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Devaluation of female work participation with urbanization: a case of peri-urban Ahmedabad

Ankit Sikarwar · Aparajita Chattopadhyay · Ajit Kumar Jaiswal · Ritu Rani

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Abstract Urban expansion of the Indian metropolitan cities has reached the rural peripheries. There have been social, economic, and environmental consequences of this process of peri-urbanization on villages surrounding the big cities. In such situations, it becomes crucial to understand whether the peri-urban areas present opportunities for women emerging out of the processes of development or they expose rural women to previously unavailable challenges or not observed in other regions. This study analyses Female Work Participation (FWP) with related parameters in 712 villages surrounding the Ahmedabad city of Gujarat state. The analysis is based on village-level secondary data derived from the Office of the Registrar General, Census of India for 2001 and 2011. FWP is calculated using the standard formula provided by the Census of India. For the graphical presentation and urban proximity analysis, a geospatial mapping of all villages is performed with the help of Geographic Information System. To understand the association of urban proximity and other covariates with FWP, Ordinary Least Square regression is applied for 2001 and 2011. FWP reached 23 percent in 2011 from 38 percent in 2001. FWP has an inverse relationship with urban proximity, which means as the

distance from the main city increases, there is an increase in FWP of villages. More than 40 percent of women are still working as marginal workers. Moreover, within the main worker category, a huge proportion of female is engaged as agricultural laborers. The findings suggest a pressing need for women-centric policies in the region.

Keywords Female work participation · Peri-urbanization · Ahmedabad · India

Introduction

Urbanization is a complex process of change of rural lifestyles into urban ones. It has shown almost exponential growth since the end of the nineteenth century (Champion 2001; Pacione 2001; Antrop 2000; Bryant et al. 1982). A large part of this urban population lives in peri-urban regions. Thus the question of how to manage peri-urbanization has become one of the critical issues in spatial planning and sustainable urban development in the twenty-first century (Watson 2009). Over the first half of the twentieth century, the growth in Indian cities remained primarily confined within municipal boundaries (Brush 1968). The growth of industrialization in association with the development of transport and communication system is adding a new dimension to this initial pattern of urbanization, particularly after

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the economic liberalization in the 1990s. As a result of this, not only the cities are changing markedly both in population and area, but their influence on the neighboring areas is also becoming more and more pronounced (Hareedy and Deguchi 2010). The impact of the city's growth is changing the rural lifestyle and environment in many directions (Smith and Krannich 2009). This outward growth is not only changing the spatial aspects of the villages but also the daily life of the people; their social and economic spheres are also transforming very drastically. The villages are exposed to many challenges amid transformations triggered due to peri-urbanization.

The rapid change in land use characteristics of peri-urban regions has gained worldwide attention of land-use scientists and urban planners in the last few years (Tavares et al. 2012; Nilsson et al. 2013; Appiah et al. 2014; Tian et al. 2017). Apart from the land-use change, the peri-urban region is also characterized by social and institutional alteration. Socially, suburban areas are dynamic, wherein social forms are constantly created, modified, and discarded (Iaquinta and Drescher 2000). The social challenges are crucial to be studied and analyzed for the overall development of the rural–urban fringe region.

Deteriorated female work participation (FWP) is one of the social and economic challenges which remains unaddressed among the multidimensional challenges faced by the peri-urban villages, particularly in developing countries. The sharp decline in female employment has raised concerns among policy-makers regarding gender equality, women empowerment, and their livelihood strategies. Women's employment is a critical factor in their economic empowerment and their overall status in society (Mehrotra et al. 2013). Moreover, India's experience does not demonstrate a clear connection between such urban-centric growth and, at least, women's work (Sen 2016). Despite better economic growth of the country after the liberalization, the figures of women work participation are disappointing (Lahoti and Swaminathan 2016; Chandrasekhar & Ghosh 2013; Abraham 2013). Even though the share of agriculture in gross value added (GVA) has declined to 13.7 percent of gross domestic product (GDP) during 2011–12, about half of the workforce (49 percent) is still dependent on agriculture for their livelihood (Dev 2018). Out of 131 countries, India ranks 11th from the bottom in female labour force

participation (ILO 2013). India ranks 123rd in gender gaps in economic participation and opportunity, and gaps in labour force participation rates for males and females, 121st in gender gaps in educational attainment, and the worst, rank 135th in differences between women's and men's health (WEF 2012). In terms of women's employment, gender equality, and overall women empowerment, India has not yet performed up to the mark when compared to many other developing countries.

In such situations, when more than 60 percent of the total population of the country is rural, it becomes crucial to assess the conditions of FWP at the village level. This study aims to analyze FWP in the peri-urban villages surrounding Ahmedabad city situated in Gujarat. An assessment of FWP and other women related parameters is made for 712 villages for the years 2001 and 2011. Moreover, to understand FWP in detail, various occupation types have been studied with respect to the distance of a village from the city.

