Understanding Migration Aversion using Elicited Counterfactuals*

Preliminary and Incomplete

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Abstract

Individuals face tradeoffs when deciding where to live in the US. The best location for employment may be far away from family and friends, or may be in an unpleasant climate. In this study, I examine the determinants of individuals' preferences for migration by analyzing data that elicits probabilities of moving to another location under a set of counterfactual scenarios. These scenarios include a reduction in employment frictions, ability to move with relatives or friends, and a removal of financial costs associated with moving. I find that removing each of these frictions would result in substantially higher levels of migration, particularly for higher-skilled workers. These results are relevant for the recent debate regarding the secular decline in migration in the US.

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1 Introduction

Individuals face tradeoffs in choosing where to live. Among these tradeoffs are optimal job location, proximity to family or friends, financial concerns such as cost of living, geographical and cultural amenities, and psychology. While prior research has focused on each of these pathways for determining migration decisions, there has yet to be a study that has been able to jointly model each of these tradeoffs. Understanding migration incentives is particularly important in light of recent research that has documented a secular decline in interstate migration rates in the United States (Molloy, Smith, and Wozniak, 2017; Kaplan and Schulhofer-Wohl, 2017). In particular, movement of labor is perceived by some to be one of the primary pathways for self-correction of local labor markets (Blanchard and Katz, 1992; Molloy and Wozniak, 2011).

This paper examines the relative magnitude of various migration costs by eliciting migration probabilities under counterfactual scenarios. In other words, what are the primary factors preventing individuals from migrating? I consider a variety of pathways that prevent moving: financial constraints, social constraints, and employment constraints. I find that each pathway is equally prohibitive of migration. The implication of this result is that policy designed to encourage migration through, e.g., providing moving subsidies, is of limited use.

In modeling migration decisions, a researcher can take two different approaches: (i) estimate a structural model of individual migration decisions using observational data; or (ii) estimate a simpler model using stated preference data. Under the first approach, the researcher uses longitudinal observational data and, assuming rational behavior and perfect information about labor market conditions, estimates how sensitive migration is to cross-location differences in wages, employment, local amenities, or proximity to family. Then, given the estimates of the model, the researcher can compute migration probabilities for each individual under counterfactual scenarios (e.g. a moving subsidy). Examples of research that has taken this type of approach include Kennan and Walker (2011); Bishop (2012); Coate (2013); Ransom (2016); Kaplan and Schulhofer-Wohl (2017). Importantly, due to the high dimensionality of location characteristics and non-labor-market factors (such as location of family), no one study has been able to jointly estimate all of these potential pathways. The second empirical approach is to use stated preference data, which elicits from individuals their migration probabilities under various counterfactual scenarios. This allows the researcher to recover counterfactual probabilities of migration without having to estimate a model that is overly complex or empirically intractable. The underlying assumption is that individuals' reported probabilities (or stated preferences)

are a reasonable measure of what their actual preferences would be if required to make a choice in reality under the same scenario. Research that has taken this type of approach includes Blass, Lach, and Manski (2010); Arcidiacono, Hotz, and Kang (2012); van der Klaauw (2012); Arcidiacono et al. (2014); Wiswall and Zafar (2015) and Wiswall and Zafar (2017).

The data in this study were collected from a nationally representative survey panel managed by Qualtrics during October 2016. The sample consists of 830 respondents who recorded demographic information as well as two sets of migration information: (i) questions ascertaining how satisfied a respondent is with his or her current location of residence; and (ii) the location of a potential migration destination the respondent's probability of moving there under seven different scenarios.

To quantify the role of alternative migration scenarios on preferences for migration, I develop and estimate a model of migration that is based on utility maximization. Each individual's migration probability is a function of benefits and costs of migration, broadly defined. In general, migration has been shown to be a function of financial constraints, family ties (Coate, 2013), preferences for local amenities (Ransom, 2016), employment constraints (Kennan and Walker, 2011; Ransom, 2016), or risk aversion (Jaeger et al., 2010). Additionally, migration could be driven by identity to the extent that individuals' self-identity is tied to a specific location (Akerlof and Kranton, 2000). The model I propose in this paper can incorporate each of these mechanisms, though the focus is on measuring the multidimensionality of migration costs.

The data contain elicited migration probabilities in counterfactual scenarios with lower costs of migration in certain dimensions (e.g. financial costs, family costs, or employment costs). Variation in the elicited probabilities across different scenarios allows me to quantify, in terms of utility, the magnitudes of various migration costs. These costs can then be transformed into monetary units using the marginal utility of money (recovered from the scenario that relaxes financial costs) in a method similar to Blass, Lach, and Manski (2010) and Wiswall and Zafar (2017).[1] Importantly, rich variation in individuals' stated migration probabilities across counterfactual scenarios allows me to estimate heterogeneous preferences to a greater extent than in traditional empirical models of observed choice.

The primary finding of the paper is that, on average, individuals are as responsive to a relaxation of labor market frictions and to moving with members of their social network

[1] Blass, Lach, and Manski (2010) use estimates of their utility model to recover willingness to pay for electricity outages. Wiswall and Zafar (2017) examine college students' willingness to pay for future non-wage job benefits.

as they are to receiving a financial subsidy to move. This shows that migration preferences are multidimensional in nature. More specifically, individuals would be willing to pay up to 120% of their financial costs of moving in order to reduce employment frictions. They also would be willing to pay up to 85% of the financial moving cost to be able to bring members of their social network with them. Higher-skilled workers, whose human capital may be spatially constrained due to specialization, have higher willingness to pay for migration frictions than do lower-skilled workers.

The results point to the multidimensionality of moving costs and, in particular, the difficulty of policy to induce migration through financial moving subsidies. The reason for this is that individuals have strong preferences for being located in the same place as family or friends, and for working in a job that is especially well suited to their skills and tastes.

The remainder of the paper is organized as follows: Section 2 details the collection of the stated-preference migration data, and Section 3 discusses the migration model and empirical strategy for estimating its parameters. Section 4 discusses the main empirical results of the paper, and Section 5 concludes.

2 Data and Descriptives

This section describes in more detail the data source used in the analysis. In this section I also present descriptive statistics of the data, including comparisons between the collected data and household surveys conducted by the US Census Bureau, as well as evidence on correlates of migration.

2.1 Survey data

The primary data source for this analysis comes from a sample of survey respondents collected by Qualtrics during October 2016. The questions on the survey instrument were combined with questions from other researchers at Duke University in a so-called "omnibus" survey. Qualtrics provided a nationally representative sample of 1,383 respondents who were age 18 or older and live in the United States. 830 respondents completed the survey in an acceptable manner, defined by passing an attention check and having reasonable response times for each of the questions.[2] All questions on the survey were reviewed by survey design experts before being put into the field. A copy of the complete

[2]For more information on the sample collected by Qualtrics, see .

survey instrument is included in Appendix A.1.

The survey consisted of five demographic questions and five questions related to migration expectations. The demographic questions collected information on respondents' location, age, sex, race/ethnicity, and education level. The migration expectation questions collected information in two categories: (i) preferences about eight characteristics of the respondent's current location and unconditional probability of moving away within the next five years; and (ii) a candidate destination location and how the probability of moving there would be different under seven different counterfactual scenarios.

The eight origin-location characteristics are as follows: job opportunities; social opportunities; climate/weather; geographic location; cost of living; traffic and transportation infrastructure; cultural and recreational amenities; and school quality.

The seven counterfactual migration scenarios cover a range of employment, family, and financial scenarios and are as follows: own job loss; spouse/partner job loss; ownself or spouse/partner offered a similar job in new location; respondent offered dream job in new location; respondent able to move to new location with family and friends; respondent able to move to new location with current colleagues; and moving expenses to new location are completely covered.

The counterfactual migration scenarios were chosen to capture a variety of frictions that might prevent individuals from moving. Broadly speaking, they are classified into three categories: (i) employment frictions; (ii) social frictions; and (iii) financial frictions. The employment frictions cover the following scenarios: job loss of oneself; job loss of one's spouse or partner; offered a similar job in new location; offered dream job in new location; or respondent allowed to move to new location with coworkers. Social frictions are incorporated by the case of allowing friends or family to move with the respondent. Financial frictions are included by the case of covering all moving expenses.

2.1.1 Comparison with American Community Suvey

A natural question regarding the survey sample is the extent to which it is representative of the United States as a whole. Table 1 presents evidence along this line by comparing the Qualtrics survey with the American Community Survey (ACS) for demographic characteristics that were collected in both surveys. For most of the demographic indicators, the two surveys are very close. There are two main exceptions: the Qualtrics panel overstates both the share of Asians and the share of college graduates. By the same token, the Qualtrics panel understates the share of Hispanics and the share of high school dropouts.

