the Traverse City area. Further, there were a number of micropolitan areas and individual counties in Michigan which had unemployment rates in excess of 8%, or even in excess of 10%, in 1995.

We develop a regression model utilizing the migration share for destination counties over the 1995 to 2000 period as the dependent variable. Specifically, the migration share from each Michigan micropolitan area j to each U.S. county i was the share of total outmigrants from j who moved to county i. However, so as to not bias the results, migration between the counties of these 17 Michigan micropolitan areas were excluded from the sample of potential destinations i and from total outmigration for j when calculating migration shares.

There are 52,649 observations given that the data set tracks the migration share to 3,097 counties from 17 Michigan micropolitan areas. Of the 52,649 observations, destination counties received outmigrants in 4,440 cases. The migration share variable therefore frequently takes a value of 0, and we utilize a Tobit model in our analysis. In that model, the equation for the underlying latent value for

migration share, $MIGSH^*_{ij1995-2000}$ takes the following form:

$$MIGSH^*_{ij1995-2000} = \beta_1 + \beta_2DIST_{ij} + \beta_3DISTSQ_{ij}$$
$$+ \beta_4LNPOP_i + \beta_5NATAMENITY_i$$
$$+ \beta_6CRIMERATE_i$$
$$+ \beta_7UNEMRATE_i + \beta_8WAGE_i$$
$$+ \beta_9RENT_i + \beta_{10}MSA_i + \varepsilon_I \qquad (1)$$

where $DISTt_{ij}$ and $DISTSQ_{ij}$ together create a potentially non-linear measure of distance between micropolitan area j and destination county i. $LNPOP_j$ is the natural log of population, $NATAMENITY_j$ is a measure of the natural amenities, and $CRIMERATE_j$ is the crime rate in the destination county. Further, $UNEMRATE_i$ is the unemployment rate, $WAGE_i$ is the average annual wage rate, and $RENT_i$ is the monthly rent for housing in the destination county. MSA_i indicates whether the destination county is part of a metropolitan area. The observed migration share $MIGSH_{ij1995-2000}$ equals $MIGSH^*_{ij1995-2000}$ if $MIGSH^*_{ij1995-2000} > 0$ and equals 0 if $MIGSH^*_{ij1995-2000} \leq 0$.

Further, given that the model examines the outmigration flows from 17 separate micropolitan areas, we also estimate a second version of the model which focuses on the difference in characteristics between origin and destination counties, following Gunderson and Sorenson (2010). This second model is seen in Equation 2 below:

$$MIGSH^*_{ij1995-2000} = \beta_1 + \beta_2DIST_{ij}$$
$$+ \beta_3DISTSQ_{ij} + \beta_4LNPOP_i$$
$$+ \beta_5(NATAMENITY_i - NATAMENITY_j)$$
$$+ \beta_6(CRIMERATE_i - CRIMERATE_j)$$
$$+ \beta_7(UNEMRATE_i - UNEMRATE_j)$$
$$+ \beta_8 (WAGE_i - WAGE_j)$$
$$+ \beta_9(RENT_i - RENT_j)$$
$$+ \beta_{10}MSA_i + \varepsilon_I \qquad (2)$$

The $DIST_{ij}$ and $DISTSQ_{ij}$ variables were calculated based on the distance from the population-weighted centroid of the destination counties to the airport in micropolitan areas. The airport was chosen for micropolitan areas given that several micropolitan areas contained multiple counties, so that it was not feasible to use a county population centroid. The population-weighted county centroids are available from the U.S. Census Bureau, while information about the location of airports was available from the U.S. Department of Transportation. The great-circle distance between two points, the

shortest on terrain surface, was calculated using the 'Haversine' formula, which generates an 'as-the-crow-flies' distance between the points.[2] Consistent with Greenwood (1969) and Cushing (1986), the share of migrants choosing a destination county would decline as this distance rises.

The $LNPOP_j$ variable is the natural log of population in a destination county and is retrieved from the U.S. Census Bureau. A larger share of micropolitan outmigrants would choose a more populous area simply due to a greater possibility of finding employment in that area, or the greater likelihood of having family or friends in that area. After controlling for population, however, fewer micropolitan migrants would choose a destination county within a metropolitan area, MSA_i, given that these residents as a group have already revealed some preference for living in a micropolitan area.

