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# From corn to popcorn? Urbanization and dietary change: Evidence from rural-urban migrants in Tanzania

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## ABSTRACT

There is rising concern that the ongoing wave of urbanization will have profound effects on eating patterns and increase the risk of nutrition-related non-communicable diseases. Yet, our understanding of urbanization as a driver of changes in food consumption remains limited. Data from the Tanzania National Panel Survey, which tracked out-migrating respondents, allow us to compare individuals' dietary patterns before and after they relocated from rural to urban areas and assess whether those changes differ from household members who stayed behind or moved to a different rural area. Our study shows that moving to an urban area does not have any significant effect on the intake of fats, animal-source foods, and dietary diversity. However, individuals who moved to urban areas do experience a more pronounced shift away from the consumption of traditional staples, and towards high-sugar, more conveniently consumed and prepared foods. These effects occur across the whole spectrum of urban locations, ranging from smaller secondary towns to large cities. Further exploring the factors underlying these changes in dietary patterns upon moving, we demonstrate that – depending on the food category considered – a substantial part of the impact of relocating to an urban area is related to the transition out of farming, differences in food prices, and especially income changes. The latter appears to explain the more pronounced growth of unhealthy food consumption after rural-urban migration. As such, health concerns over diets can be expected to spread to less urbanized areas as soon as income growth takes off there. Our findings call for more in-depth research on the extent and consequences of changes in diets related to living in more urbanized areas that may contribute to improved projections on food demand and help to improve health and food and nutrition security policies as well as agricultural and trade strategies.

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## 1. Introduction

Until recently, researchers and policy makers mainly focused on the problem of food insecurity and undernutrition in rural areas (e.g. Bloem & de Pee, 2017; Crush & Frayne, 2010; Mohiddin, Phelps, & Walters, 2012). Yet, the rising awareness that developing countries are increasingly suffering from the “double burden of malnutrition”, with under- and overnutrition occurring simultaneously, and the fact that the prevalence of overweight appears to be higher and rising more rapidly in urban areas warrants adding an urban focus (Ruel, Garrett, & Sivan, 2017).

Urbanization – the shift from a population that is dispersed across small rural settlements in which agriculture is the dominant economic activity towards one where the population is concentrated in larger, dense urban settlements (Montgomery, Stren, Cohen, & Reed, 2003) – is increasingly put forward as a crucial determinant of changing dietary patterns. It is considered as one of the driving forces behind the “nutrition transition”, giving rise to and accelerating profound shifts in diets, physical activity, and the prevalence of several nutrition-related non-communicable diseases. More specifically, while part of the urban population faces food insecurity, other subpopulations are hypothesized to suffer from dietary excess and obesity as a consequence of more sedentary lifestyles and the transition towards diets high in sugar, fats, and refined foods, but low in fibre (e.g. Doak, Adair, Bentley, Monteiro, & Popkin, 2005; Hawkes, 2006; Popkin, 1999; 2001). However, whether and how these patterns are linked to urbanization

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remains poorly understood. With sub-Saharan Africa currently in the midst of a wave of rapid urbanization and more than 55% of its inhabitants projected to be living in urban areas by 2020 (UN, 2015), a better understanding of how this may change diets is necessary to develop appropriate policies for agriculture, trade, and for improving health and food and nutrition security.

This growing urban population is the result of natural urban population growth, the reclassification of previously rural areas into urban ones, and rural-urban migration (McGranahan & Satterthwaite, 2014). While there is substantial geographical variation, on average, migration accounts for about a quarter of total urban growth in Africa (World Bank, 2008). Rural-urban migrants, however, constitute a particularly interesting group to study as, with the right data, we can observe the diet of the same individual in two different environments. Using data from the Tanzania National Panel Survey (TNPS) for 2008/09 and 2012/13 that traced household members who migrated throughout this period, we aim to study the extent to which changes in the structure of diets may be attributable to moving to an urban environment and explore what this could imply for the wider debate on urbanization and dietary change.

This paper makes several contributions to the literature. First, the majority of research on urbanization and dietary change is based on cross-sectional comparisons of rural and urban diets. This approach has limitations, as urban and rural populations may differ in many more respects than only the environment they reside in. The panel nature of the data we use and the tracking of individuals that moved to new locations allow us to go much further in addressing selection than earlier studies. More specifically, we are able to compare migrants' dietary patterns before and after they relocate from rural to urban areas and assess how this differs from those who did not move over the same period. Since we observe households in which some individuals migrate and others do not, we can restrict the difference-in-differences comparison to those originating from the same rural baseline household, thus obtaining estimates that are purged of observed or unobserved heterogeneity across migrant and non-migrant families.