In Table 2, I compare the elicited migration behavior in the Qualtrics sample with the

actual migration behavior of the ACS. The ACS reports migration intensity by asking respondents if they moved in the past year and, if so, the location of their previous residence. Using migration probabilities from the survey, as well as the chosen destination, I construct a similar measure. Individuals are classified as being willing to move if their unconditional migration probability is 90% or higher. The results show that a 90% cutoff value yields an identical fraction of non-movers. However, individuals in the Qualtrics sample are generally more willing to move farther away.

The results from Tables 1 and 2 indicate that the survey sample used in the current analysis is indicative of the broader population as a whole.

2.2 Descriptive analysis

In this section, I describe the distribution of migration beliefs, the distribution of satisfaction with various attributes of the current location, and how demographics and satisfaction correlate with stated migration beliefs. I also present summary statistics of the impact of counterfactual migration policies on stated migration beliefs.

2.2.1 Distribution of migration beliefs

As mentioned earlier, the survey asks respondents the following question: "How likely—on a scale from 0 to 100—are you to move to another city or town in the next 5 years?" Figure 1 presents a histogram of the distribution of migration beliefs. The distribution is tri-modal, with spikes at 0%, 50%, and 100%. However, 45% of respondents report a probability that is not at one of the modes. Responses most commonly fall at integers that are multiples of 5 or 10. The average of the distribution is 38.75% with a median of 40%.

In addition to the extensive margin of migration as depicted in Figure 1, I compute the intensive margin of migration, or the distance each respondent would travel if he or she migrated. This information comes from the following question in the survey: "If you had to choose, what is one U.S. city or town that you might consider moving to in the next 5 years?" with a follow-up question eliciting the state. I combine this information with information on the respondent's ZIP code (asked on the first question of the survey) to compute distance. Figure 2 reports the distribution of distance. The distribution spikes close to zero and then decreases nearly monotonically as distance increases, with the exception of a slight spike near 2,500 miles. The distribution of migration distance as depicted in Figure 2 is concordant with existing knowledge about migration; namely that migration decreases with geographical distance, and does so at a decreasing rate.

2.2.2 Satisfaction with current location

In addition to surveying respondents about their migration beliefs, I also collect data on their satisfaction with their current location. This is done through a series of questions: "Thinking about the town or city where you currently live, how satisfied are you with [attribute]: Extremely Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Extremely Dissatisfied? I then compute satisfaction as the fraction of individuals who report being either "Extremely Satisfied" or "Somewhat Satisfied". Dissatisfaction is computed similarly for the respective categories of the scale.

The results for each of the eight attributes are reported in Table 3. For all attributes, individuals report satisfaction rates of no less than 42%, while dissatisfaction rates are no higher than 33%. As expected, the attributes with the highest rates of satisfaction tend to have the lowest rates of dissatisfaction, and vice versa. Geographical amenities, cultural amenities, climate, and school quality have the highest satisfaction rates and lowest dissatisfaction rates.

2.2.3 Correlation between demographics, satisfaction, and migration beliefs

I now examine the extent to which demographics and satisfaction predict migration beliefs. The working hypothesis is that those who report being more dissatisfied should report a higher likelihood of moving. Similarly, there are various demographic characteristics (such as age or education level) that are known to systematically correlate with migration (Kennan and Walker, 2011; Ransom, 2016; Malamud and Wozniak, 2012).

To assess these correlations, I estimate a fractional logit model, where the individual's stated migration probability (on a 0-to-1 scale) is the dependent variable.[3] I also examine the intensive margin of migration by including log distance (in miles) as a dependent variable. The log distance specifications are estimated by OLS.

The results of the fractional logit and log distance models are reported in Table 4. Columns (1) and (2) report the results from the fractional logit, while the last two columns report OLS results of log distance. Consistent with research in the migration literature,

[3]The fractional logit was originally developed by Papke and Wooldridge (1996). It is a quasi-likelihood estimation method for models where the dependent variable can take on a range of values in the unit interval, rather than $\{0,1\}$ as in traditional logit models. The log likelihood function is the same as the traditional logit model:

$$\ln \mathcal{L} = \sum_i y_i \ln\left(\frac{\exp\left(\mathbf{x}_i'\beta\right)}{1+\exp\left(\mathbf{x}_i'\beta\right)}\right) + (1-y_i)\ln\left(\frac{1}{1+\exp\left(\mathbf{x}_i'\beta\right)}\right)$$

with the sole exception that $y_i \in [0,1]$ rather than $y_i \in \{0,1\}$.

education has a strong effect on migration. Other demographic characteristics tend to not be correlated with the stated migration probability, with the exception of race/ethnicity for the extensive margin, and gender for the intensive margin. While education has a positive correlation with the extensive margin, it has a negative or neutral correlation with the intensive margin. Table A.1 reports results from the ACS sample on the same set of covariates as Column (1) of Table 4. The trends are similar, though the race/ethnicity correlations go in opposing directions in some cases. The ACS does not report distance migrated, so it is not possible to replicate Column (3) of Table 4.

In addition to demographic characteristics, Table 4 reports migration response to dissatisfaction with a variety of attributes in the current location. Consistent with the results of Table 3, I report the dissatisfaction gradient for the two most disliked attributes: climate and geographical location. All attributes are included in the model. Not surprisingly, individuals who are more dissatisfied with their geographical location are much more likely to report a higher migration probability. However, this is not the case with climate. On the other hand, the opposite seems to be true with migration intensity: individuals who are more dissatisfied with their current climate tend to report destinations that are farther away. This is not surprising, given that large climate changes are only possible at sufficiently far distances between any two locations. There is no appreciable effect of dissatisfaction with geographical location on migration distance, except for the group who are extremely dissatisfied.

Overall, the results of the correlations among demographics, satisfaction, and migration beliefs are in line with the migration literature and intuition.

2.2.4 Summary statistics of counterfactual migration policies

Finally, I present summary statistics of the various counterfactual migration policies described in Section 2.1. These results are reported in Table 5. The first row reports summary statistics of the distribution of migration probabilities. Each of the following rows lists moments of the distribution of the change in migration probability under each of the seven counterfactual scenarios.

Inspection of Table 5 shows that the three counterfactuals with the largest positive effect on migration are paying for all moving expenses (+23.81 percentage point change on average), followed by offering the respondent his or her dream job (+23.23), followed by allowing the respondent to move with his or her friends and family (+18.78). Job loss, spousal job loss, or being offered a similar job in the new location show very little effect on migration. Respondents on average perceive coworkers as a net negative, as they report

being less likely to move if given the option to bring coworkers with them (-21.01). Each of the counterfactuals exhibits large extremes, as the range of changes falls in the interval $[-100, 100]$ percentage points.

Figures 3 through 9 plot the distributions of the change in migration probabilities in the baseline versus counterfactual for each of the seven scenarios. The mode of each distribution is at 0 (i.e. no change in migration behavior). As in the baseline case, there are mass points at -100, -50, 50, and 100, in addition to clustering at multiples of 5 and 10. As implied by the results in Table 5, there is substantial heterogeneity in the responses. Surprisingly, there are even negative responses to what would generally be perceived as positive scenarios. For example, a person who reports being less likely to move when given a generous financial offer either has a distaste for money, or their probability is measured with error.

In the next section, I describe the empirical model used to estimate heterogeneous migration costs while also allowing for measurement error in survey responses.

3 Model & Estimation

3.1 Model of migration

Individuals are indexed by i, currently live in one location k_i, and choose whether or not to move to another location, k_i.[4] Utility of moving from k_i to j_i is a function of the individual's demographic characteristics, how satisfied i is in her current location, how costly it would be to move away from k_i, and preference uncertainty ε_i. Removing the individual subscript on the choices for expositional purposes, utility is expressed as the following linear index:

$$u_i = X_i \left(\beta_j - \beta_k\right) - C_{i(k,j)}\delta + \varepsilon_i \tag{3.1}$$

where the X's indicate demographic characteristics and satisfaction with the specified location, while the C's represent the cost of moving from k to j and are only incurred in the case where a move occurs. The first term in the right hand side of (3.1) captures the benefits of migration, while the second term represents costs (or frictions). These costs represent frictions to moving, where frictions are allowed to be distance-related, job-related, social, or financial. These are intended to represent the a broad array of frictions facing

[4] The subscripts on k and j indicate that these locations are individual-specific.

individuals in their decision to move. This level of variety in frictions is not typically observed in standard survey data.

The probability that the individual chooses to migrate is then

$$p_i = \int 1\{u_i > 0\} \, dF(\varepsilon_i) \tag{3.2}$$

$$= \frac{\exp\left(X_i(\beta_j - \beta_k) - C_{i(k,j)}\delta\right)}{1 + \exp\left(X_i(\beta_j - \beta_k) - C_{i(k,j)}\delta\right)} \tag{3.3}$$

under the assumption that the ε's are drawn iid from a Type 1 extreme value distribution.

