Do rural migrant parents intend to settle in cities? Impacts of childcare strategies, split households, migration duration, and distance

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Introduction: The current transnational and internal migration involve more and more circular and temporary residences in the host communities. However, few studies have examined the settlement intention of circular and temporary migrant parents with children under 18 years old, which has made inclusive planning for these migrants' needs difficult. This paper aimed to examine whether rural migrant parents intended to settle in cities, with specific discussion about the impacts of childcare strategies, split households, and migration duration and distance.

Methods: This was a cross-sectional study design. The data was sourced from the China Migrants Dynamic Survey.

Results: Through analysis of a sample of 4,247 rural migrant parents in the Pearl River Delta, this study found that 56% of rural migrant parents intended to become urban settlers. Higher levels of education and income and longer migration durations yielded the parents' increased intention to become urban settlers. The birthplaces and primary caregivers of migrants' children were also significant factors. Moreover, split households, especially households in which the youngest child did not live with the parents in cities, decreased parents' intention to settle permanently. Instead of geographic distance, administrative provincial boundaries were found to be a critical factor in inter-provincial migrant parents' decreased intention to settle in cities.

Discussion: This study provides insights into understanding urbanization in China and contributes to future policy studies regarding internal migration, social integration and population growth, especially in a low fertility and rapid aging contest.

KEYWORDS

rural migrant worker, settlement intention, split household, childcare strategy, migration duration, place

Introduction

Settlement in the host community is an integration process for migrants. There are three phases in the integration process: "sojourner," "transition," and "settlement" (Piore, 1979; Massey, 1986). In the "sojourner phase," the migrants enter the host community to work without dependents, who have seldom economic, social and institutional connections with the host community. Their jobs are usually unstable and seasonal at this stage and they remit most of their income back. In the "transition phase," many migrants bring families and have frequent economic, social and institutional contact with the host communities.

Since their experience grows, they get more stable, better-paying jobs. In the final "settlement" phase, the migrants consider themselves as residents of the host society. They have been joined by families and have developed widespread contact with the host communities. However, not all migrants set permanent settlement in host areas as a goal for their migration, such as Polish migrants in London (Ryan, 2011), skilled migrants in Australia (Hugo, 2006; Khoo et al., 2008) and professional immigrants in Hong Kong and Singapore (Castles, 2003). Migrants who do not intend to settle permanently in the host community will not enter the next phase, and the integration process will stop. Current migration trends involve an increasing pattern of circular and temporary residence in host communities, which has a profound impact on local labor markets and economic and social development (Hugo, 2006; Graham et al., 2015). There are many parents among these temporary migrants, and their migration greatly impact their children's development and wellbeing (Battistella and Conaco, 1998; Sobritchea, 2007; Chae et al., 2016; Konzett-Smoliner, 2016). A study of the settlement intention of these temporary migrant parents with children under 18 years old is important and can advance the understanding of migration and integration.

Rural migrant parents in the Pearl River Delta (PRD) in China were selected as a case study to examine the settlement intention of circular and temporary migrant parents. Settlement intention is defined as the willingness/plan of migrants to settle in their host communities or to return to their communities of origin in the future. The settlement of rural migrants and their families can help big cities maintain and increase their population numbers. This is especially important given the decline in population that has been observed in China's biggest cities since 2020. As a result, maintaining and increasing population size has become a task for local city governments. This study provides insights into rural migrant parents' settlement intention and urbanization in China. It also contributes to future policy studies and evidence-based recommendations for local policymakers regarding internal migration, social integration and population growth at the city level.

Understanding the migrant population in china and their settlement intention

Rural-urban dual system in China and its continuations

China adopted a strategy of export-oriented industrialization to boost economic development after Deng Xiaoping's Reform and Open-Door policy launched in 1978. This strategy demanded a large labor force, which created a dependence on rural migrant workers in many cities that persists today (Fan, 2008, p. 4). These rural migrant workers have made tremendous contributions to China's rapid economic growth (Wang, 2005; Chan and Buckingham, 2008; Fan, 2008; Shen, 2013). However, they are not granted full community membership in their cities of residence, similar to cases of international migration wherein immigrant workers are not automatically granted full local citizenship rights (Chan, 2010; Cerna, 2016). This is enforced by the rural-urban dual

system (Chan, 1994; Wei, 2018; Chan and Wei, 2019), in which the hukou (household registration) system is a central feature. The dual system has erected an invisible wall between rural and urban sectors and produced a highly mobile rural population (Chan, 1994).

Since the 2010s, China was strategizing how to relocate secondary industries to inland regions to have a more balanced regional development (Chu, 2020). Bernard et al. (2019) and Zhu et al. (2021) have reported an increase in employment-related migration, particularly among rural migrants seeking off-farm employment in urban areas. Repeat migration, especially circulation between rural and urban areas, and return migration, especially among those returning to rural areas in central and western China, have also been observed (Bernard et al., 2019; Zhu et al., 2021). However, these migration have not resulted in a commensurate change in population distribution and internal migration (Chu, 2020). Currently, a large proportion of rural population still moves regularly between cities and rural area where individuals have their hukou registrations. These migrants regularly move to cities after Chinese New Year and return to their rural villages before the next Chinese New Year.