Secondly, while there is a growing recognition that urban areas form a continuum ranging from small towns to major cities (e.g. Christiaensen & Kanbur, 2017; Satterthwaite, 2006), little attention has been paid to the role these different types of urban environments play in stimulating dietary change. We extend existing analyses by moving beyond the (administrative) rural-urban dichotomy and explore the heterogeneity of our results by type of urban destination and population density.

Finally, the literature has put forward potential reasons as to why rural and urban food consumption may differ, ranging from increases in income and changes in relative prices, to different lifestyles and exposure to more global eating patterns (e.g. Crush & Frayne, 2011; Hawkes, 2008; Popkin, 1999). Yet, the validity of these hypotheses and the relative importance of the different mechanisms has not been tested empirically. We aim to contribute to explaining *how* urbanization may affect dietary patterns by exploring the role of the transition from a farming to a non-farming household and changes in income and food prices as underlying mechanisms through which moving to an urban area affects food consumption.

Overall, the evidence presented in this paper confirms that, for the same individual, eating patterns depend on whether one resides in an urban or a rural area. The results demonstrate that in comparison to household members who remained in their original rural villages, those relocating to urban areas experience a stronger shift away from traditional staples and towards more conveniently consumed, high-sugar or prepared foods. However, several other trends that are commonly associated with urbanization are not reflected in our results. In particular, there

is no evidence of a significantly different change in the consumption of oils and fats. Also, moving to an urban area does not appear to contribute to higher intake of more nutritious food groups, such as animal-source foods and fruits and vegetables, nor to improved dietary diversity. We find similar, though smaller, changes when migrating to secondary towns versus larger cities. In addition, most of the differences appear to be independent of the administrative classification into rural or urban and are confirmed when focusing upon population density estimates instead. Further exploring the factors underlying these changing dietary patterns, we demonstrate that – depending on the food category considered – a substantial part of the impact of relocating to an urban area is related to no longer residing in a farming household, differences in food prices, and especially income changes.

The remainder of this paper is organized as follows. The second section briefly discusses how urbanization may interact with different determinants of food consumption and reviews the available empirical evidence. Next, we discuss the food environment in Tanzania and the country's relevance as a case study for this particular topic. The data and methodology are described in Section 4 and Section 5 respectively. The main results are discussed in Section 6. Section 7 explores the heterogeneity of the results across the urban landscape. In Section 8, we present the results of our analysis of the importance of different mechanisms and Section 9 concludes.

## 2. Urbanization and food consumption

Urbanization interacts with several key determinants of food consumption. As it tends to coincide with a movement out of agriculture, it is likely that more people become employed in sectors with lower energy requirements (Deaton & Dreze, 2009; Ntandou, Delisle, Agueh, & Fayomi, 2008; Sobngwi et al., 2002). This transition out of (smallholder) farming would also imply that own-production and food consumption choices become less closely linked (Huang & Bouis, 2001). Moreover, the more distinct separation of living and work location, combined with improved (female) labour market opportunities and longer commuting distances in urban areas are assumed to raise the opportunity costs of time spent on acquiring and preparing food and induce greater preferences for more conveniently consumed and (pre-)prepared foods (Bourne, Lambert, & Steyn, 2002; Huang & Bouis, 2001; Huang & David, 1993; Regmi & Dyck, 2001). In addition, smaller living spaces and lack of storage and cooking facilities could contribute to increased reliance on foods requiring less or no preparation (Gollin & Goyal, 2017).

Changes in food consumption may be further facilitated by the fact that urban areas are characterized by markedly different food supply environments, affecting the availability and price of food items. Options for eating outside of the house or buying processed or prepared food are, for example, likely to be more abundant and more varied in urban areas, where minimarkets, supermarkets and fast food chains are more present and food-manufacturing sectors are often based nearby (Hawkes, 2008; Nickanor, Kazembe, Crush, & Wagner, 2017). Rural markets also tend to be less integrated with national and international markets and characterized by imperfect competition, ultimately leading to higher marketing margins (Bergquist, 2017; Moser, Barrett, & Minten, 2009; Osborne, 2005). Urban prices of imported or processed food items are therefore likely to be lower. Domestically produced food items on the other hand, could be less widely available and more expensive in cities that are located farther from production areas. Overall, it is assumed that the relative prices of traditional food items will differ in urban areas and that new items will be added to the mix.

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