There would be a larger share of migrants choosing destination counties with more amenities, following Hammond and Thompson (2009), Deller et al. (2001), Rappaport (2004) and Cushing (1987). The $NATAMENITY_i$ variable is a continuous aggregate score for natural amenities of U.S. counties based on seven underlying natural amenity variables. A non-continuous version of this variable ranks counties on a scale of 1 to 7; this ranking was utilized in Table 2 above. The component natural amenity variables include climate variables (average January temperature and sunshine, average June temperature and humidity), topography, and the percentage of surface area covered by water. Higher-amenity counties have higher scores for the continuous variable, and the average county nationwide would have an aggregate natural amenity score value of 0. The natural amenity scale variable is generated by the Economic Research Service of the U.S. Department of Agriculture. The $CRIMERATE_i$ variable is a measure of crimes per 100,000 people. This is an example of a manmade, rather than natural, amenity in the model. Data for such manmade amenities is difficult to obtain across all U.S. counties but was available for crime rates. Crime rate data is retrieved from the National Archive of Criminal Justice Data.

Destination counties with higher wages or lower unemployment rates would be potentially more attraction locations for workers migrating from a micropolitan area. The variable $WAGE_i$ is the average annual wage and is drawn from the U.S. Bureau

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[2] R = earth's radius (mean radius = 6,371km), Δlat = lat$_2$ - lat$_1$, Δlong = long$_2$ - long$_1$, a = sin^2(Δlat/2) + cos(lat$_1$))* cos(lat$_2$)* sin^2(Δlong/2), c = 2*atan2(⎯⎯⎯), d = R c

of Labor Statistics. Data on the unemployment rate in destination counties, the variable *UNEMRATE$_i$*, is also taken from the U.S. Bureau of Labor Statistics.

The variable *RENT$_i$* is meant to reflect the cost of housing in county i, whether rental housing or an owned home. Rent is defined as the fair market rent for a two bedroom apartment. After accounting for amenities, wage rates, and other variables in our model, the share of migrants choosing a destination county would decline as rents increased in that county. Data on fair market rent is available from the U.S. Department of Housing and Urban Development.

Table 3 shows the average value for model variables. Average values for amenity and economic variables are provided for both potential destination counties and Michigan micropolitan areas. Characteristics such as natural amenities are unchanging through time. When variables change over time, the model utilized values for 1995, the initial year for the 1995 to 2000 migration flow data. Initial year variables were utilized in order to reduce the potential endogeneity of wage, rent, unemployment rate, and crime rate variables.

Note that the average distance between Michigan micropolitan areas and potential destination counties is 1,270 miles. This figure includes counties located throughout the United States, whether or not migration occurred. Results indicate that the average natural amenity score was lower in the Michigan micropolitan areas (-1.88) than the potential destination counties (0.04). Wages were lower in destination counties than in Michigan micropolitan areas, but the average cost of housing, as measured by rent, was quite similar. This finding is consistent with the expected trade-off between amenities and wages. The average annual wage in destination counties was $20,900 in 1995, while the fair market monthly rent for a two bedroom apartment was measured to be $400.

Table 3. Summary statistics of destination counties and micropolitan areas, 1995.

Variable Name	Destination Mean	Micropolitan Mean	Difference Mean
Migration Share	.00032	N/A	N/A
Distance from Micropolitan Area (miles)	1,270	N/A	N/A
Population	83,755	N/A	N/A
Amenity Score	0.04	-1.88	1.92
Unemployment Rate	5.96%	6.70%	-0.82%
Wage (annual)	$20,900	$22,400	-$1,570
Crime per 100,000 residents	3,990	1,220	2,770
Rent per month	$400	$406	-$5
Number of Observations	52,649	17	52,649

6. Empirical results

Results are summarized in Table 4. The first column of results reflects how the characteristics of destination counties impact migration shares. The second column of results reflects how differences in characteristics between Michigan micropolitan areas and destination counties impact migration shares. Note that coefficients in Table 4 utilizing the Tobit model are not marginal effects. However, marginal effects have the same sign as the coefficients, so that the sign and significance results in Table 4 can be used to draw conclusions about whether a particular variable increases or decreases migration share.

6.1. Destination county characteristics

Results suggest that destination county characteristics alone do not precisely explain the migration choices of the micropolitan outmigrants. As expected, a statistically significant negative relationship is identified between distance and migration share. The relationship is found to be linear. At the same time, a positive and statistically significant relationship is identified between natural amenities and migration share. Higher amenity counties were found to attract a larger share of outmigrants. The exception was the crime disamenity. The coefficient on crime was statistically significant and positive, suggesting that counties with higher crime rates

attract a larger share of outmigrants from Michigan micropolitan areas.

While amenities were significant, no statistically significant relationship was found between labor market conditions and migration share. The coefficient on both the unemployment rate and average wage in destination counties was not found to be statistically significant. Further, rent, population and metropolitan status were not found to have an influence on migration share. As expected, coefficients on rent were negative and coefficients on

population were positive, but neither was statistically significant.