Expressing this in terms of log odds, (3.3) can be rewritten as

$$\ln\left(\frac{p_i}{1 - p_i}\right) = X_i(\beta_j - \beta_k) - C_{i(k,j)}\delta. \tag{3.4}$$

3.2 Identification using elicited counterfactuals

I now briefly discuss the intuition behind how migration costs can be identified using data on elicited counterfactual behavior. Following the notation above in (3.2) through (3.4), let p_i^s denote the probability of moving in scenarios $s \in \{0, \ldots, 7\}$, where 0 corresponds to the baseline case. The probability p_i^0 is measured in the survey by responses to the question: "How likely on a scale from 0 to 100 are you to move to another city or town in the next 5 years?" Each respondent has a panel of data with eight probabilities.

Moving costs (generally defined) are identified by estimating a pooled version of (3.4), where the pooling occurs across individuals and counterfactual scenarios. Separate intercepts for each scenario capture the average effect of changing the cost associated with migration. In the next section, I discuss how to incorporate heterogeneity into the estimation, and the resulting effects on the utility parameter estimates.

3.3 Estimation of migration preferences

The data on respondents' migration beliefs over the seven counterfactual scenarios forms a panel dataset of dimension $N \times 8$. Each the dependent variable for each person and scenario is the log odds transformation of the percentage reported by the individual. The independent variables include fixed effects for each scenario, as well as demographic measures which are repeated across the panel within the individual. I now discuss how estimation is adapted to robustly handle rounding of percentage responses, as well as how heterogeneity can be incorporated into the analysis.

3.3.1 Rounding

As noted in Blass, Lach, and Manski (2010) and Wiswall and Zafar (2017), rounding of the stated migration probabilities to values that are multiples of 5 or 10 is quite common. While such rounding is not problematic for the estimation of (3.4), rounding near the boundary points of 0 or 100 is problematic for the log odds function. This can be done by estimating median regression (LAD) instead of OLS on (3.4):

$$M\left[\ln\left(\frac{p_i}{1-p_i}\right)\middle| X, C\right] = X_i\left(\beta_j - \beta_k\right) - C_{i(k,j)}\delta. \tag{3.5}$$

The required assumptions for (3.5) are that an errors in measurement are symmetrically distributed around 0 conditional on the covariates. This also implies that preferences themselves are symmetrically distributed.

Measurements of exactly 0 or 100 percentage points are problematic for LAD on the log odds function, so I follow Blass, Lach, and Manski (2010) and Wiswall and Zafar (2017) and recode values of 0 to be 0.1 and values of 100 to be 99.9.

3.3.2 Individual heterogeneity

Because there are no repeated measures for each scenario, it is not possible to estimate individual-specific preferences. However, I can estimate group-specific versions of (3.4), which amounts to separate estimation for different demographic groups (e.g. college graduates vs. non-college graduates, males vs. females, whites vs. non-whites). The next section presents results under varying specifications of heterogeneity.

3.4 Calculating willingness to pay for migration compensation

The primary purpose of this paper is to measure the relative sensitivity of various frictions on individuals' decisions to move from their current location. The most natural way to do so is to calculate the willingness to pay for various scenarios, relative to some monetary cost that is incurred. For example, in previous research, Blass, Lach, and Manski (2010) use households' measured sensitivity to electric bills to calculate willingness to pay to avoid electricity outages. Wiswall and Zafar (2017) use individuals' measured sensitivity to wages to calculate willingness to pay for various non-wage job amenities. In the current example, I use individuals' sensitivity to the financial costs of moving to measure their willingness to pay for other migration amenities (such as the ability to move with family and friends). Willingness to pay for attribute s is calculated as follows:

$$\text{WTP}_s = \frac{-\delta_s}{\delta_7} \tag{3.6}$$

where δ_s is the moving benefit (in terms of utility) for the sth counterfactual scenario and δ_7 is the moving benefit for having financial costs paid.

Typically, willingness to pay calculations include some price variable on the right hand side to allow conversion from utils to currency. However, as the Qualtrics panel did not collect information on dollar amounts of income or the price of moving services, I express willingness to pay as a percentage of the individual's financial moving cost (however the individual perceives it). I also present estimates that convert WTP estimates to dollars where the conversion assumes that financial costs are $10,000 for everyone. This approach is less reliable because full-service moves vary dramatically based on household size and distance, and household size is not observed in the data. As a reference, full-service move on a 2-bedroom home ranges from approximately $8,500 to $12,500, depending on distance.[5]

3.5 Missing data

While response rates were high (over 97%) for most questions on the survey, they were considerably lower for the counterfactual migration scenarios. This is in part because some of the scenarios corresponded to settings that may not have been applicable to the respondent, e.g. job loss or moving with coworkers (not applicable if respondent is not currently employed), or spousal/partner job loss (not applicable if respondent is either single or if respondent's spouse/partner is not employed). So as not to force a response from a person for whom the scenario did not apply, the survey allowed respondents to mark "Not applicable" for each of the scenarios. This proved to be a design flaw, as many respondents marked "Not applicable" for various scenarios, but were allowed to continue the survey.

The extent of missing data can be seen in Table 5. Scenarios that would only be applicable to respondents who are currently employed have the lowest response rates. Scenarios independent of employment or marital status had the highest response rates, including the scenario in which all financial moving costs are paid (which had the highest response rate). This pattern of missingness is encouraging from the standpoint of the survey's ability to elicit honest responses.

[5]See .

To further examine the potential effects of skipping questions, Table A.2 reports the distribution of the number of counterfactual scenarios left blank. 30% of the sample answered all questions, with a relatively uniform distribution of non-response thereafter. 14% of respondents left all scenarios blank.

Table A.3 examines selection into the share of questions missed. The table reports estimates from a fractional logit regression, where the dependent variable is the fraction of questions missed. The table shows that respondents with lower levels of education were more likely to have skipped questions. However, given that this population is also more likely to be non-employed, it is unclear if this behavior would bias the results of the survey. Employment status was not collected in the survey, so it is impossible to determine the level of concordance between employment status and question skipping.

The main estimation strategy described above, which is a pooled estimation of (3.4), uses all available information on the migration questions. In this regard, it treats missing responses as missing at random (conditional on covariates included in the model). This is a sensible approach given the near-uniform distribution of missingness reported in Table A.2 and the systematic demographic differences in missing behavior reported in Table A.3.

4 Results

In this section, I present the results of the estimation method detailed in the previous section. The main finding is that individuals are as responsive to job offers and moving with their social network as they are to receiving a financial subsidy to move. This shows that migration preferences are multidimensional in nature.

4.1 Homogeneous preference estimates

I first discuss Table 6, which reports LAD estimates of (3.4) for varying sets of individual covariates X_i. Column (1) reports figures very similar to a log-odds-transformed Table 5: migration probabilities are most responsive to provision of financial costs, moving with social network, and being offered a dream job. Adding indicators for ethnicity and education level in columns (2) and (3) slightly increases these parameter estimates, as does including indicators for satisfaction with current geographical location and a quadratic in distance in columns (4) and (5). The same demographic pattern found in Table 4 also appears here. This reflects the fact that individuals who report high unconditional moving probabilities also report high counterfactual moving probabilities. In the final column

there is a positive relationship between migration and distance, which is inconsistent with what is found in revealed preference migration models. This result is likely driven by the fact that individuals who report low migration probabilities also report destination locations that are nearby, perhaps because they do not want to leave their current location.

4.2 Heterogeneous preference estimates

The results in Table 6 have the unattractive property that all individuals respond to migration costs in the same way. The distributions in Figures 3 through 9 indicate that there is substantial heterogeneity in how individuals respond to the various migration scenarios.

Table 7 reports LAD estimates of (3.4) for the entire sample (reproducing column (5) of Table 6) as well as various subgroups of the population. I divide the sample by education (college graduates vs. not), ethnicity (whites vs. non-whites), gender, and migration propensity ("movers" vs. "stayers", where movers are defined as reporting an above-median unconditional migration probability) to examine if the responses to migration costs are heterogeneous across groups. While I would ideally allow for individual-specific preferences, this is not possible in the current setting for reasons detailed in Section 3.3.2. Even so, the estimates indicate a large range of heterogeneity in responses to the various scenarios.

Financial costs of moving The seventh row of Table 7 reports the effect of being offered a full moving cost allowance on the probability of moving. College graduates, non-whites, and males have the lowest elasticity, while females, non-college-graduates, and whites have the highest.

Job loss The effect of losing one's job on migration behavior is reported in the first row of Table 7 and is null for all subpopulations. The following row lists the effect of one's spouse or partner losing his or her job, and is insignificant for all subpopulations except for non-white respondents.