Literature review

In the present time, research focus on women is confined not only to a single dimension of women empowerment, but on the multifaceted development of women. Among various aspects of women's wellbeing, work participation is considered a pivotal factor that can uplift their status in the society (Kantor 2003; Mahata et al. 2017). In India, female work participation (FWP) at local and national levels are linked to various factors like economic growth and urbanization (Kumari and Pandey 2012; Thomas 2012; Lahoti and Swaminathan 2016; Sen 2017; Mitra 2019), female education (Reddy 1979; Kingdon and Unni 2001; Srivastava and Srivastava 2010; Nagaich and Sharma 2014), family size (Eapen 1992; Dev 2004), etc.

The interrelation between FWP and urbanization is complex. Initially many of the researchers have found that economic growth and urbanization are strong determinants of FWP (King 1978; Agarwal 1985; Mathur 1994). These propositions were based on the 'U'- shaped hypothesis of Goldin (1994). Goldin (1994) analysing cross-sectional data for more than 100 countries found that female labour force participation exhibits a 'U' shaped relationship with economic development. It is observed that with the

development process, the economy shifts from low-productive agricultural type to industrial and service type; as women were engaging in agriculture it is likely that FWP is expected to fall. But with structural changes, rising education levels, decline in fertility rates, female economic activity increases with development (Gaddis and Klasen 2014).

The validity of the 'U' shaped relationship between FWP and economic growth in the Indian context was examined by a few researchers. Das and Desai (2003) have stated that the female labour force in India has not experienced feminization like other Southeast Asian countries, for several decades; they remained at the bottom of the U-shape despite substantial growth in GDP. Using the state-level panel data Lahoti and Swaminathan (2016) studied the relationship between economic development and FWP. They found that the continuously declining FWP rates in India do not show any sign of upturn with higher growth. Moreover, FWP rates have fallen consistently for the last quarter of a century in India, and at the same time the growth figures of the economy saw a respectable performance (Abraham 2013; Sen 2016). Thus, in India, the rising economic growth and FWP status is a paradox. FWP in India is influenced by several other factors such as reproductive roles, education level and existing social, religious and cultural norms of the society (Srivastava and Srivastava 2010; Klasen and Pieters 2015; Chatterjee et al. 2018). The association of FWP with some developmental indicators like child nutrition or health is a puzzle in India. Higher work participation leads to poorer child health (Sinha and Chattopadhyay 2017). Similar is the case with many other health indices. This has led us to explore the dynamics of FWP mainly to understand who works, what kind of work are they do and how far they are linked to urbanization process.

The literature suggests that most of the studies related to FWP in India have tried to explore the rural and urban differentials in FWP rates. The studies mainly confined to state and district levels and to major cities. Also, the spatial dimension related to FWP is ignored by the majority of the researches. Thus in this paper, an unexplored aspect of FWP in peri-urban space is studied. The peri-urban space is an amalgamation of urban and rural economy and lifestyle and thus can reveal the transitional landscape of FWP. Also analyzing the FWP rates at the village level will give more constructive insights related to

this complex yet very important phenomenon to fill the gap in the existing literature.

Study area

Gujarat is considered as one of most developed states of India due to its pro-industrial and developmental activities during last few decades. However, when it comes to women's status and employment, the statistics reveal some shocking facts. In terms of women workforce, the state ranks only 17th among 35 states and union territories. Moreover, 6.3 million women belong to socially deprived groups among 30 million women in Gujarat, wherein most are scheduled tribes in rural areas (INDIA 2011). The rationale behind the selection of the peri-urban region of Ahmedabad for this study can be described by various arguments. First, in Gujarat, women related indicators (Sex Ratio, Child Sex Ratio, Female Literacy, FWP rate, etc.) does not support the overall women empowerment and the situation is critical not only in rural areas but also in the urban centers. Second, in Gujarat, due to the rapid developmental activities and industrialization the peri-urban space is experiencing multilayered changes. These changes may affect the FWP significantly.

In light of the above-mentioned points, this study focuses on 712 villages surrounding the Ahmedabad metropolitan city in Gujarat. Ahmedabad is the largest in Gujarat and the seventh-largest city of India in terms of the total population. As presented in Fig. 1, these villages are classified into three proximity zones ((a) below 30 km, (b) 30–45 km, and (c) beyond 45 km) according to their distance from the main city (Ahmedabad). A list of the number of villages from each district/sub-district is mentioned in Table 1. There are 24 towns within the study area in 2011, which were even less in the previous decade, and thus these towns are termed as villages throughout the paper for simplicity.