The imprecision of estimates for coefficients on labor market and rent variables may reflect our specification using only the characteristics of destination counties. Michigan micropolitan areas differ in their rent, amenity, and labor market characteristics. A more precise specification would match the difference in these characteristics between micropolitan areas and destination counties, as described in Equation (2) above. This approach is used in our second set of migration results.

Table 4. Influence of population, distance amenities, rents, wages, and crime on 1995-2000 migration shares.

Variable	Destination County	Difference*
Constant	2.570E-04	-5.42E-02***
	(1.07E-03)	(3.83E-03)
Distance (miles)	-1.630E-06***	-1.38E-05***
	(3.28E-07)	(9.78E-07)
Distance Squared (miles squared)	1.220E-10	2.10E-09***
	(8.43E-11)	(1.57E-10)
Natural Log of Population	1.050E-04	4.51E-03***
	(6.64E-05)	(3.19E-04)
Amenity Score	6.460E-05***	4.93E-04***
	(2.32E-05)	(6.65E-05)
Unemployment Rate	-4.150E-04	2.30E-05
	(9.73E-04)	(3.39E-05)
Wage (annual)	-9.330E-09	6.34E-08***
	(1.20E-08)	(1.81E-08)
Crime Rate per 100,000 residents	9.180E-09***	1.30E-08***
	(3.02E-09)	(3.57E-09)
Rent per month	-3.980E-07	-2.62E-06***
	(3.38E-07)	(9.79E-07)
MSA	5.020E-06	-6.81E-04***
	(7.94E-05)	(2.55E-04)
Sum of Squared Residuals	0.590	0.465
Number of Observations	52,649	52,649

Note: Difference between Micropolitan Areas and Destination Counties
Figures in parenthesis are standard errors. *** indicates statistically significant at the 1% level

6.2. *Difference in characteristics*

The results of the second regression reflect how differences in wages, amenities, rents, and unemployment rates between micropolitan areas and potential destination counties influence the destination choices of migrants. A negative and statistically significant relationship is again identified between distance and migration share, but the relationship is found to be non-linear. Migration share falls with distance but at a declining rate. The coefficient on the natural log of population variable was positive and statistically significant, indicating that migration share rose with the population of destination counties. Both findings are consistent with the gravity model. In that model, apart from the amenity and economic conditions in initial and destination locations, migration is more likely to closer destinations and larger destinations. Controlling for the population of destination counties, migration shares were found to be lower when destination counties are part of a metropolitan area. This may reflect further non-linearity in the influence of destination county population (since counties in metropolitan areas tend to be larger) or reflect that micropolitan area residents have already demonstrated a preference for living outside of metropolitan areas.

Moving beyond population and distance, relative conditions in the micropolitan areas and destination counties are found to influence migration shares. The coefficient on the natural amenity variable was again positive and statistically significant, consistent with the findings of Rappaport (2004), Cebula and Alexander (2006), and Gunderson et al. (2008), who argued that amenities generate long-run net inmigration and population growth. The coefficient on the crime rate disamenity, however, unexpectedly continues to have a positive sign. The coefficient on wage rates was positive and statistically significant while the coefficient on rents was negative and statistically significant. Thus, after controlling for distance, population and amenities, destination counties offering a larger improvement in real wages would capture a larger share of outmigrants. These results are consistent with the findings of Cebula and Alexander (2006). The relative unemployment rate, however, was not found to influence migration share, consistent with the finding of Gunderson and Sorenson (2010).

7. Summary

This study examined community marketing efforts to recruit Michigan residents using the example of economic development organizations in Columbus, Nebraska, which worked to recruit population from the Traverse City, Michigan. The Columbus area organizations had targeted non-metropolitan Michigan in general and Traverse City in particular for recruitment due to elevated unemployment rates, a large part-time/part-year workforce (in the case of Traverse City), and a perceived amenity match with Columbus.

Our initial analysis provided mixed support for the choice of Traverse City as a recruiting target. There was a significant gap in unemployment rates and full-time employment between Traverse City and Columbus. Results of regression analysis, however, indicated that Columbus, Nebraska, might have difficulty capturing a large share of outmigrants from the Traverse City, Michigan, area. Regression results indicated that differences in the unemployment rate of a Michigan micropolitan area and a destination county did not influence the share of outmigrants who chose a particular destination county. Migration shares also rose when a destination county had higher natural amenities. The natural amenity score for Columbus was lower than the score for Traverse City. Finally, regression results indicated that migration shares declined with distance between a micropolitan area and a destination county, suggesting that Nebraska counties would have difficulty recruiting population from distant Michigan.

Columbus area organizations which participated in the recruitment efforts in Traverse City deserve credit for taking an innovative approach to growing population and labor force. However, future community marketing efforts may need to focus on attracting migrants from adjacent or other nearby states, and on attracting migrants from areas with lower real wage rates and less abundant natural amenities than Columbus, Nebraska.

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