Job offers Rows three and four of Table 7 list the respective impacts of being offered a job similar to the incumbent job, and being offered one's dream job. Non-whites and females have the weakest preferences for retaining their current job, while females, non-college-graduates, and whites have the strongest preferences for being offered their dream job.

Joint moves The final two scenarios are reported in the fifth and sixth rows of Table 7 and have to do with allowing moves with others (either family and friends, or coworkers). There are significant differences in preferences for moving with family across white/non-white and male/female groups. Males have the lowest distaste for moving with coworkers, while college graduates also have a low distaste for moving with coworkers.

4.3 Estimates of willingness to pay

While the results of Table 7 indicate modest amounts of heterogeneity in tastes for migration, they are difficult to compare across groups because different groups have different responses to receiving moving cost subsidies. To allow comparison in the responses to various migration scenarios, I present in Table 8 estimates of willingness to pay (in terms of percentage of moving costs) for various migration attributes, following the method outlined in (3.6).[6]

The interpretation of the willingness to pay (WTP) estimates is as follows: attributes that are perceived as negative correspond to positive values of WTP because individuals require compensation in exchange for an increase in a negative attribute. By a similar argument, positive attributes correspond to negative values of WTP.

Table 8 shows that individuals have distaste for job loss and spousal job loss, though the magnitudes are quite small. White males with college degrees are most willing to pay for being able to work in a similar job in the new location. This group is willing to pay nearly half of the financial cost of moving in order to secure a similar job. This points to the large role for job lock in migration decisions.

There is very little heterogeneity in the willingness to pay for being offered one's dream job in the new location, although the magnitude is quite high for all respondents (between 100% and 120% of the financial cost to moving). The same group that has high taste for job continuity also has high taste for moving with family and friends. This group is willing to pay up to 85% of the financial cost of moving for this opportunity. Finally, women, those who are not white, and those who have lower levels of education have considerably high distaste for moving with coworkers. The effect is on the order of 93% to 123% of the financial costs of moving.

Overall, the results of Table 8 indicate that individuals are willing to pay large amounts to be able to maintain job stability, improve job satisfaction, or stay close to friends and family when moving away from their current location. The results suggest that these

[6]Table A.4 reports the estimates of Table 8 in dollar amounts under the assumption that financial moving costs are $10,000 for all respondents.

employment and social frictions are nearly as large as financial frictions to moving. This is especially true for higher-skilled workers whose human capital may be spatially constrained.

5 Conclusion

This paper examines the relative magnitude of various migration incentives by eliciting migration probabilities under counterfactual scenarios. Using data collected from a nationally representative sample of 830 individuals, I estimate utility parameters of migration costs and measures of willingness to pay to avoid such costs. I find that individuals are as responsive to a relaxation of labor market frictions and to moving with members of their social network as they are to receiving a financial subsidy to move. These responses are stronger for higher-skilled workers, who may work in more specialized jobs.

The results point to the multidimensionality of moving costs and, in particular, the difficulty of policy to induce migration through financial moving subsidies. The reason for this is that individuals have strong preferences for being located in the same place as family or friends, and for working in a job that is especially well suited to their skills and tastes.

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Figures and Tables

Table 1: Descriptive statistics of the estimation subsample

Variable	Survey (%)	2015 ACS (%)
Female	50.48	51.37
White	64.94	64.45
African American	13.61	12.25
Asian	11.69	5.65
Hispanic	6.51	15.20
Other	3.25	2.45
HS dropout	3.49	12.90
HS grad	28.55	27.90
Some college	33.86	31.12
College grad	23.49	17.84
Advanced degree	10.60	10.24
Employed	45.06	60.54
Age	45.31	47.12
	(17.36)	(18.40)
N	830	2,490,616

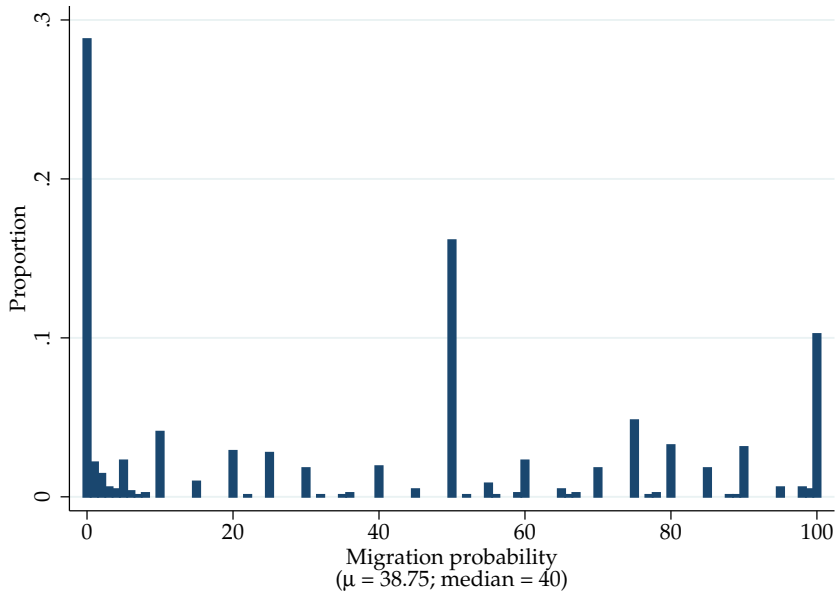
Notes: Mean and standard deviation reported for age variable. "Survey" refers to the sample of 830 people who completed the survey. "2015 ACS" refers to the 2015 American Community Survey sample of all US residents aged 18 or older.

Table 2: Migration behavior

Variable	Survey (%)	2015 ACS (%)
Didn't/Won't move	85.18	85.29
Move within county	2.89	8.57
Move within state	2.65	2.99
Move across states	9.28	2.49
N	830	2,490,616

Notes: "Survey" refers to the sample of 830 people who completed the survey. "2015 ACS" refers to the 2015 American Community Survey sample of all US residents aged 18 or older. "Won't move" is defined as individuals in the survey who reported an unconditional migration probability of less than 90% or a destination within 1 mile of the current residence.

Figure 1: Distribution of migration beliefs



Source: Qualtrics survey panel collected in October 2016. For details, see Section 2.

Figure 2: Distribution of migration distance

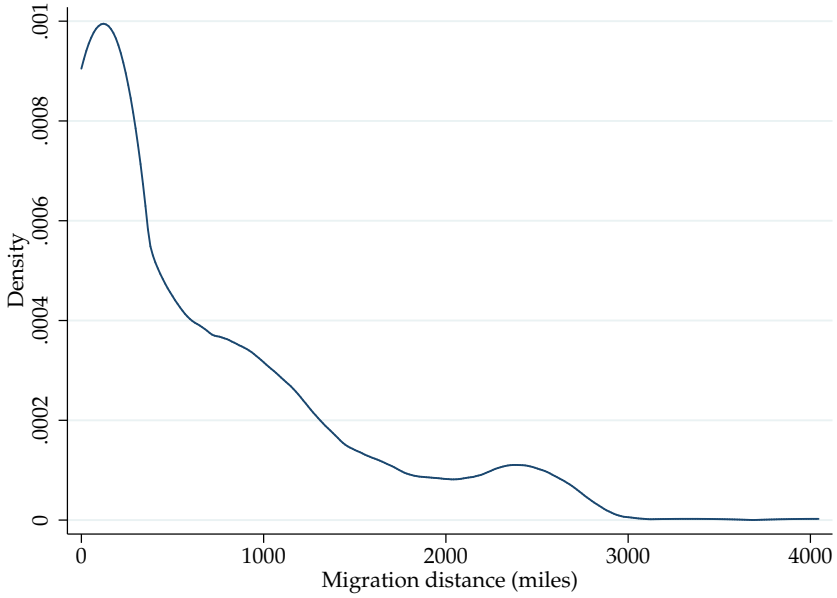


Table 3: Satisfaction with current location

Variable	% Satisfied	% Disatisfied
Job opportunities	42.1	31
Social opportunities	51.63	20.56
Climate	60.12	17.94
Geographical location	68.76	12.55
Cost of living	47.95	32.61
Transportation/Infrastructure	45.95	30.11
Cultural amenities	54.78	15.24
School quality	50.67	19.11
Observations	825	825

Notes: Fraction of respondents who reported being satisfied (*Somewhat Satisfied* or *Extremely Satisfied*) or dissatisfied (*Somewhat Dissatisfied* or *Extremely Dissatisfied*) with the given location characteristic. 19 respondents did not answer at least one of these questions, but no respondent left all of them blank.