Data sources

This study is based on secondary data derived from Primary Census Abstract—Gujarat, 2001, and 2011 published by the Office of the Registrar General, Census of India. The indicators related with FWP such

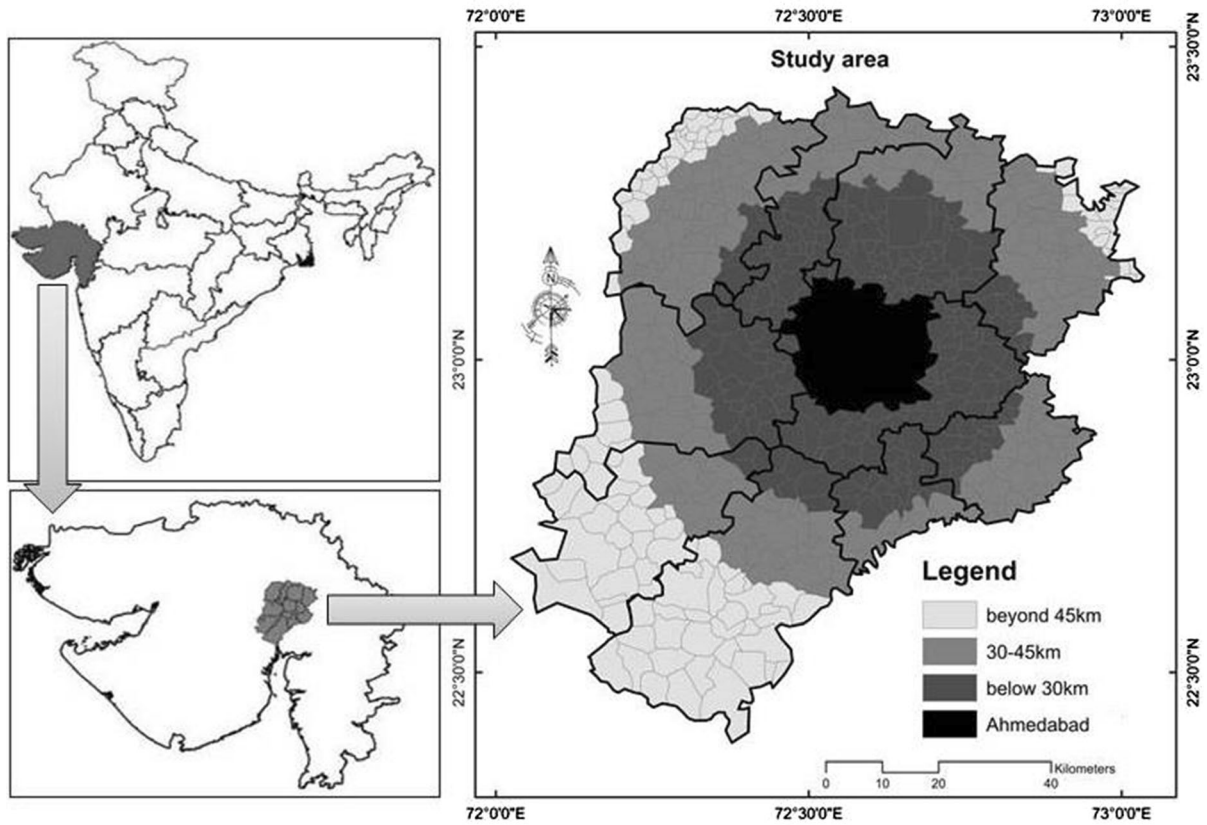


Fig. 1 Location map of the peri-urban villages surrounding Ahmedabad city selected for the study and proximity zones

Table 1 Classification of selected villages/towns according to districts and sub-districts

District	Sr.no	Sub-district	No. of villages	No. of towns
Ahmedabad	1	Daskroi	60	4
	2	Sanand	65	1
	3	Balva	47	1
	4	Dolka	70	1
Gandhinagar	5	Gandhinagar	69	7
	6	Dahegam	92	1
	7	Kalol	62	6
Kheda	8	Kheda	40	1
	9	Mehmedabad	64	1
Mahesana	10	Kadi	119	1
		Total	688	24

Source: Authors (classified from Primary Census Abstract, 2011)

as total population, number of households, child (0–6 years) population, female population, female literacy, female worker, female non-worker, main female worker, marginal female worker, and female workers by occupation types are studied at the village

level. Later these indicators are standardized for statistical analysis.

Methodology

Geospatial mapping of villages

Geospatial mapping of 712 peri-urban villages is done using village/town boundaries from District Census Handbook as a base map to generate study area shapefile. The village boundaries of understudy areas were digitized using UTM Zone 44-North projection in ArcMap 10.3. To study the urban proximity effect, these villages are classified into three groups (a. below 30 km, b. 30–45 km and, c. beyond 45 km) according to their distance from the Ahmedabad city. This shapefile of 712 villages is used for various geospatial analyses.

Operational definitions of different work types

To understand the FWP in the selected peri-urban villages, various work participation types are taken into consideration. The census definitions of various working categories are mentioned here.