Migrant parents and their children

There were 245 million migrants in China in 2016 while migrants were defined as the individuals who had been living in the host community for 1 month or more (NHCC, 2017). About 169 million of these migrants were rural migrant workers who were documented as urban residents because they worked and lived in cities for most of the year, but were still registered with agricultural hukou in their rural hometowns (NBSC, 2017). It was also reported that there were 103 million children of migrants under 18 years old in 2015, including 34.2 million migrant children and 68.8 million children who remained in their parents' home villages (UNICEF et al., 2017). Among the latter group of children, it was estimated that 53.1% lived with one parent (de facto single-parent households), 44.3% lived with other people (mainly grandparents), and 2.6% lived alone in their original communities (Chan, 2019). Of the migrant children, 45% lived with both parents and 55% lived in single-parent or no-parent households (Chan, 2019). The majority of migrants' children, especially those left behind in rural areas, were found to be disadvantaged and to face multiple, serious challenges during their childhood and adolescence (Chan and Ren, 2018; Luo et al., 2018; Wei, 2018).

The settlement intention of rural migrant workers

Research into temporary migrants' settlement intention has begun to receive greater attention in the literature on domestic migration in China. Fan (2011) (38.2%) and Zhu and Chen (2010) (20.6%–35.8%) found that a small percentage of domestic migrants had the intention of becoming permanent settlers in cities. Bernard et al. (2019) found a rise in repeat movement among rural-urban migrants in China. Rural migrant workers who intend to settle in

cities are usually more concerned about the local environment than those without intention to settle (Gu and Ma, 2013). Economic incentives (Chen and Liu, 2016; Chen and Wang, 2019), types of employment (Chen and Wang, 2019), healthcare (Xie et al., 2017), housing access in cities (Liu et al., 2017), rural landholding (Hao and Tang, 2015), and the age of migrants (Yue et al., 2010) are significant factors associated with migrants' intention to settle in host communities. Usually, higher economic income and successfully purchasing urban housing in host cities can increase the migrants' intention to settle in the cities (Liu et al., 2017). However, there is a lack of literature focusing on rural migrant parents with children under 18 years old, and little is known about their settlement intention and the associated factors.

Linking split household arrangements, childcare strategies, migration duration and distance and migrant parents' settlement intention

In a common conception of a "modern family," all family members live together in the same place most of the time (Fan et al., 2011). However, sometimes family members cannot live together, often due to the absence of fathers, mothers or both parents. Examples include situations where Filipino (Sobritchea, 2007) and Indonesian women (Silvey, 2004) work overseas as domestic helpers or where migrant workers move from rural to urban China (Guo and Shen, 2014, 2016). This type of arrangement is identified as a split-household family, defined as "a situation where family members who under 'normal' circumstances would be living in the same place are in actuality living in separate places" (Fan et al., 2011).

Split household arrangements in rural China are mostly caused by family members, especially fathers or mothers, departing the household for paid employment. These rural migrant parents depart to maximize their incomes in host cities while also taking advantage of village resources, such as holding rural houses and lands (Fan, 2011; Fan et al., 2011). However, many children and elderly dependents of migrants are left behind in rural areas because of difficulties in accessing basic social welfare in cities, such as education and health care, due to the residence-based public finance system (Xiang, 2007; Liu, 2014). Split-household arrangements have negative impacts on social support for young children (Battistella and Conaco, 1998; Sobritchea, 2007; Guo and Shen, 2014) and elderly parents who remain in the communities of origin (Knodel and Saengtienchai, 2007). Moreover, the expectations for migrant fathers and migrant mothers differ in regards to their left-behind children: migrant fathers are expected to send remittances, but migrant mothers are expected to maintain emotional intimacy in addition to sending remittances (Antman, 2012; Zentgraf and Chinchilla, 2012). In Honduras, the absence of mothers was found to result in an increased school dropout rate and increased involvement with gangs and drugs for adolescents and young adults, along with other social problems (Nazario, 2006). Therefore, split household arrangements should be examined in relation to migrant parents" settlement decisions.

Childcare strategies (distant or close parenting) may be other essential factors in migrant parents' decision-making. Migrant parents' childcare strategies are affected by the location of migrants' workplaces, health care availability for immigrants, and childcare agencies in the destination (Kusakabe and Pearson, 2013). In addition, potential heterogeneity of children, such differing ages, genders, and numbers of siblings, may also affect migrant parents' settlement intention (Wang et al., 2019).

In addition, migration is generally defined by temporal and spatial dimensions (Niedomysl and Fransson, 2014). Migration duration and distance can work through one another to place migrant workers partly on the "inside" and partly on the "outside" during the process of integration (Allen and Axelsson, 2019). Even if migration durations are the same, different groups of migrants have varying characteristics and perform the integration process differently depending on the impacts of administrative borders and geographic distances (Niedomysl and Fransson, 2014). Whether migration duration and distance have significant impacts on migrants' settlement intention remains unknown.

To address this gap in knowledge, this study examined rural migrant parents' intention to settle in cities, with a focus on the impact of childcare strategies, split household arrangements, and migration duration and distance.

