



# Neighborhood quality and labor market outcomes: Evidence from quasi-random neighborhood assignment of immigrants <sup>☆</sup>



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## ABSTRACT

Settlement in a socially deprived neighborhood may hamper individual labor market outcomes because of lack of employed or highly skilled contacts. I investigate this hypothesis by exploiting a unique natural experiment that occurred between 1986 and 1998 when refugee immigrants to Denmark were assigned to municipalities quasi-randomly, which successfully addresses the methodological problem of endogenous neighborhood selection. I show that individuals sort into neighborhoods. Taking account of location sorting, living in a socially deprived neighborhood does not affect labor market outcomes of refugee men. Their labor market outcomes are also not affected by the overall employment rate and the overall average skill level in the neighborhood. However, an increase in the average skill level of non-Western immigrant men living in the neighborhood raises their employment probability, while an increase in the employment rate of co-national men living in the neighborhood raises their real annual earnings. This provides quasi-experimental evidence that residence-based job information networks are ethnically stratified.

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## 1. Introduction

Widespread use of friends, relatives and acquaintances to search for jobs is a stylized fact.<sup>1</sup> Personal contacts may convey information about job vacancies and recommend friends, relatives and acquaintances with similar personal characteristics as themselves to their employer. For employers, job referrals lower the search costs as well as the screening costs of applicants. For employees, job referral may speed up the job-finding process and, as sug-

gested by [Dustmann et al. \(2011\)](#) lead to a short-termed wage premium due to reduced uncertainty about the worker productivity.

According to recent social network theories the quality of personal contacts is of key importance for job referral ([Montgomery, 1994](#); [Calvó-Armengol and Jackson, 2004](#)).<sup>2</sup> The higher the quality of personal contacts, the more useful the contacts are for job referral.

My main research question is whether the quality of the job information network affects labor market outcomes. In the first part of my analysis I provide tentative evidence from the Welfare Research Survey conducted in Denmark in 2006 among representative samples of natives and immigrants that the quality for contacts matters: unemployed respondents whose acquaintances (e.g. friends of friends, co-workers and neighbors) have a high employment rate have a higher job-finding rate, after controlling for other personal characteristics and area characteristics. Job seekers may thus receive information about job vacancies from employed neighbors among others. Therefore, living in a neighborhood with more unemployment may reduce job chances. If so, concentration of unemployed workers in certain neighborhoods increases employment inequality in society (see e.g. [Montgomery, 1994](#)). Results from studies using observational data are consistent with neighborhood job referral, i.e. individuals who live in the same or adjacent neighborhoods sometimes refer each other to jobs.<sup>3</sup> By

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<sup>1</sup> See [Rees \(1966\)](#), [Granovetter \(1974, 1995\)](#), [Holzer \(1988\)](#), [Blau and Robins \(1990\)](#), [Montgomery \(1991\)](#), [Gregg and Wadsworth \(1996\)](#), [Topa \(2001\)](#), [Addison and Portugal \(2002\)](#), [Wahba and Zenou \(2005\)](#), [Bentolila et al. \(2010\)](#) and [Pellizari \(2010\)](#).

<sup>2</sup> By contrast, [Granovetter \(1973, 1974, 1995\)](#) argues that it is the quantity of weak ties which matters for job referral.

<sup>3</sup> See e.g. [Topa \(2001\)](#), [Weinberg et al. \(2004\)](#), [Bayer et al. \(2008\)](#), [Andersson et al. \(2009\)](#) and [Hellerstein et al. \(2011\)](#).

contrast, quasi-experimental and experimental studies find little role of neighborhood quality on adult labor outcomes.<sup>4</sup>

I argue that the Danish Spatial Dispersal Policy on Refugees which operated from 1986 until 1998 is an ideal quasi-experiment for investigation of whether the quality of the neighborhood matters for individual labor market outcomes. At the time of receipt of asylum, placement officers working in the central office of the Danish Refugee Council assigned refugee families to housing in different locations in Denmark, exclusively on the basis of a questionnaire with personal information like household size. The placement officers did not meet face to face with refugees at the time of assignment. I observe all personal characteristics known to the placement officers in the administrative registers used for the analysis and condition on them in the regressions. Conditional on these personal characteristics, characteristics of the neighborhood of assignment are valid instruments for characteristics of the current neighborhood of residence. Moreover, the approximately 15,400 refugee men subjected to the spatial dispersal policy were assigned to as many as 1710 different neighborhoods located in 245 different municipalities.<sup>5</sup> In other words, the Danish Spatial Dispersal Policy provides extensive geographic variation in neighborhood characteristics which is an important strength relative to the existing quasi-experimental and experimental studies of neighborhood job referral.

Therefore, in the second part of my analysis I use detailed administrative register data for the sample of refugee men who had initially been assigned to a neighborhood by the Danish Refugee Council to provide quasi-experimental evidence on the quality of job information networks on individual labor market outcomes. To proxy for social interactions, I use neighborhood-based networks, i.e. connections between individuals living in the same neighborhood, in line with a number of previous studies.<sup>6</sup> In particular, I provide two-stage least squares (2SLS) estimates of the causal effects of living in a socially deprived neighborhood on individual labor market outcomes. I define a neighborhood as socially deprived if the employment rate is at most 60%. As instrument for the indicator for current residence in a socially deprived neighborhood I use an indicator for assignment to a socially deprived neighborhood. Next, I estimate the effects of alternative, continuous measures of neighborhood quality (employment rates, average skill level, mean real annual earnings) and compare ordinary least squares (OLS) and propensity score matching (PSM) estimates to quasi-experimental results from instrumental variables (IV) estimation.