Table 4: Determinants of margins of migration: Likelihood and distance

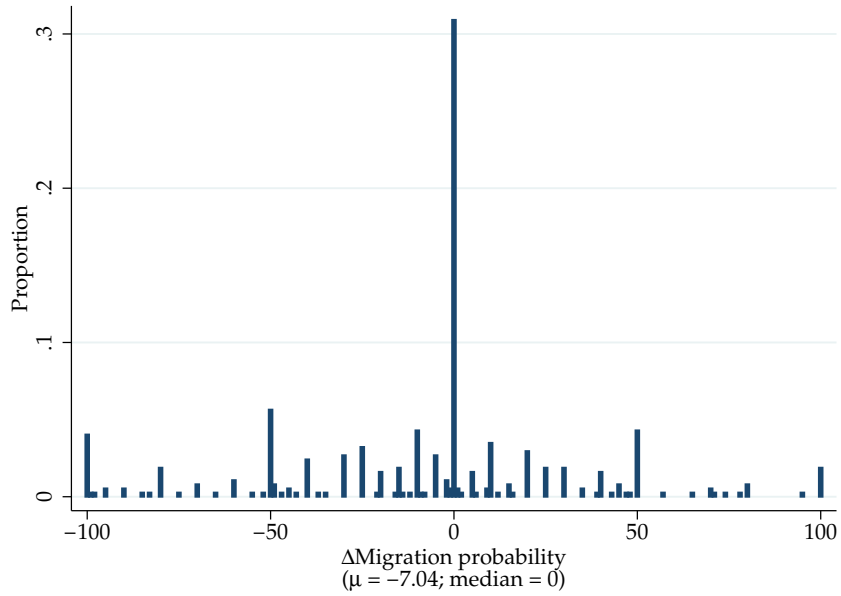
	Migration (%)		log (Distance)	
	(1)	(2)	(3)	(4)
African American	0.403**	0.456***	0.045	0.023
	(0.167)	(0.171)	(0.230)	(0.235)
Asian	-0.185	-0.236	0.379	0.367
	(0.168)	(0.179)	(0.253)	(0.256)
Hispanic	0.161	0.225	-0.088	-0.195
	(0.238)	(0.235)	(0.322)	(0.322)
Other	-0.035	0.049	-0.019	-0.077
	(0.318)	(0.305)	(0.438)	(0.432)
HS grad (or GED)	0.798**	0.724*	-0.758*	-0.768*
	(0.366)	(0.381)	(0.435)	(0.436)
Some college	0.894**	0.895**	-0.661	-0.679
	(0.363)	(0.380)	(0.432)	(0.435)
Bachelor's degree	1.110***	1.218***	-0.267	-0.343
	(0.370)	(0.388)	(0.445)	(0.447)
Advanced degree	0.968**	1.086***	-0.875*	-0.892*
	(0.393)	(0.411)	(0.480)	(0.484)
Female	-0.080	-0.157	-0.321*	-0.488***
	(0.114)	(0.120)	(0.164)	(0.166)
age	-0.009	-0.022	0.028	0.012
	(0.019)	(0.020)	(0.026)	(0.026)
age^2	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction with climate of current location:				
Somewhat satisfied		-0.150		0.215
		(0.176)		(0.232)
Neutral		-0.233		0.367
		(0.197)		(0.283)
Somewhat dissatisfied		-0.066		0.648**
		(0.225)		(0.319)
Extremely dissatisfied		-0.367		0.970*
		(0.413)		(0.512)
Satisfaction with current geographical location:				
Somewhat satisfied		0.561***		0.054
		(0.165)		(0.226)
Neutral		1.037***		0.304
		(0.202)		(0.293)
Somewhat dissatisfied		1.362***		0.190
		(0.281)		(0.362)
Extremely dissatisfied		1.149**		1.041*
		(0.507)		(0.602)
Additional controls		✓		✓
Observations	830	811	830	811
(Pseudo) R^2	0.067	0.122	0.022	0.108

Notes: Columns two and three are estimation results of a fractional logistic model with migration probability as the dependent variable. The final set of two columns contains OLS estimates with log of migration distance (in miles) as the dependent variable. Pseudo R^2 is reported for the fractional logit model. Additional controls include satisfaction with respect to: job opportunities; social opportunities; cost of living; transportation/infrastucture; cultural amenties; and schools. Coefficient estimates for these additional controls were largely insignificant. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Average effects of counterfactual migration policies

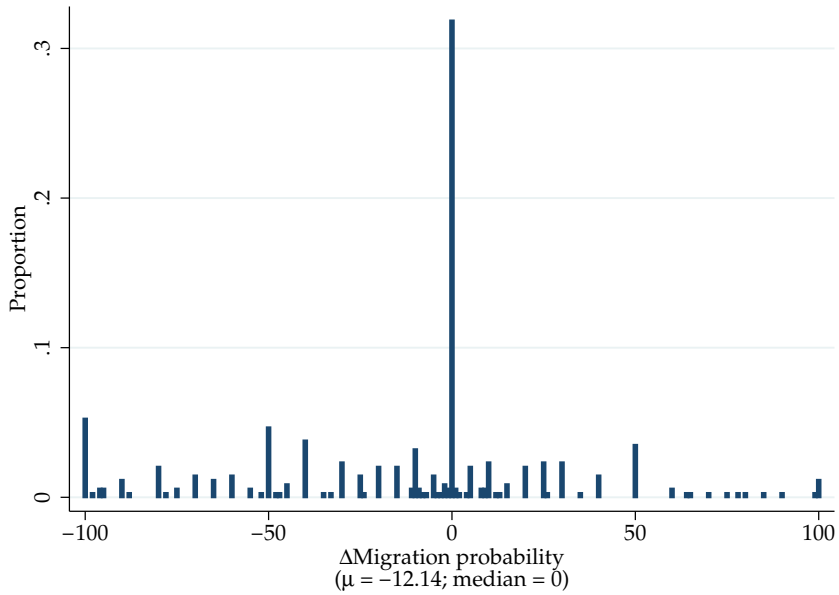
Variable	Obs	Mean	Median	Min	Max
Baseline migration probability (pct. points)	830	38.75	40.00	0	100
Δ *probability (pct. points)*:					
You lost your job	372	-7.04	0.00	-100	100
Your Spouse/partner lost their job	342	-12.14	0.00	-100	100
You (or a spouse/partner) were offered a similar job	435	4.69	0.00	-100	100
You were offered your dream job	549	23.23	20.00	-100	100
You could take your current friends and family with you	593	18.78	10.00	-100	100
You could take your coworkers with you	381	-21.01	-10.00	-100	100
Your moving expenses were fully covered	644	23.81	20.00	-100	100

Figure 3: Distribution of migration counterfactual differences: Lost job



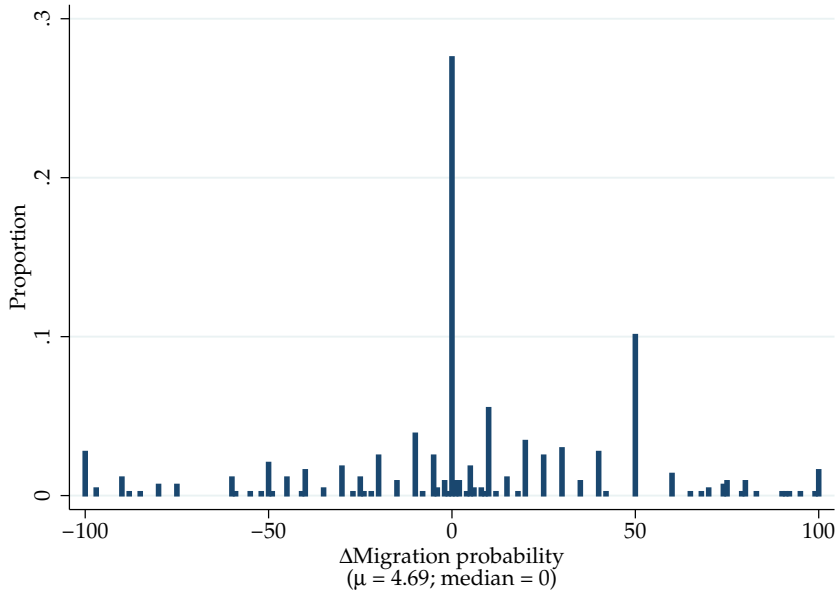
Note: Distribution of difference in stated migration probability in counterfactual versus baseline.