Methods

The study area

The PRD was selected as the area for study. The PRD, located in Guangdong Province, China, includes nine cities, Guangzhou, Shenzhen, Zhuhai, Foshan, Dongguan, Zhongshan, Huizhou, Jiangmen, and Zhaoqing. The PRD has played a leading role in China's economic development since the opening-up reform in 1978. The PRD has attracted large amounts of foreign investment and experienced a high speed of industrialization (Sit and Yang, 1997). In addition to the foreign investment-backed, export-led and labor-intensive manufacturing companies, such as Foxconn and Flextronics, many domestic companies have rapidly developed in the PRD over the past 40 years, particularly companies like Huawei and Tencent that supply technology-related products and services. The population and landscape of the PRD have undergone massive changes over the past four decades, which may be related to the dual-track urbanization strategy (Wong et al., 2003; Shen, 2006). Therefore, as a thriving economic hub, the studying of rural-urban migration in the PRD is important for us to understand the dynamics of labor movement, economic growth, the transform social fabric and cultural identify and effective governance for sustainable development. In 2016, the de facto population (changzhu renkou) in the PRD was 60.0 million, but only 55.9% had local hukou (33.5 million) (BOSG, 2017). This means that 44.1% of the de facto population may not have access to full citizenship rights, such as enrolment for children in local public schools. Less-skilled workers outnumber highly skilled workers in this floating population (Shen and Liu, 2016).

The survey and its context

The data used to examine rural migrant parents' settlement intention were collected from the China Migrants Dynamic Survey (CMDS), conducted by the National Health Commission of China (NHCC) in May 2016. The CMDS is a nationwide cross-sectional survey on internal migration in mainland China that has been funded and organized annually by the NHCC since 2009. Fieldwork is conducted by local Health Commissions. Each year, about 200,000 migrants are enrolled in the survey across all provinces in mainland China.

The CMDS has covered various topics over the past years, including, but not limited to, employment and social security, public health, marriage and family planning, and health literacy. CMDS data is accessible to researchers through an application. The 2016 CMDS collected information about migrants' children and settlement intention by adopting a stratified multi-stage random sampling method with the probability proportional to size approach when selecting participants in communities. Individuals who met the following criteria were eligible to participate in the CMDS: (i) a resident aged 15 years or older, (ii) who did not have the local hukou, and (iii) had been living in the local community for more than 1 month. Consents were obtained from all participants before they participated in the survey.

Data

This study selected the data of rural migrant parents from the 2016 CMDS according to four criteria: (a) they migrated for employment or business; (b) they had been working in any of the nine cities in the PRD for 1 month or more; (c) they were holders of an agricultural hukou outside of the PRD, and (d) they had at least one child under 18 years old. A sample of 4,247 rural migrant parents from different families was collected. These rural migrant parents came from 26 different provinces, including Guangdong (intra-provincial migrants; Figure 1). None of the participants were from Beijing, Tianjin, Shanghai, Ningxia or Tibet. Macau, Hong Kong, and Taiwan were not included in the survey.

Measurement

Dependent variable-settlement intention

This study used the question, "Do you intend to live in the current city long term, meaning for 5 years or more?" to measure rural migrant parents' settlement intention. There were four possible responses: (1) yes; (2) no, I intend to go back to my hometown; (3) I intend to keep circulating; (4) I have no idea. Following the previous migrants' settlement intention research (e.g., Fan, 2011; Zhu et al., 2012), responses two to four were recorded as "0" for the settlement intention variable in this study to be the reference group of migrant parents who intend to settle in their current cities in the future.

Independent variables

(a) individual sociodemographic characteristics, (b) childcare strategies and split household arrangements, (c) migration duration and distance. The list of individual sociodemographic characteristics included gender, age, education level and individual income in the month preceding the survey.

The number of children, the age and primary caregiver of the youngest child, and the place where the youngest child was born were used to measure childcare strategies. The places where the youngest child and spouse of the respondent were living were used to indicate the split household arrangements of rural migrant parents. The study selected the youngest children to identify participants' childcare strategies and split household arrangements if there were two or more children in the same family to simplify the modeling and calculations.