(a) *Female Work Participation Rate (FWPR)*:

$$FWPR = \left(\frac{\text{Total female workers}}{\text{Total female population}} \right) * 100$$

- (b) *Main Female Workers*: Female workers who worked for more than six months (180 days) in the reference period are termed as Main Female Workers.
- (c) *Marginal female workers*: Female workers who worked for less than six months (180 days) in the reference period are termed as Marginal Female Workers.
- (d) *Cultivators*: A person is classified as cultivator if he or she is engaged in the cultivation of land owned or held from Government or held from private persons or institutions for payment in money, kind, or share. Cultivation includes effective supervision or direction in cultivation.
- (e) *Agricultural labourers*: A person who works on another person's land for wages in money or kind or share is regarded as an agricultural labourer.
- (f) *Household industry workers*: Household Industry is defined as an industry conducted by one or more members of the household at home or within the village in rural areas and only within

the precincts of the house where the household lives in urban areas.

- (g) *Other workers*: Workers other than cultivators, agricultural labourers or workers in Household Industry, as defined above, are termed as 'Other Workers'.

Statistical analysis

As a multivariate analysis, the ordinary least square (OLS) regression model is conducted to estimate the vector of regression coefficients. In other words, to examine the effects of covariates on the outcome variables considered in the study. The analysis determined with 95% confidence interval (CI) and also estimates adjusted by other predictors.

Results

Female work participation rate (FWPR) in peri-urban villages

Figure 2 and Fig. 3 show the Female Work Participation Rates (FWPR) in 712 villages surrounding Ahmedabad metropolitan city in Gujarat for 2001 and 2011, respectively. The average FWPR of all villages understudy was 38 percent in 2001, which has declined to 23 percent in 2011 (Table 1). In 2001 only six percent of the total villages showed FWPR above 60 percent, whereas maximum villages (more than 60 percent) fall in the category of 30 and 60 percent. Around 31 percent of villages had FWPR below 30. In 2011 the FWPR declined significantly across the study area. In 2011, around 70 percent of villages showed FWPR below 30 percent, which is a remarkable reduction (31 percent in 2001 to 70 percent in 2011) in ten years. Only four percent of the villages have accounted for FWPR above 60, and rest 26 percent of villages have FWPR between 30 and 60 percent.

Female workers are classified into two categories—(i) main worker, and (ii) marginal worker. These categories of workers are based on the time duration of work, following Census. In 2001, among the working women, 59 percent were the main workers, and 41 percent were marginal workers (Table 2). After ten years, in 2011, these figures have not improved

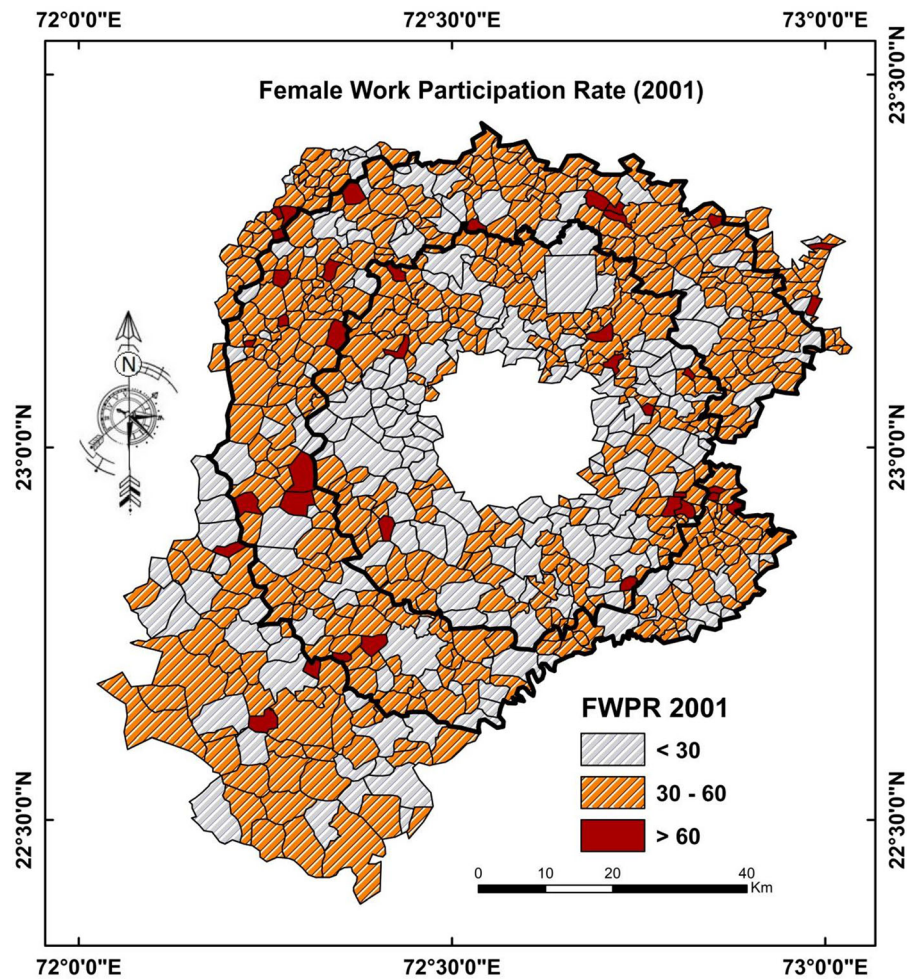


Fig. 2 Female work participation rate (FWPR) in peri-urban villages around Ahmedabad (2001)

significantly. Only two percent of the increase was found in main workers from 2001 to 2011.