Figure 4: Distribution of migration counterfactual differences: Spouse lost job



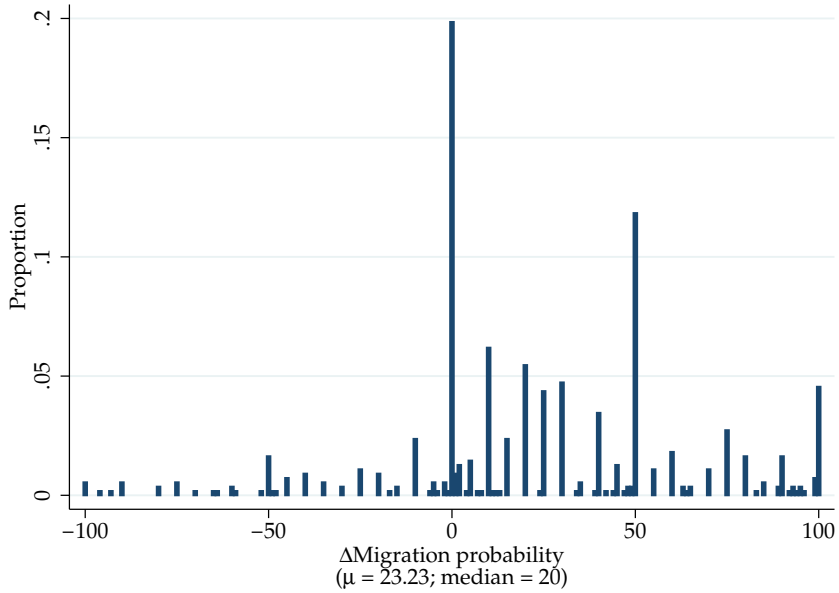
Note: Distribution of difference in stated migration probability in counterfactual versus baseline.

Figure 5: Distribution of migration counterfactual differences: Offered similar job



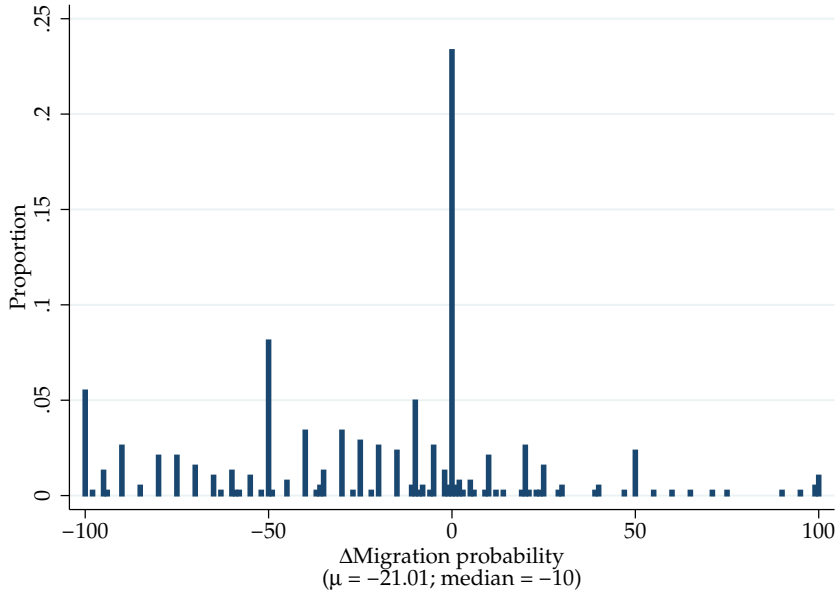
Note: Distribution of difference in stated migration probability in counterfactual versus baseline.

Figure 6: Distribution of migration counterfactual differences: Offered dream job



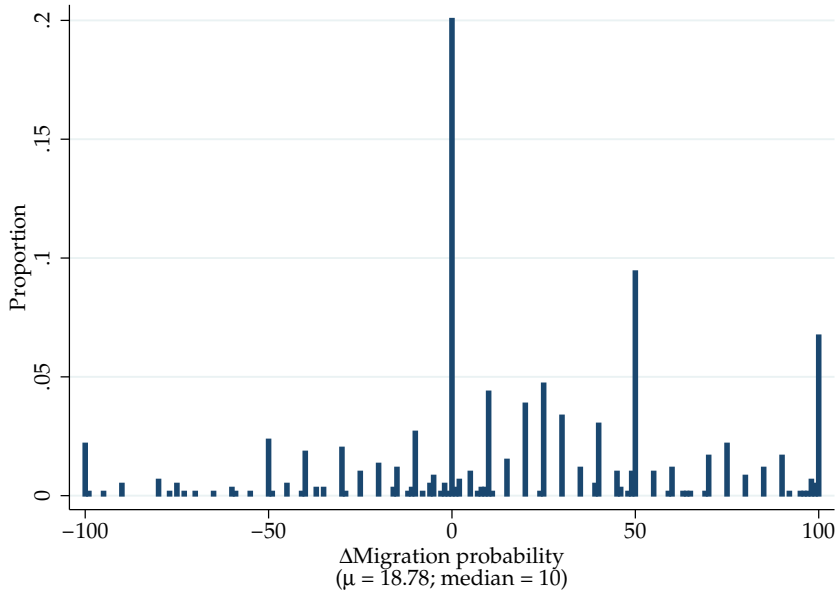
Note: Distribution of difference in stated migration probability in counterfactual versus baseline.

Figure 7: Distribution of migration counterfactual differences: Move with coworkers



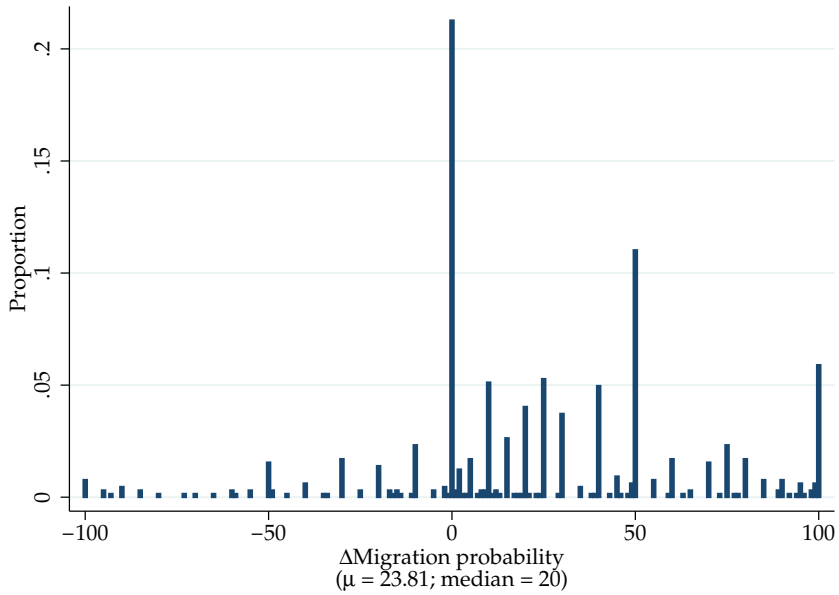
Note: Distribution of difference in stated migration probability in counterfactual versus baseline.

Figure 8: Distribution of migration counterfactual differences: Move with social network



Note: Distribution of difference in stated migration probability in counterfactual versus baseline.

Figure 9: Distribution of migration counterfactual differences: Financial costs of move paid for



Note: Distribution of difference in stated migration probability in counterfactual versus baseline.

Table 6: LAD estimates of utility function parameters

Dep. Variable: Log odds ratio	(1)	(2)	(3)	(4)	(5)
Lost job	0.000	-0.000	-0.000	-0.011	0.025
	(0.442)	(0.349)	(0.323)	(0.323)	(0.273)
Spouse Lost Job	-0.767**	-0.847**	-0.784**	-0.793**	-0.644**
	(0.390)	(0.358)	(0.356)	(0.362)	(0.323)
Offered Similar Job	0.619**	0.539**	0.650***	0.940***	0.928***
	(0.307)	(0.258)	(0.251)	(0.226)	(0.247)
Offered Dream Job	2.005***	2.213***	2.324***	2.424***	2.671***
	(0.417)	(0.344)	(0.296)	(0.366)	(0.309)
Move w/Social Network	1.253***	1.386***	1.450***	1.692***	1.613***
	(0.357)	(0.334)	(0.265)	(0.311)	(0.253)
Move w/Coworkers	-1.792***	-1.946***	-1.931***	-1.906***	-1.935***
	(0.610)	(0.433)	(0.482)	(0.504)	(0.524)
Financial costs paid	1.792***	1.925***	2.037***	2.286***	2.354***
	(0.357)	(0.294)	(0.276)	(0.286)	(0.285)
Female	0.214	0.288	0.336*	0.098	0.278*
	(0.195)	(0.199)	(0.173)	(0.163)	(0.154)
African American		0.539*	0.405	0.346	0.182
		(0.278)	(0.268)	(0.291)	(0.295)
Asian		-0.000	0.091	0.055	-0.022
		(0.210)	(0.210)	(0.222)	(0.246)
Hispanic		0.288	0.336	0.444	0.564*
		(0.266)	(0.266)	(0.280)	(0.306)
Other		0.208	0.139	0.159	0.396
		(0.360)	(0.365)	(0.399)	(0.420)
HS grad (or GED)			1.420**	1.447**	2.025***
			(0.657)	(0.632)	(0.607)
Some college			1.329**	1.594**	2.105***
			(0.624)	(0.630)	(0.594)
Bachelor's degree			1.132*	1.433**	1.885***
			(0.617)	(0.633)	(0.598)
Advanced degree			0.684	1.001	1.394**
			(0.668)	(0.667)	(0.626)
Satisfaction with current geographical location:					
Somewhat satisfied				0.147	0.207
				(0.180)	(0.176)
Neutral				0.496**	0.364*
				(0.237)	(0.209)
Somewhat dissatisfied				1.345***	1.440***
				(0.291)	(0.316)
Extremely dissatisfied				2.822**	2.394**
				(1.263)	(1.108)
Distance (1,000 miles)					1.445***
					(0.327)
Distance^2					-0.329**
					(0.131)
Constant	-0.619**	-0.827***	-2.071***	-2.632***	-3.938***
	(0.299)	(0.252)	(0.643)	(0.672)	(0.688)
Observations	4,161	4,161	4,161	4,159	4,159