This study divided the participants into inter-provincial migrants (those with a rural hometown outside Guangdong Province) and intra-provincial migrants (those with a rural hometown not in the PRD but within Guangdong Province). Google Maps was used to calculate the distance between the province where rural migrant parents registered their hukou (their hometown) and their current city in the PRD. As city-level information on rural hometowns was not available, the study estimated that distance for intra-provincial migrants was 300 km. In addition, the number of years a respondent had been a migrant worker (duration as a migrant) and the length of time they had lived in their current PRD city (duration of current migration) were used to measure migration duration.
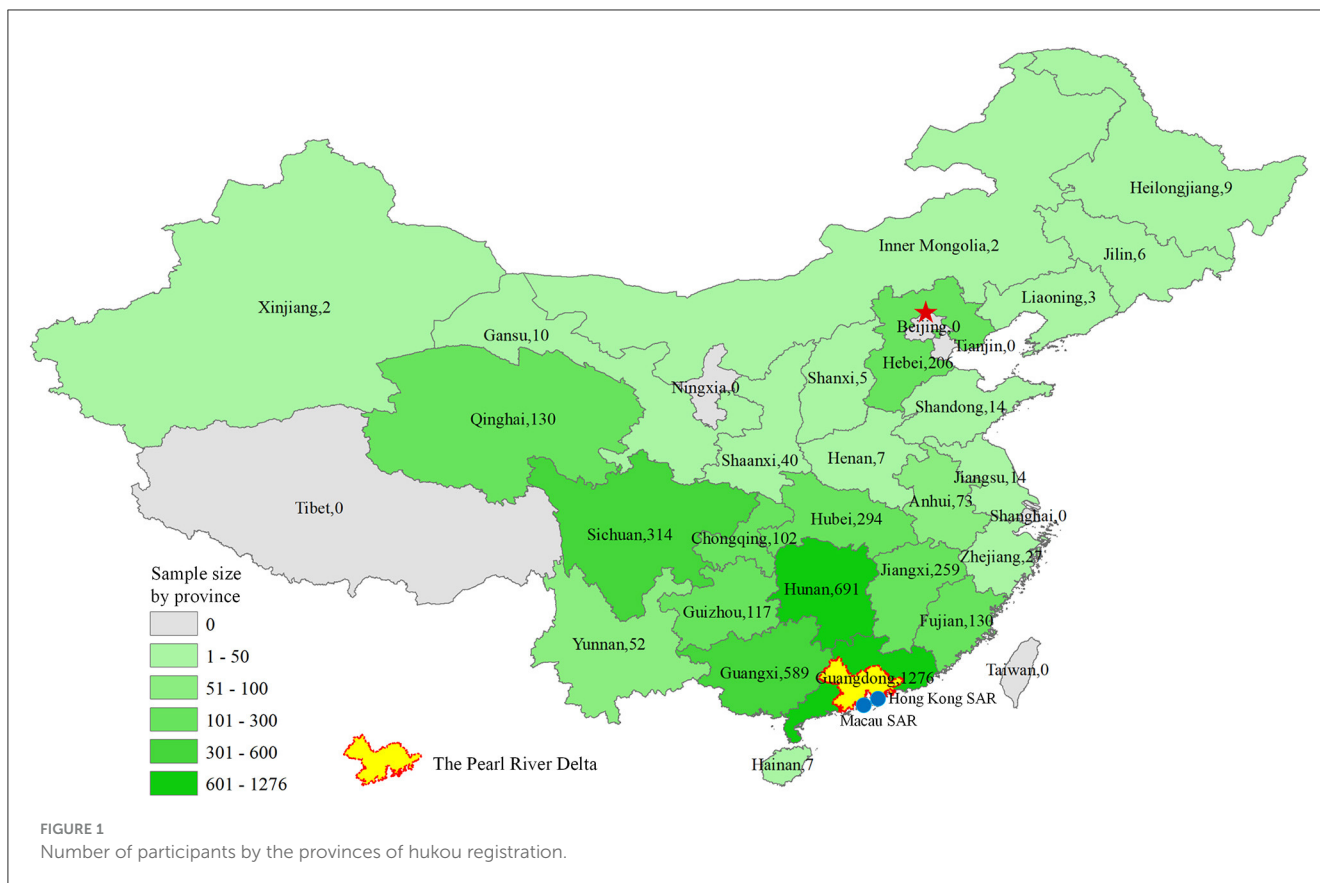
Data analysis

The first phase of analysis was to generate descriptive statistics of the data. The second phase was to examine the percentage of rural migrant parents who intended to settle in their current cities in the PRD. The differences in sociodemographic characteristics, childcare strategies, split household arrangements, and the migration duration and distance between parents who intended to become settlers and those who did not, were also examined. The third phase was to develop multivariate logistic regression models to examine the impact of sociodemographic characteristics, childcare strategies, split household arrangements, and migration duration and distance on rural migrant workers' settlement intention. The models were based on the following conceptual framework:

$$Settlement\ Intention \sim \beta_0 + \beta_1 \times var_1 + \ldots + \beta_n \times var_n$$

where *settlement intention* was the binary measure for rural migrant workers' intention to settle in their current city in the PRD. var_1 to var_n were variables representing three different categories: (a) sociodemographic characteristics; (b) childcare strategies and split household arrangements; and (c) migration duration and distance.

In addition to the three individual logistic regression models (first step) that used different categories of independent variables, one comprehensive logistic regression model (second step) that used all types of variables was also developed to control for the

FIGURE 1
Number of participants by the provinces of hukou registration.

effects of other factors. Adjusted odds ratios (OR) were reported with 95% confidence intervals (CI), and a listwise deletion was performed for missing data in the logistic regression analysis. All analyses were conducted using SPSS software, version 25.0, and two-tailed statistical significance was set at $\alpha = 0.05$.

Findings

Descriptive analysis of the data and rural migrant workers' settlement intention

Slightly fewer rural migrant mothers (44.0%) than fathers (56.0%) were sampled in the study. Most of the participants were young parents (mean = 34.5 years old, SD = 6.5). Over 90% of them had completed education at the senior secondary or lower levels. The mean income for participants over the preceding month was RMB4589 (about USD667 in 2016; Table 1).

Over 40.0% of the migrant parents had only one child at the time of the survey (1,813 out of 4,247, 42.7%), and the mean number of children was 1.67 (SD = 0.67). Around one-third of respondents' children were born in the parents' current PRD city (1,378 out of 4,247, 32.4%). Less than half of the children were mainly taken care of by both parents (1,955 out of 4,247, 46.0%), one third by grandparents (1,420 out of 4,247, 33.4%), 15.8% by mothers (670 out of 4,247, 3.5%), 1.3% by fathers (54 out of 4,247), and 3.5% by others, such as aunts or uncles (148 out of 4,247). Nearly 40.0% of their children were left behind while at least one

parent was working in a PRD city (1,650 out of 4,247, 38.9%). Additionally, 10.0% of respondents' spouses did not live in the same PRD city (split with spouse, 424 out of 4,247).