Using observational data, the studies by [Topa \(2001\)](#) and [Hellerstein et al. \(2011\)](#) find empirical evidence that residence-based job search networks are ethnically stratified. In that case the quality of the co-ethnic network should matter more for individual labor market outcomes than the overall quality of the neighborhood. In the third part of the analysis, I exploit the Spatial Dispersal Policy on Refugees to provide quasi-experimental evidence on the effects of the quality of the immigrant and co-ethnic networks on labor market outcomes of refugees. As before, I use the detailed administrative register data for the sample of refugee men who had initially been assigned to a neighborhood by the Danish Refugee Council. However, to proxy for social interactions, I follow [Borjas \(1995\)](#) and use neighborhood-based immigrant and co-ethnic networks, i.e. defined as connections between individuals of

immigrant origin/the same national origin living in the same neighborhood.<sup>7</sup> Specifically, I present 2SLS estimates of the effects of the quality of immigrant/co-ethnic men living in the neighborhood on individual labor market outcomes 2–6 years after immigration. As instruments I use the quality of immigrant/co-ethnic men living in the neighborhood of assignment in the year of assignment and an indicator for no other immigrant/co-ethnic men living in the neighborhood of assignment in the year of assignment. I measure quality in terms of the employment rate and the average skill level. Therefore, my paper combines two strands of literature: empirical network studies which use neighborhood-based networks and empirical network studies which use ethnicity-based networks.<sup>8</sup>

Previous studies on the impact of residence-based ethnic networks on labor market outcomes ([Bertrand et al., 2000](#); [Edin et al., 2003](#); [Damm, 2009](#)) use metropolitan areas/municipalities as the geographic unit of analysis. The empirical model used in these studies to identify the effect of the size as well as the interaction between the size and the quality of the ethnic group omits the quality of the local ethnic group; the direct effect of the quality of the local ethnic group is assumed to be captured by language/country of origin fixed effect. By instead using neighborhoods, I can disentangle the effect of the quality from the size of the immigrant/co-ethnic network in contrast to previous studies.

Finally, to shed light on how long it takes for a new resident to become part of the established networks in the neighborhood, I investigate the speed at which network effects operate in the neighborhood using the detailed administrative registers for refugee men who were initially assigned to neighborhoods by the Danish Refugee Council.

The next section provides tentative evidence on the importance of the quality and quantity of contacts on individual employment from the Welfare Research Survey conducted in Denmark in 2006 among random samples of natives and non-Western immigrants. Section 3 describes the construction of a balanced panel of male refugees from administrative register data and presents OLS and PSM estimates of living in a socially deprived neighborhood six years after immigration for the individuals in the balanced panel of male refugees. It then describes the Danish Spatial Dispersal Policy on Refugees and exploits it to provide quasi-experimental evidence on the effects of living in a socially deprived neighborhood and the effects of continuous measures of neighborhood quality on individual labor market outcomes of male refugees. Section 4 presents quasi-experimental evidence on whether residence-based networks of male refugees are ethnically stratified and on the speed at which network effects operate in the neighborhood. Section 5 offers conclusions.

## 2. Survey evidence on the importance of the social network for employment

In this section I use the Welfare Research Survey linked with administrative registers from Statistics Denmark to shed light on which types of social networks are more useful for job referral. The Welfare Research Survey was conducted in Denmark from February to November 2006 among a random sample of 1000 natives aged 18–45 and a random sample of 1000 immigrants (i.e. foreign-born individuals whose parents are also foreign-born or have foreign citizenship) from each of the following source countries:

<sup>4</sup> See the quasi-experimental study by [Oreopoulos \(2003\)](#) and evaluations of the Moving to Opportunity Program by [Katz et al. \(2001\)](#), [Kling et al. \(2007\)](#), [Sanbonmatsu et al. \(2011\)](#) and [Ludwig et al. \(2012\)](#).

<sup>5</sup> In the observation period, Denmark was divided into 275 municipalities (local authorities), on average inhabited by 19,562 individuals (in 2004).

<sup>6</sup> See [Topa \(2001\)](#), [Weinberg et al. \(2004\)](#), [Bayer et al. \(2008\)](#), [Andersson et al. \(2009\)](#), [Hellerstein et al. \(2011\)](#), [Oreopoulos \(2003\)](#), [Katz et al. \(2001\)](#), [Kling et al. \(2007\)](#), [Sanbonmatsu et al. \(2011\)](#) and [Ludwig et al. \(2012\)](#).

<sup>7</sup> This approach is also related to the studies by [Bertrand et al. \(2000\)](#), [Munshi \(2003\)](#), [Edin et al. \(2003\)](#), [Damm \(2009\)](#) and [Dustmann et al. \(2011\)](#) which define the network as connections between individuals with the same language/national origin living in the same metropolitan area/municipality.

<sup>8</sup> [Cingano and Rosolia \(2012\)](#) instead use coworker-based networks. For an extensive summary of the economic literature on job information networks and neighborhood effects, see [Ioannides and Loury \(2004\)](#), [Durlauf \(2004\)](#) and [Ross \(2011\)](#).

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