Notes: LAD parameter estimates of equation (3.4), pooled across all individuals and all scenarios. Bootstrapped standard errors (500 replications) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: LAD estimates of utility function parameters for various subpopulations

		By education		By race		By gender		By migration status	
Dependent Variable: Log odds ratio	Full Sample	College graduate	Some coll. or less	White	Non-white	Male	Female	Mover	Stayer
Lost job	0.025	-0.070	0.062	0.227	-0.446	0.120	-0.284	-0.778***	2.868***
	(0.273)	(0.529)	(0.344)	(0.321)	(0.396)	(0.338)	(0.466)	(0.189)	(0.876)
Spouse Lost Job	-0.644**	-0.870	-0.463	-0.237	-1.272***	-0.692	-0.766	-1.070***	2.068**
	(0.323)	(0.552)	(0.441)	(0.400)	(0.441)	(0.442)	(0.526)	(0.262)	(0.919)
Offered Similar Job	0.928***	0.944**	1.056***	1.304***	0.369	0.933**	0.873**	-0.039	4.379***
	(0.247)	(0.417)	(0.312)	(0.305)	(0.385)	(0.377)	(0.341)	(0.230)	(0.507)
Offered Dream Job	2.671***	1.985***	3.123***	2.988***	2.267***	2.330***	2.925***	5.170***	6.587***
	(0.309)	(0.438)	(0.608)	(0.401)	(0.570)	(0.493)	(0.516)	(1.120)	(0.401)
Move w/Social Network	1.613***	1.537***	1.959***	2.197***	1.178**	1.479***	2.020***	0.518	6.109***
	(0.253)	(0.376)	(0.377)	(0.341)	(0.460)	(0.351)	(0.439)	(0.321)	(0.400)
Move w/Coworkers	-1.935***	-1.340**	-2.759***	-1.705**	-2.276***	-0.598	-3.716***	-2.237***	0.064
	(0.524)	(0.599)	(1.004)	(0.729)	(0.820)	(0.456)	(0.840)	(0.366)	(0.560)
Financial costs paid	2.354***	1.805***	2.973***	2.654***	1.959***	1.955***	3.023***	4.657***	6.109***
	(0.285)	(0.421)	(0.446)	(0.355)	(0.604)	(0.342)	(0.500)	(1.363)	(0.415)
Female	0.278*	0.513**	0.065	0.730***	-0.445			0.038	0.254
	(0.154)	(0.228)	(0.239)	(0.197)	(0.320)			(0.167)	(0.195)
African American	0.182	1.452***	-0.895**			1.014***	-0.496	-0.065	0.531
	(0.295)	(0.366)	(0.350)			(0.300)	(0.459)	(0.244)	(0.454)
Asian	-0.022	0.187	-0.328		-0.318	0.375	-0.983*	-0.566**	0.099
	(0.246)	(0.276)	(0.433)		(0.325)	(0.240)	(0.544)	(0.240)	(0.400)
Hispanic	0.564*	0.728*	0.589		0.218	0.856**	0.241	0.549*	0.431
	(0.306)	(0.408)	(0.526)		(0.355)	(0.343)	(0.568)	(0.316)	(0.451)
Other	0.396	0.837	0.349		-0.088	0.877**	-1.276	0.315	-0.061
	(0.420)	(0.945)	(0.563)		(0.586)	(0.374)	(1.256)	(0.444)	(0.565)
HS grad (or GED)	2.025***		2.163***	2.168**	2.783***	3.509***	1.519*	-0.532	0.563*
	(0.607)		(0.617)	(0.843)	(0.819)	(1.090)	(0.871)	(0.664)	(0.331)
Some college	2.105***		2.361***	2.130**	3.206***	3.373***	1.633*	-0.514	0.635
	(0.594)		(0.608)	(0.836)	(0.801)	(1.068)	(0.837)	(0.670)	(0.408)
Bachelor's degree	1.885***			1.729**	3.337***	3.009***	1.993**	-0.526	0.651*
	(0.598)			(0.850)	(0.794)	(1.069)	(0.861)	(0.680)	(0.374)
Advanced degree	1.394**	-0.176		1.266	2.710***	2.868***	0.946	-0.327	0.298
	(0.626)	(0.256)		(0.851)	(0.973)	(1.097)	(0.896)	(0.697)	(0.376)
Satisfaction with current geographical location:									
Somewhat satisfied	0.207	0.164	0.415	0.454*	0.144	0.274	0.287	0.276	0.296
	(0.176)	(0.270)	(0.273)	(0.251)	(0.322)	(0.225)	(0.311)	(0.204)	(0.252)
Neutral	0.364*	0.301	0.390	0.721***	0.273	0.318	0.623	0.040	-0.015
	(0.209)	(0.316)	(0.316)	(0.249)	(0.441)	(0.309)	(0.379)	(0.266)	(0.248)
Somewhat dissatisfied	1.440***	1.411*	1.467***	1.749***	1.313*	0.566	2.466***	0.606**	-0.811
	(0.316)	(0.734)	(0.467)	(0.434)	(0.790)	(0.459)	(0.612)	(0.290)	(0.560)
Extremely dissatisfied	2.394**	5.681***	1.791*	4.918***	1.389*	5.915***	2.028**	1.175	1.604
	(1.108)	(1.150)	(0.986)	(0.855)	(0.791)	(0.532)	(0.789)	(0.827)	(1.594)
Distance (1,000 miles)	1.445***	0.957**	1.302**	0.654**	1.645***	1.419***	1.240**	-0.084	1.333**
	(0.327)	(0.391)	(0.506)	(0.332)	(0.584)	(0.384)	(0.537)	(0.303)	(0.613)
Distance^2	-0.329**	-0.336**	-0.163	0.146	-0.574***	-0.437***	-0.125	0.123	-0.267
	(0.131)	(0.142)	(0.213)	(0.137)	(0.199)	(0.142)	(0.237)	(0.124)	(0.247)
Constant	-3.938***	-1.893***	-4.263***	-4.630***	-4.025***	-5.283***	-3.465***	1.068	-7.533***
	(0.688)	(0.482)	(0.821)	(0.973)	(0.978)	(1.142)	(0.936)	(0.689)	(0.336)
Observations	4,159	1,512	2,647	2,730	1,429	1,970	2,189	2,333	1,826

Notes: LAD parameter estimates of equation (3.4), pooled across all individuals and all scenarios within specific demographic subgroups. "Movers" are those who report unconditional migration probabilities larger than the median. Bootstrapped standard errors (500 replications) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Estimates of willingness to pay for migration benefits (as percentage of moving cost)

		By education		By race		By gender		By migration status	
Dependent Variable: Log odds ratio	Full Sample	College graduate	Some coll. or less	White	Non-white	Male	Female	Mover	Stayer
Lost job	-1.049	3.871	-2.083	-8.563	22.750	-6.160	9.396	16.708***	-46.942***
	(11.796)	(30.303)	(11.379)	(12.780)	(21.683)	(16.676)	(15.606)	(6.404)	(13.329)
Spouse Lost Job	27.381*	48.188	15.562	8.936	64.932*	35.396	25.321	22.976**	-33.849**
	(15.893)	(35.346)	(14.465)	(15.285)	(35.855)	(26.201)	(18.659)	(9.219)	(14.666)
Offered Similar Job	-39.419***	-52.305***	-35.523***	-49.144***	-18.820	-47.715***	-28.860***	0.848	-71.677***
	(9.048)	(18.064)	(9.012)	(9.720)	(18.657)	(16.096)	(10.360)	(4.963)	(6.844)
Offered Dream Job	-113.479***	-110.002***	-105.037***	-112.579***	-115.742***	-119.199***	-96.743***	-111.027***	-107.833***
	(13.094)	(19.430)	(22.989)	(12.938)	(38.991)	(21.503)	(17.278)	(35.392)	(6.055)
Move w/Social Network	-68.538***	-85.152***	-65.893***	-82.787***	-60.125**	-75.629***	-66.815***	-11.130	-100.000***
	(9.143)	(16.816)	(11.572)	(10.313)	(23.763)	(13.615)	(14.111)	(7.662)	(5.078)
Move w/Coworkers	82.226***	74.233*	92.792***	64.224**	116.201**	30.590	122.911***	48.030***	-1.044
	(25.723)	(40.800)	(35.797)	(30.574)	(57.610)	(26.191)	(37.962)	(16.141)	(9.169)
Observations	4,159	1,512	2,647	2,730	1,429	1,970	2,189	2,333	1,826

Notes: Estimates of willingness to pay for various migration benefits, expressed as a percentage of financial moving costs. "Movers" are those who report unconditional migration probabilities larger than the median. Attributes that are "good" are negatively signed because individuals would be willing to forego income to obtain these. Attributes that are "bad" are positively signed because individuals require compensation in exchange for an increase in a "bad" attribute. Bootstrapped standard errors (500 replications) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

A Data Appendix

A.1 Survey instrument

This section reports the survey instrument that was provided to respondents.