Seven out of 10 rural migrant parents were inter-provincial migrants (2,971 out of 4,247, 70.0%) while 30.0% were intra-provincial migrants (1,276 out of 4,247). On average, respondents' native provinces were more than 700 km away from their current host PRD cities (mean = 774 km, SD = 496). Respondents had, on average, been migrant workers for around 9 years (mean = 8.75 years, SD = 6.42) and had lived in their current PRD city for more than 5 years (mean = 5.68 years, SD = 5.04).

More than half of rural migrant parents reported an intention to stay in their current cities (2,512 out of 4,247, 59.1%). The difference test results in Table 1 show that the group of rural migrants who intended to become settlers and the group who did not intend to settle were significantly different in all listed independent variables except for age of the youngest child (Table 1).

Impacts of sociodemographic characteristics, childcare strategies, split household arrangements, migration duration and distance

Impact of sociodemographic characteristics

According to the first-step model, gender (mothers or fathers) did not play a significant role in rural migrant

TABLE 1 Descriptive statistics and correlation analysis between settlement intention of rural migrant parents and the independent variables ($N = 4,247$).

Names of independent variables	Total No. (%)/mean (SD)	Intention to settle (no) No. (%)/mean (SD)	Intention to settle (yes) No. (%)/mean (SD)	Difference test[#]
Sociodemographic characteristics				
Gender				
Male	2,378 (56.0%)	927 (39.0%)	1,451 (61.0%)	$\chi^2_{(1)} = 7.820$, $p < 0.01$
Female	1,869 (44.0%)	808 (43.2%)	1,061 (56.8%)	
Age (years)	34.5 (6.5)	33.9 (6.8)	34.9 (6.3)	$t_{(4,245)} = -5.376$, $p < 0.001$
Education				
Primary or below	377 (8.9%)	186 (49.3%)	191 (50.7%)	$\chi^2_{(3)} = 71.299$, $p < 0.001$
Junior secondary	2,382 (56.1%)	1,051 (44.1%)	1,331 (55.9%)	
Senior secondary	1,102 (25.9%)	402 (36.5%)	700 (63.5%)	
Postsecondary	386 (9.1%)	96 (24.9%)	290 (75.1%)	
Income (RMB/month)	4,589 (4,323)	3,827 (2,482)	5,115 (5,184)	$t_{(42,45)} = -9.643$, $p < 0.001$
Log$_{10}$ (income)	3.58 (0.26)	3.53 (0.22)	3.61 (0.28)	$t_{(4,245)} = -10.370$, $p < 0.001$
Childcare strategies and split households				
The number of children	1.67 (0.67)	1.63 (0.64)	1.70 (0.68)	$t_{(4,245)} = -3.542$, $p < 0.001$
The age of the youngest child (years)	5.89 (4.50)	5.73 (4.56)	5.99 (4.46)	$t_{(4,245)} = -1.880$, $p = 0.60$
The place where the youngest child was born				
Not the current city (e.g., rural hometown)	2,869 (67.6%)	1,332 (46.4%)	1,537 (53.6%)	$\chi^2_{(1)} = 113.735$, $p < 0.001$
Current city	1,378 (32.4%)	403 (29.2%)	975 (70.8%)	
Primary caregiver				
Both parents	1,955 (46.0%)	640 (32.7%)	1,315 (67.3%)	$\chi^2_{(4)} = 132.984$, $p < 0.001$
Father	54 (1.3%)	37 (68.5%)	17 (31.5%)	
Mother	670 (15.8%)	268 (40.0%)	402 (60.0%)	
Grandparents	1,420 (33.4%)	726 (51.1%)	694 (48.9%)	
Others	148 (3.5%)	64 (43.2%)	84 (56.8%)	
Split with children				
The youngest child was not living in the current city	1,650 (38.9%)	864 (52.4%)	786 (47.6%)	$\chi^2_{(1)} = 147.974$, $p < 0.001$
The youngest child was living in the current city	2,597 (61.1%)	871 (33.5%)	1,726 (66.5%)	
Split between spouses				
The spouse was not living in the current city	424 (10.0%)	210 (49.5%)	214 (50.5%)	$\chi^2_{(1)} = 14.673$, $p < 0.001$
The spouse was living in the current city	3,823 (90.0%)	1,525 (39.9%)	2,298 (60.1%)	
Migration duration and distance				
Types of migrants				
Intra-provincial	1,276 (30.0%)	387 (30.3%)	889 (69.7%)	$\chi^2_{(1)} = 83.593$, $p < 0.001$
Inter-provincial	2,971 (70.0%)	1,348 (45.4%)	1,623 (54.6%)	
Distance (km)	774 (496)	823 (478)	740 (505)	$t_{(4,245)} = 5.425$, $p < 0.001$
Log$_{10}$ (distance)	2.81 (0.26)	2.85 (0.25)	2.78 (0.27)	$t_{(4,245)} = 7.628$, $p < 0.001$
Duration of current migration (years)	5.68 (5.04)	4.44 (4.26)	6.53 (5.36)	$t_{(4,245)} = -10.288$, $p < 0.001$
Duration as a migrant (years)	8.75 (6.42)	7.54 (5.94)	9.58 (6.60)	$t_{(4,245)} = -13.563$, $p < 0.001$