The Census of India categorizes main workers into four broad groups of occupation as (i) Cultivators, (ii) Agricultural labourers, (iii) Household industry workers, and (iv) Other workers. From Fig. 4, it is clear that from 2001 to 2011, there has been a noticeable change in the proportions of main female workers. During this period, the percent share of cultivators has increased very slightly as compared to the increase in the share of agricultural labourers. It is found that the proportion of other workers has decreased from 58 percent of 39 percent from 2001 to 2011 (Table 2).

Urban proximity and changing patterns of FWPR

To understand the influence of urban proximity on female work participation, the FWPR is calculated for three proximity zones. Villages are classified into three groups as per the distance from the Ahmedabad city boundary. Figure 5 and Table 2 show that villages that are far away (above 45 km) from the city have higher FWPR as compared to the zone which is nearer to the city (below 30 km). It should be noted that in 2001 the difference between FWPR by proximity zones was lesser (34 in villages below 30 km and 40 in villages above 45 km) than the difference observed in 2011 (18 in villages below 30 km and 27 in villages above 45 km). This shows the worsening situation

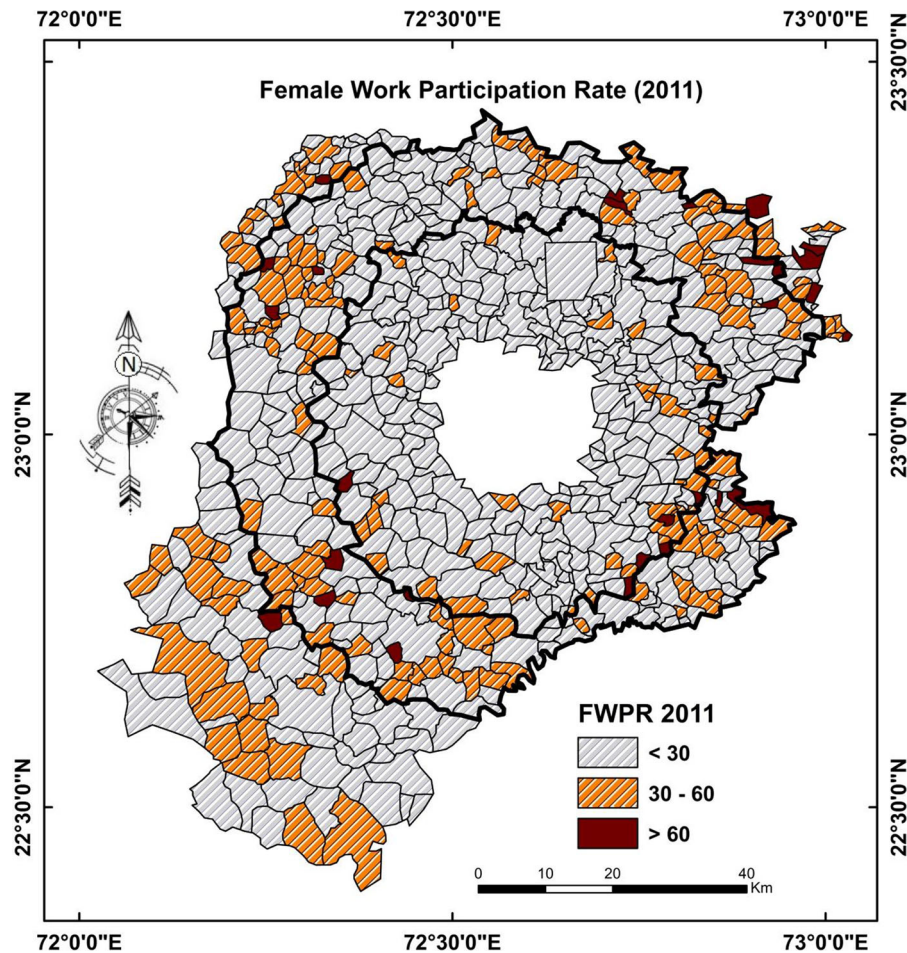


Fig. 3 Female work participation rate (FWPR) in peri-urban villages around Ahmedabad (2011)

over time across region, and more for villages which are nearer to the city.

Table 2 shows the dynamics of main and marginal female workers in three proximity zones. It is found that the proportion of main workers was higher than the proportion of marginal workers for villages within 45 km distance from the city, and there is no significant change from 2001 to 2011. A remarkable difference is found in the villages which are at a distance of 45 km and above where the proportion of main workers has increased (48 percent in 2001 to 52 percent in 2011), and the proportion of marginal workers has declined sharply (64 percent in 2001 to 36 percent in 2011).