Consent form Thank you for your interest in our survey, a study being conducted by researchers at Duke University. You will be asked a number of questions about you, your opinions about issues facing the country, and how you form opinions. Your participation is voluntary and your responses will be held strictly confidential. This survey should take about 10 minutes to complete. As specified by the online research panel which invited you to participate in this survey, you will receive an incentive for your participation. You may withdraw at any time and you may refuse to answer any question. For answers to any questions you may have about this survey, please contact Dr. D.S. Hillygus at dism@duke.edu. For answers to any questions you may have about your rights as a research subject, contact the Chair of the Duke University Human Subjects Committee (campusirb@duke.edu; 919-684-3030). To indicate that you read the above information and consent to participate in this research, please click the "Next" button below.

We have a few demographic questions before we begin the survey.

1. What is the ZIP code for the town or city where you currently live?

   [enter ZIP code]

2. What year were you born?

   [enter year in YYYY format]

3. Which best describes your gender?

   ☐ Female

   ☐ Male

4. How would you classify your race? Mark all that apply.

   ☐ White or Caucasian

   ☐ Asian or Pacific Islander

   ☐ African American or Black

☐ Native American

☐ Hispanic or Latino

☐ Other (please specify)

5. What is the highest level of education that you have received?

☐ Less than high school

☐ Some high school

☐ Finished high school or GED

☐ Trade certificate

☐ Some college or associate's degree

☐ Bachelor's degree from a university or college

☐ Graduate or professional degree

We would like to begin by asking some questions about your life and your plans for the future.

6. Thinking about the town or city where you currently live, how satisfied are you with...

	Extremely Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Extremely Dissatisfied
The job opportunities	☐	☐	☐	☐	☐
The social opportunities	☐	☐	☐	☐	☐
The climate/weather	☐	☐	☐	☐	☐
The geographic location	☐	☐	☐	☐	☐
The cost of living	☐	☐	☐	☐	☐
Traffic, transportation, and infrastructure	☐	☐	☐	☐	☐
Cultural and recreational amenities	☐	☐	☐	☐	☐
School quality	☐	☐	☐	☐	☐

7. How likely—on a scale from 0 to 100—are you to move to another city or town in the next 5 years?

[Please enter a whole number.]

8. If you had to choose, what is one U.S. city or town that you might consider moving to in the next 5 years?

   [Please write the name of the city or town in the text box.]

9. In what state is that city or town located?

   [Please click on the name of the state.]

10. Now we'd like you to imagine some different scenarios. How likely—on a scale from 0 to 100—would you be to move to that city or town [written in the previous question] in the next 5 years if ...

    [Please enter a whole number for each line.]

	0 to 100	Not Applicable
You lost your job		☐
Your spouse/partner lost their job		☐
You (or a spouse/partner) were offered a similar job		☐
You were offered your dream job		☐
You could take your current friends and family with you		☐
You could take your coworkers with you		☐
Your moving expenses were fully covered		☐

A.2 Appendix Tables

Table A.1: Determinants of migration likelihood in survey and ACS

	Survey	ACS
African American	0.643**	0.092***
	(0.270)	(0.008)
Asian	-0.762*	0.108***
	(0.419)	(0.010)
Hispanic	0.324	-0.176***
	(0.388)	(0.008)
Other	0.403	0.145***
	(0.536)	(0.015)
HS grad (or GED)	0.782	-0.061***
	(0.648)	(0.009)
Some college	0.454	0.019**
	(0.645)	(0.009)
Bachelor's degree	0.599	0.110***
	(0.662)	(0.010)
Advanced degree	0.474	0.115***
	(0.721)	(0.011)
Female	0.014	-0.026***
	(0.211)	(0.005)
age	0.018	-0.085***
	(0.038)	(0.001)
age^2	-0.001	0.001***
	(0.000)	(0.000)
Constant	-2.101**	0.775***
	(0.992)	(0.017)
Observations	830	2,490,616
(Pseudo) R^2	0.0542	0.0639

Notes: Logit estimation of likely migration in survey (unconditional migration probability of greater than 89% and migration distance greater than 1 mile) and observed migration in the ACS. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.2: Number of counterfactual scenarios not answered

No. of missing responses	Freq.	Percent
0	240	28.92
1	78	9.40
2	86	10.36
3	61	7.35
4	79	9.52
5	103	12.41
6	66	7.95
7	117	14.10
Total	830	100.00

Notes: Distribution of number of counterfactual migration scenarios with missing data.

Table A.3: Predictors of missing responses

	Survey
African American	0.206
	(0.162)
Asian	0.428**
	(0.179)
Hispanic	0.040
	(0.233)
Other	0.086
	(0.317)
HS grad (or GED)	-0.679*
	(0.351)
Some college	-0.555
	(0.350)
Bachelor's degree	-1.231***
	(0.359)
Advanced degree	-1.299***
	(0.374)
Female	0.068
	(0.112)
age	0.039***
	(0.003)
Constant	-1.406***
	(0.383)
Observations	830
(Pseudo) R^2	0.0760

Notes: Fractional logit estimates of demographic characteristics on the dependent variable: "share of counterfactual scenarios that the individual left blank." Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Estimates of willigness to pay (in $) for migration benefits

		By education		By race		By gender		By migration status	
Dependent Variable: Log odds ratio	Full Sample	College graduate	Some coll. or less	White	Non-white	Male	Female	Mover	Stayer
Lost job	-$105	$ 387	-$208	-$856	$ 2,275	-$616	$ 940	$1,671**	-$4,694***
	(1,187)	(3,090)	(1,110)	(1,260)	(2,189)	(1,603)	(1,574)	(662)	(1,352)
Spouse Lost Job	$ 2,738*	$ 4,819	$ 1,556	$ 894	$ 6,493**	$ 3,540	$ 2,532	$2,298**	-$3,385**
	(1,504)	(3,703)	(1,475)	(1,525)	(3,308)	(2,510)	(1,898)	(938)	(1,533)
Offered Similar Job	-$3,942***	-$5,230***	-$3,552***	-$4,914***	-$1,882	-$4,772***	-$2,886***	$85	-$7,168***
	(886)	(1,848)	(978)	(1,075)	(1,832)	(1,588)	(1,009)	(500)	(652)
Offered Dream Job	-$11,348***	-$11,000***	-$10,504***	-$11,258***	-$11,574***	-$11,920***	-$9,674***	-$11,103***	-$10,783***
	(1,280)	(1,790)	(2,051)	(1,285)	(3,610)	(2,360)	(1,630)	(3,251)	(614)
Move w/Social Network	-$6,854***	-$8,515***	-$6,589***	-$8,279***	-$6,013**	-$7,563***	-$6,681***	-$1,113	-$10,000***
	(923)	(1,769)	(1,178)	(1,007)	(2,455)	(1,359)	(1,360)	(789)	(500)
Move w/Coworkers	$ 8,223***	$ 7,423*	$ 9,279**	$ 6,422**	$ 11,620*	$ 3,059	$ 12,291***	$4,803***	-$104
	(2,374)	(4,364)	(3,746)	(3,153)	(5,959)	(2,542)	(3,588)	(1,662)	(913)
Observations	4,159	1,512	2,647	2,730	1,429	1,970	2,189	2,333	1,826

Notes: Estimates of willingness to pay for various migration benefits, expressed in dollars and assuming a financial moving cost of $10,000. Attributes that are "good" are negatively signed because individuals would be willing to forego income to obtain these. Attributes that are "bad" are positively signed because individuals require compensation in exchange for an increase in a "bad" attribute. "Movers" are those who report unconditional migration probabilities larger than the median. Bootstrapped standard errors (500 replications) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.