[#]Chi-square tests were conducted for the categorical variables, including gender, education, the place where the youngest child was born, primary caregiver, the place where the youngest child was living and types of migrants; T-tests were conducted for the continues variables, including age, income, log$_{10}$ (income), the number of children, the age of the youngest child, distance, log$_{10}$ (distance), duration of current migration and duration as a migrant.

parents' future settlement plans [Model 1, OR: 1.065 (95% CI: 0.934, 1.214); Table 2]. Increased age, higher education levels and higher individual economic income had a positive and significant influence on parents' intention to become urban settlers. Specifically, a 1-year increase in age led to an expected increase of 3.9% in settlement intention [Model 1, OR: 1.039 (95% CI: 1.028, 1.049)], while completion of postsecondary education increased the likelihood of settling down in cities by 197.1% [Model 1, OR: 2.971 (95% CI: 2.148, 4.108)]. A one-unit increase of Log_{10} (income) (such as from RMB1,000 to RMB10,000 per month) contributed to a 219.6% greater intention to settle in cities [Model 1, OR:3.196 (95%CI: 2.437, 4.192)].

When comparing the first-step model (Model 1) with the comprehensive model in the second step (Model 4), age was not a significant factor in the comprehensive model. The effects of junior secondary education, senior secondary education and Log_{10} (income) decreased from Model 1 to Model 4. The effect of postsecondary education slightly increased from an OR of 2.971 (95% CI: 2.148, 4.108) in Model 1 to 3.027 (95% CI: 2.135, 4.293) in Model 4.

Impact of childcare strategies and split household arrangements

The number of children [OR: 1.128 (95% CI: 1.023, 1.244)] and age of the youngest child [OR: 1.042 (95% CI: 1.026, 1.058)] had significant and positive influences on rural migrant parents' intention to settle in cities (Model 2, Table 2). The youngest child being cared for by only the father decreased the intention to settle in cities by 74.8% [OR: 0.252 (95% CI: 0.137, 0.462)], while intention to settle in cities decreased by 19.9% when only the mother served as the primary caregiver [OR: 0.801 (95% CI: 0.662, 0.971)]. Moreover, the youngest child being born in the current city increased rural migrant workers' intention to settle by 91.4% [OR: 1.914 (95% CI: 1.643, 2.231)]. If the youngest child was not living in the current city, intention to settle in the current city decreased by 42.1% [OR: 0.579 (95% CI: 0.464, 0.721)].

According to the second-step model (Model 4), the number of children and the age of the youngest child did not have a significant effect on the intention to settle. The effect of "the youngest child was born in the current city" [from OR 1.914 (95% CI: 1.643, 2.231) to 1.478 (95% CI: 1.253, 1.743)], father was the primary caregiver [from OR 0.252 (95% CI: 0.137, 0.462) to 0.261 (95% CI: 0.138, 0.494)] and split between children and parents [from OR 0.579 (95% CI: 0.464, 0.721) to 0.648 (95% CI: 0.515, 0.815)] was decreased while controlling sociodemographic characteristics, migration duration and distance. Meanwhile, the negative effect of having the mother as the primary caregiver increased from an OR of 0.801 (95% CI: 0.662, 0.971) to 0.787 (95% CI: 0.643, 0.964). In both Model 2 and Model 4, grandparents were the primary caregivers, and splits between spouses were not significantly associated with rural migrant workers' settlement intention.

Impact of migration duration and distance

According to Model 3, inter-provincial migrant parents had a 45.0% lower intention to become urban settlers [OR: 0.550 (95% CI: 0.431, 0.702)] than intra-provincial migrant parents. Meanwhile, both the duration of current migration [OR: 1.081 (95% CI: 1.063, 1.099)] and duration as a migrant [OR: 1.018 (95% CI: 1.006, 1.031)] were positively associated with rural migrant parents' intention to settle in cities.

When considering the influence of sociodemographic characteristics, childcare strategies and split household arrangements (Model 4), the effect of duration as a migrant increased slightly [from an OR of 1.018 (95% CI: 1.006, 1.031) to 1.020 (95% CI: 1.007, 1.034)]. Conversely, there were decreases in the effects of inter-provincial migrants [from OR 0.550 (95% CI: 0.431, 0.702) to 0.597 (95% CI: 0.464, 0.769)] and duration of current migration [from OR 1.081 (95% CI: 1.063, 1.099) to 1.061 (95% CI: 1.042, 1.081)]. In both Model 3 and Model 4, geographic distance was not significantly associated with rural migrant parents' settlement intention.

Discussion

Rural migrant parents' intention to become urban settlers

Chinese rural migrant workers form the largest migration flow in the world. They have contributed tremendously to the rapid urban growth that is reshaping the demographic, economic, social and cultural landscapes in urban and rural China (Wang, 2005; Chan and Buckingham, 2008; Fan, 2008; Shen, 2013). Traditionally, a high proportion of rural migrant workers worked in the foreign investment-backed, export-led and labor-intensive manufacturing companies. However, similar to the increases in gig labor seen in many countries (including in the United States and Europe) (De Stefano, 2015; Wells et al., 2020), an increasing number of rural migrants are involved in the gig economy in China. The average gig worker supply and demand increased 25% in China which might be caused by the increasing online shopping and food delivery during the COVID-19 pandemic (Cao et al., 2022). However, migrants are still highly mobile and receive few benefits.