The proximity zones have also experienced changes within the main worker, subgroups. As indicated in Fig. 6 and Fig. 7, as the distance increased

from the city, the villages have experienced an increase in the proportion of agricultural labourers and a decrease in the proportion of other workers. It is also found that the proportion of agricultural labourers has increased over time (from 2001 to 2011) and subsequently the proportion of other workers has reduced.

Association of urban proximity and related demographic covariates with FWP

Table 3 explains the effect of urban proximity (distance from the city) with selected demographic factors on proportion of main and marginal female worker, and FWR. The result of this table is split into two major division viz. regression outcomes in 2001 and 2011, respectively. Focusing first on urban

Table 2 Dynamics of female work participation in peri-urban villages by proximity zones in 2001 and 2011

Indicators of female work	Average for all villages	Average for villages by proximity zones		
		Below 30 km	30–45 km	Beyond 45 km
FWPR 2001	38	34	40	40
FWPR 2011	23	18	27	27
MW 2001 (%)	59	63	61	48
MW 2011 (%)	61	62	58	64
MRGW 2001 (%)	41	37	39	52
MRGW 2011 (%)	39	38	42	36
Cult 2001 (%)	10	8	9	14
Cult 2011 (%)	13	13	13	13
AGRL 2001 (%)	31	28	31	37
AGRL 2011 (%)	47	41	48	55
MFHH 2001 (%)	1	2	1	1
MFHH 2011 (%)	1	2	1	1
OW 2001 (%)	58	62	58	46
OW 2011 (%)	39	44	37	32

FWPR Female work participation rate, MW Main worker, MRGW Marginal worker, Cult Cultivators, AGRL Agricultural labourer, MFHH Manufacturers in household industries, OW Other worker

Source: Calculated by authors from Census of India 2001; 2011

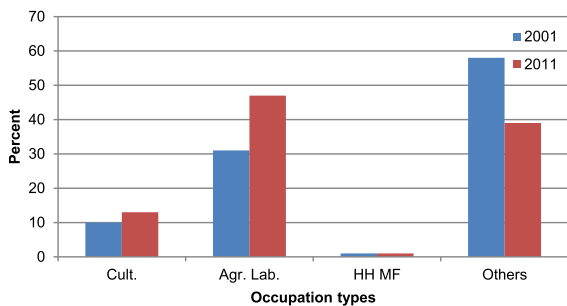


Fig. 4 Proportion of main female workers in different occupational categories (Cult: Cultivators, Agr. Lab: Agricultural labourers, HH MF: Manufacturing in household industry)

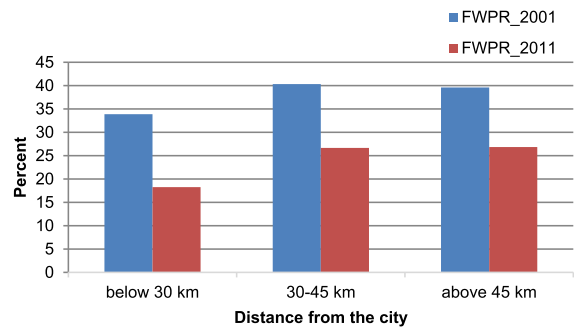


Fig. 5 Average FWPR in three proximity zones during 2001 and 2011

proximity, the association with work participation is statistically significant ($p < 0.001$) in both 2001 and 2011. In 2001, it is observed that decrease in urban proximity i.e. from 30–45 km ($\beta = 6.021, p < 0.001$) to 45 km and above ($\beta = 4.119, p < 0.001$) leads to increase in work participation rate, controlling for other factors. The results were in similar line for 2011 as well, with slight change in values. In this analysis, literacy is found to be negatively associated with work participation in 2001 ($\beta = -0.254, p < 0.001$) as well as in 2011 ($\beta = -0.184, p < 0.001$). However,

no significant association is observed between work participation and household size, child- sex ratio and 0–6 year population.

Proportion of main female workers to total female workers was found strongly associated with urban proximity for year 2011. The share of main female workers increases sharply with the decrease in urban proximity of villages in the range of 30–45 km ($\beta = 3.932, p < 0.001$) and 45 and above km ($\beta = 4.729, p < 0.001$). In addition to this, in 2011, the household size is also negatively associated with

Fig. 6 Share of main female workers in different occupational categories according to the proximity zones during 2001