The migrant parents who participated in the survey left their rural hometowns and worked in cities an average of more than 700 km away. These parents had been migrant workers for an average of around 8 years and regularly circulated between their rural hometowns and the cities. They had generally lived in their current PRD host city for more than 5 years. Around 40% of their children were left behind in their rural hometowns. Previous research has found that only a small proportion of rural migrant workers (including participants at all family life cycle stages) have the intention of settling in cities (e.g., Fan, 2011; Zhu et al., 2012). However, when focusing on the group of rural migrant parents with children below 18 years old, this study found that more than half intended to settle in the host cities in the PRD (59.1%). This was especially true for intra-provincial migrants who had obtained higher education and higher incomes, had worked as migrant

TABLE 2 Regression of rural migrant parents' intention to settle in the current PRD city ($N = 4,247$).

Names of independent variables	First-step			Second-step
	Model 1	Model 2	Model 3	Model 4
Sociodemographic characteristics				
Female (Ref. male)	1.065 (0.934, 1.214) $p = 0.348$			1.103 (0.956, 1.272) $p = 0.179$
Age (years)	**1.039 (1.028, 1.049) $p < 0.001$**			1.008 (0.992, 1.024) $p = 0.338$
Education (Ref. primary or below)				
Junior secondary	**1.355 (1.080, 1.700) $p < 0.001$**			**1.304 (1.024, 1.661) $p < 0.05$**
Senior secondary	**1.866 (1.451, 2.399) $p < 0.001$**			**1.841 (1.407, 2.410) $p < 0.001$**
Postsecondary	**2.971 (2.148, 4.108) $p < 0.001$**			**3.027 (2.135, 4.293) $p < 0.001$**
Log_{10} (income)	**3.196 (2.437, 4.192) $p < 0.001$**			**2.971 (2.234, 3.950) $p < 0.001$**
Childcare strategies and split households				
The number of children		**1.128 (1.023, 1.244) $p < 0.05$**		1.092 (0.975, 1.224) $p = 0.129$
The age of the youngest child (years)		**1.042 (1.026, 1.058) $p < 0.001$**		1.020 (0.997, 1.044) $p = 0.092$
The youngest child was born in the current city (Ref. no)		**1.914 (1.643, 2.231) $p < 0.001$**		**1.478 (1.253, 1.743) $p < 0.001$**
Primary caregiver (Ref. both parents)				
Father		**0.252 (0.137, 0.462) $p < 0.001$**		**0.261 (0.138, 0.494) $p < 0.001$**
Mother		**0.801 (0.662, 0.971) $p < 0.05$**		**0.787 (0.643, 0.964) $p < 0.05$**
Grandparents		0.804 (0.645, 1.002) $p = 0.052$		0.826 (0.656, 1.040) $p = 0.104$
Others		0.815 (0.566, 1.174) $p = 0.272$		0.832 (0.570, 1.216) $p = 0.342$
Split between children and parents (Ref. no)		**0.579 (0.464, 0.721) $p < 0.001$**		**0.648 (0.515, 0.815) $p < 0.001$**
Split between spouses (Ref. no)		1.186 (0.932, 1.510) $p = 0.166$		1.002 (0.778, 1.291) $p = 0.988$
Migration duration and distance				
Inter-provincial migrants (Ref. Intra-provincial)			**0.550 (0.431, 0.702) $p < 0.001$**	**0.597 (0.464, 0.769) $p < 0.001$**
Log_{10} (distance)			0.951 (0.627, 1.442) $p = 0.813$	0.901 (0.584, 1.391) $p = 0.639$
Duration of current migration (years)			**1.081 (1.063, 1.099) $p < 0.001$**	**1.061 (1.042, 1.081) $p < 0.001$**
Duration as a migrant (years)			**1.018 (1.006, 1.031) $p < 0.01$**	**1.020 (1.007, 1.034) $p < 0.01$**

The bold values in the table are significant variables in the regression models.

workers for longer and whose children had migrated with them to cities.

Contextual factors influencing rural migrant parents' settlement intention

One potential reason for rural migrant parents' higher intention to become urban settlers than the overall migrant population may be that parents want to retain their employment in cities while providing hands-on parenting for their children. It can be difficult for substitute caregivers to maintain authority over the left-behind children of migrant parents, especially during adolescence (Dreby, 2007). In China, Fan (2008, p. 92) found that grandparents are good caregivers for preschool-age children, but older left-behind children need more direct supervision from their parents. A growing body of research has indicated that having parents who migrate has a significant and negative impact on the development

of left-behind children in rural China, especially in terms of school engagement (Wen and Lin, 2012), academic outcomes (Li et al., 2017; Liu et al., 2018), subjective wellbeing (Chai et al., 2019) and mental health (Zhang et al., 2019). Many rural parents therefore choose to reunite with their children in cities in order to provide direct and intensive parental care.

Among rural migrant parents, individuals with higher levels of education and higher individual incomes indicated higher levels of intention to become urban settlers, which was consistent with previous findings (e.g., Fan, 2011; Chen and Liu, 2016). When surveyed rural migrant parents rated their intention to become settlers in cities, they might have not considered the affordability and feasibility of the settlement. It is still insurmountable for the unskilled and low-income rural migrants to become settlers especially in the "super first-tier" cities in China, such as Beijing and Shanghai.