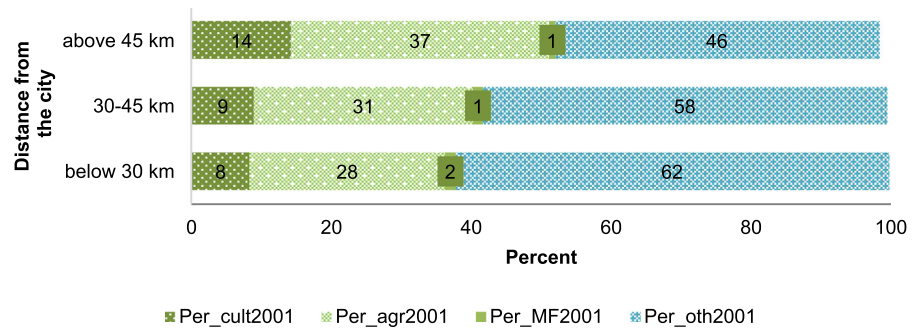
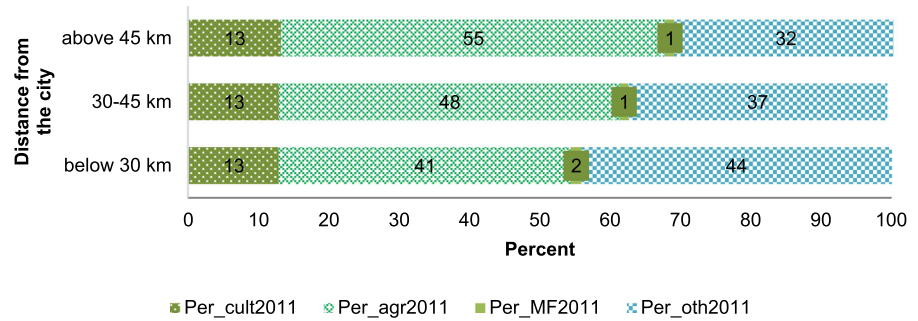


Fig. 7 Share of main female workers in different occupational categories according to the proximity zones during 2011



the share of main female workers ($\beta = -3.243$, $p < 0.001$). Moreover, no significant association is obtained between main workers and other variables in 2001.

Furthermore, in 2001 the relationship between share of marginal female workers and urban proximity was significantly strong. The analysis found, that the share of marginal female workers exhibits an increasing pattern with the decline in urban proximity. In addition to this, similar association is found in 2011, but significant value is observed in the proximity range of 30–45 km only ($\beta = 3.261$, $p < 0.001$). Female literacy rate is negatively associated with the marginal work participation in both the years of census 2001 ($\beta = -0.248$, $p < 0.001$) and 2011 ($\beta = -0.131$, $p < 0.001$).

Discussion

This study attempts to analyze the dynamics of FWP and other related factors under the influence of urban proximity. Using the geospatial maps and regression model, the results show remarkable changes in FWP and its significant association with urban proximity and other covariates.

FWP, in 2001, was recorded very low as only 38 percent of the total females were working in the studied villages. These stats became more challenging when FWPR lowered to 23 percent in 2011 (Table 2). This sharp decline in the FWP shows one of the most critical challenges in front of women empowerment in these rural parts of Gujarat. Though these villages surround the biggest city of the state and one of the most prominent industrial regions of the country, the scenario of FWPR in this region is still far below the state’s average FWPR that is already very low (28 percent in 2011). There are multiple cause factors behind this decline as described by various scholars. The observed stubby female work participation is suggested to be due to cultural attitudes and social norms about women in the workplace (ILO 2013). Looking at the duration of work, the study found that for both the time (2001 and 2011), around 60 percent of females were working as main workers and the rest of as marginal workers. This indicates an unrestored condition of improvement in FWP. This might be possible due to many reasons. One of the notable reasons may be described as ‘income effect’ where females participate in economic activities only during the temporary crisis or distress. As per this theory, females tend to engage in economic activities if there

Table 3 Results of linear regression of female work participation by selected demographic factors

2001			
Covariates	Female work participation rate (FWPR)	Main female worker (proportion to total female worker)	Marginal female worker (proportion to total female worker)
Urban proximity			
Below 30®			
30 to 45	6.02***(3.62 8.42)	2.99**(0.62 5.35)	3.03***(0.75 5.31)
45 and above	4.12**(0.89 7.33)	- 2.07 (- 5.24 1.10)	6.19*** (3.13 9.24)
Household size	0.34 (- 2.67 3.34)	- 1.82 (- 4.79 1.14)	2.16 (- 0.68 5.01)
Female literacy	- 0.25***(- 0.35 - 0.15)	- 0.01 (- 0.10 0.09)	- 0.25***(- 0.34-0.15)
Child Sex ratio	- 0.01 (- 0.09 0.07)	0.03 (- 0.05 0.10)	- 0.04 (- 0.11 0.037)
0 to 6 years population	- 0.54*(- 1.11 0.04)	- 0.24 (- 0.80 0.33)	- 0.30 (- 0.85 0.24)
Constant	54.76 (34.57 74.94)	31.58 (11.68 51.48)	23.18 (4.04 42.31)
R- squared	0.08	0.02	0.09
Adj R-squared	0.07	0.01	0.08
2011			
Urban proximity			
Below 30®			
30 to 45	7.19*** (4.55 9.82)	3.93*** (2.06 5.79)	3.26*** (1.02 5.49)
45 and above	6.37*** (2.77 9.97)	4.73*** (2.18 7.27)	1.64 (- 1.40 4.69)
Household size	- 3.53*(- 7.40 0.34)	- 3.24**(- 5.98- 0.49)	- 0.28 (- 3.5 3)
Female literacy	- 0.18***(- 0.30-0.06)	- 0.05 (- 0.13 0.03)	- 0.13**(- 0.23- 0.03)
Child Sex ratio	0.02 (- 0.07 0.10)	- 0.01 (- 0.07 0.04)	0.03 (- 0.04 0.11)
0 to 6 years population	0.50 (- 0.17 1.18)	0.08 (- 0.40 0.55)	0.43 (- 0.14 1.0)
Constant	40.26 (17.17 63.35)	29.74 (13.39 46.09)	10.52 (- 9.04 30.09)
R-squared	0.08	0.05	0.041
Adj R-squared	0.07	0.04	0.032