This study also found that a longer migration duration had a significant and positive effect on rural migrant parents' intention to become settlers in cities. When parents have been migrant workers in the PRD for extended periods of time, they may have accumulated more financial assets to facilitate family reunions in cities, collected information about schooling for children and integrated more into the local communities. Geographical distance was found to be crucial in migrant selection (Bogue and Thompson, 1949). Usually, migration flows decline with distance because social or physical costs increase and knowledge decreases as distance from the community of origin increases (Stillwell et al., 2016). However, the findings of this study did not find that geographic distance had a significant effect on rural migrant parents' intention to settle in the host cities.

Institutional factors on rural migrant workers' settlement intention

In addition to the above contextual factors, which include sociodemographic characteristics and migration duration and distance, macro factors that structure and institutionalize rural migrant parents' intention to become urban settlers must be discussed. Previous research has argued that by splitting their households and circulating between rural hometowns and cities, rural migrant workers can maximize household income by working in cities while maintaining their rural resources (Fan, 2011). In the study of rural migrant parents in the PRD, the split household arrangements also have a significant influence on their settlement intention, especially when the split occurs between parents and children. It's found that rural migrant workers whose household members, especially children, were living in the host communities with them had the strongest intention to settle permanently (70.8%). However, possible endogeneity bias cannot be ignored when discussing the relationship between split household arrangements and migrants' settlement intention since whether children are living in the current city may be included as one step of their settlement plan. Becoming settlers in cities have become an crucial to the educational pursuits of children and adolescents (Valentine et al., 2017). According to a study of internal migrants in Ecuador, migrants who had settled in cities for extended periods of time still considered cities as only temporary

locations where they lived to build a better future for their children (Lawson, 1999). In China, there are still large disparities between urban and rural areas, especially in early childhood education (Hong et al., 2015) and primary compulsory education (Rao and Ye, 2016). In addition to education, the distribution of civil facilities, such as libraries, sports centers, museums and cinemas, as well as cities' urban culture, may influence rural parents to settle in cities so that their children have better education and access to resources. It is therefore easy to understand even for more than half of rural migrant parents whose children are left behind in rural area reported a strong intention to settle permanently (53.6%). This group of migrants wanted to retain their existing parenting structures and school education for their children while maintaining employment in cities.

Instead of geographic distance, a strong correlation between the administrative borders and rural migrant workers' settlement intention was found in the case study in the PRD. Intra-provincial rural migrant parents were more likely to stay in their current host cities than inter-provincial parents. This could be explained from both a cultural perspective, similarity in custom and languages creates a sense of belonging, but also from an institutional perspective as intra-provincial and inter-provincial migrants encounter different difficulties when they try to settle. For example, student fees, tuition and textbooks fees are waived for intra-provincial migrant children in Guangdong Province if their parents have stable employment and have lived in the host cities for 5 years or more, but the inter-provincial migrant children are not granted these benefits (DOEG, 2009). This might be caused by the province-based financial expenditures for compulsory education. Changing education policies may affect parents' intention to settle in the future, as inter-provincial migrant parents may increase their intention to become urban settlers if their children are given same benefits as the children of intra-provincial migrant parents.

Limitations and future studies

This study examined rural migrant parents' settlement intention using statistical analysis of data collected from the PRD. The statistical analysis creates a picture of the settlement intention of rural migrant parents and the determining factors of this intention. However, there are some limitations to the study. First, the survey design yielded only cross-sectional data. Cross-sectional data does not allow for the examination of causal relationships between settlement intention and the independent variables. Future studies should therefore replicate this study using longitudinal designs to gain a better understanding of the settlement intention of rural migrant parents over time. Second, this study only examined the childcare characteristics of the youngest child, including his/her age, birthplace, primary caregiver and current living location. However, other children if there are any, may also influence parents' decisions. There may be different effects on parents' settlement intention if one child is living in cities and another is in rural area. More factors should be discussed in the study of rural migrant workers' settlement intention, such as the employment and occupations of rural migrants (Chen and Wang, 2019). Third, the measurement of settlement intention adopted a binary approach (settle in cities or not). However, many rural

migrants may have not considered this type of question before the survey, and their responses to settlement intention may not be as discrete. The measurement of settlement intention can be expanded by including settlement location (rural or urban), plan (current city or rural hometown) and intention for hukou migration. It is important to understand that many of the migrants' responses are only meaningful when they are properly contextualized, especially in reference to the structural constraints they face. The changing structural constraints may also cause the changes of their settlement intention. Therefore, more contextualized and more deeply probing qualitative studies are needed to further examine rural migrant workers' settlement intention.

Conclusions

An increase in circular and temporary population movements has been reported in both international and domestic migration. Migrants' decisions to settle or return have profound impacts on the local population, economy, labor market and social development, especially regarding migrant parents with children under 18 years old. By examining rural migrant parents' settlement intention with a focus on associated factors such as childcare strategies, split household arrangements and migration duration and distance, this study provides insights into the urbanization process in China. In addition to increasing individual economic incomes, reducing differences in treatment caused by provincial administrative borders, encouraging rural migrant mothers to give birth in cities, providing urban social services for migrant families, especially for children, and encouraging family reunions in cities can increase rural migrant parents' intention to settle permanently in cities. The city government is encouraged to adopt these policies to maintain and/or increase the local population size in the contest of low birth rate. Further longitudinal investigation and in-depth study into rural migrant parents' settlement patterns is necessary to improve understanding of childcare strategies, split households, migration duration and distance, and settlement decisions.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

CG: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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