® reference category

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

is depletion in household income (Unni 1989; Mukhopadhyaya and Tendulkar 2010).

The study found pronounced changes in women's occupation types over the period. The main working females are further classified into four broad groups of occupations. The results show a huge increase in the share of females working as agricultural labourers (Table 2). These are the women who work in another person's land for a wage. Also, there is an insignificant increase in the share of female cultivators. Share of females in other occupation, which is non-agricultural activities have declined drastically in ten years. These situations are an indication of poverty among women

as they do not have their land or, even they have land, they are forced to work on other's land to increase the household income (Mencher 1980; Duvvury 1989; Garikipati 2009).

Urban proximity is found associated with the change in FWP in the studied villages. Figure 5 and Table 2 indicate that with the increase in distance from the main city, there is an increase in FWPR in 2001 and 2011. It should be noted that the villages within 30 km have experienced remarkable shrinking of FWPR (34 percent in 2001 to 18 percent in 2011) as compared to the villages beyond 30 km. This is mainly due to the effect of being the suburbs of the big city. In

the closest vicinity of the metro city, the villages have mixed kind of the economy, which is characterized by the conversion of agricultural land into industrial and residential land due to the demand created by the central city (Greene 1997; Haarsma and Qiu 2017). The reduction in agricultural land leads to the low participation of females in primary activities. Also, the women in these villages are not educated enough to occupy the formal jobs available nearer to the city. Explaining these conditions, Gaddis and Klasen (2014) argued that as the economy develops, there is a shift from an agricultural economy to non-agricultural economy; as females in these areas were largely engaged into agricultural activities (as cultivators or labourers) it is likely that female labour force participation is expected to fall. But with structural changes, rising education levels, decline in fertility rates, women's economic activity increases with development. From Table 2, it becomes clear that the villages that are nearer to the city have a higher share of females in the main worker category than in the marginal worker category. It clearly shows that though the FWP is increasing in the villages far away from the city, a huge proportion of females are still engaged in seasonal works.

Figure 6 and Fig. 7 present the changes in women in different occupations with reference to the proximity zones. The pattern of the share of females in different occupations is similar in 2001, and 2011 where the share of females as agricultural labourers are increasing and share of females as 'other workers' are decreasing with increasing distance from the city. This shows the most challenging situation of FWP in the remote villages where maximum females are working as labourers that also seasonally. The shrinking share of females in non-agricultural activities raises serious questions on policies drafted for women empowerment in this region.

The plunge in FWP in these villages has many other causative factors such as increasing household size, lack of higher education for females, a higher number of children in the household, etc. From Table 3, it becomes clear that household size influences FWP in a negative manner. It means if there are a higher number of members in a house, females have fewer chances to work outside. A higher number of household members increase the burden of household and care responsibilities assigned to women and hindering the opportunities to cross these borders. The other inter-related

factors like reproductive roles, cultural sanctions, and patriarchal hierarchies can explain the withdrawal of women from labour force (Sudarshan and Bhattacharya 2009). Surprisingly literacy rate has shown a negative relation with FWP in these villages. It is mainly due to the definition of 'literate' in the Indian census. The census defines a person literate if he or she can read and write. May be females in these villages are literates, but they haven't attained higher education and thus may not be able to participate in better economic activities. Also, the definition of literates excludes the child population (0–6 years), and at the same time definition of worker is crude (includes child population). This factor can be considered for such a reverse association of FWP and female literacy. It is also evident that female attaining a slightly higher educational level continues to remain in education with the hope of getting a better job. Therefore, lower participation of females at higher levels of education is a positive phenomenon as it could possibly ensure better quality jobs for the educated females in the future (Mehrotra et al. 2013).

Conclusion

The critical condition of FWP in these peri-urban villages is alarming and needs immediate attention of the policymakers to ensure overall gender equality, women empowerment, and women livelihood strategies. In the developed state like Gujarat, work opportunities for women are indeed extremely limited, specifically in villages wherein movement of female workers from cultivators and non-farm workers to agricultural labourers has increased and not enough work opportunities being generated in the non-farm sector. There is also a strong need to consider the development of women in peri-urban villages as a part of city planning and policies. Also, ensuring and enlarging opportunities of higher education to women in these rural outliers will help in deploying half of the demographic dividend of India into productive activities efficiently.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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