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FARM TO NON-FARM: ARE INDIA'S VILLAGES "RURBANISING"?

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Abstract

The process of urbanization in terms of workforce patterns is largely considered to be unidirectional – increasing engagement of the workforce in non-agricultural occupational pursuits. Using a unique database matching Census data on rural settlements for 2001 and 2011, this paper shows that this process is not straightforward and is characterised by considerable variation and unpredictability. This poses several questions regarding policy implementation, and particularly, on where the focus of the government’s ‘RURBAN’ initiatives should be.

Contents

Introduction.....	1
Data.....	2
Results.....	2
Trends in the proportion of main male non-farm workforce	4
Fluid Rural Labour Market	6
State specific variation	8
Conclusion	10
Endnotes.....	13
References.....	14
Appendices.....	15
Appendix A - Male Main Non-Farm Workforce Proportion in 2001 and 2011 by Population in 2001 for States.....	16
Appendix B - Male Main Non-Farm Workforce Proportion in 2001 and 2011 for settlements with Population in 2001 at least 5,000 for States	23

Introduction

In his maiden speech in the Lok Sabha on 11 June 2014, Prime Minister Modi emphasised the ‘RURBAN’,ⁱ calling for urban amenities to improve farmers’ standard of living while preserving the “soul” of villages.ⁱⁱ He also laid emphasis on the need for creating agro-based industries for sustainable employment for the youth of villages. This ‘RURBAN’ approach recognises the reality that our villages are not just about farming and the *kisaan* (farmer), a reality borne out by data. The National Sample Survey (NSS) 68th round (2011-12) shows a diversity of employment in rural areas: 64% of the rural workforce is engaged in agriculture and allied activities (usual status of employment), but 50% of the total manufacturing employment and 44% of the total services employment in the country is in rural areas.ⁱⁱⁱ Additionally, in 2004-05, 42% of the Net Domestic Product (NDP) from manufacturing, 46% of the NDP from construction, and 27% of NDP from financing, insurance, real estate and business services was from rural areas.^{iv} While villages already show tremendous diversity of employment, an increase in agro-based industry will lead to more choices for the rural worker and might provide for a more stable employment pattern in the villages of India. In order to understand how this change might take place, we examine the trend in rural non-farm employment to analyse how villages are urbanising, or “rurbanising”.

Urbanisation is widely thought to be a unidirectional process: farmers move away from rural activities to ‘modern’ industrialised pursuits.^v And although this phenomenon is accepted the world over, India is one of the few countries to use it as the foundation of its definition for urbanisation. There are three types of urban settlement according to the Census: (i) Statutory Towns (STs) - all places with a municipality, corporation, cantonment board or notified town area committee, etc., (ii) Census Towns (CTs) - all other places which have a minimum population of 5,000, at least 75 per cent of the male working population engaged in non-agricultural pursuits, and a density of population of at least 400 per sq. km., and (iii) Outgrowths – viable units that emerge adjacent to, but are outside the administrative limits of STs. These are not complete settlement units, like an entire village.^{vi} It is worth noting that while CTs are recognised by the Census as urban settlements, they are administered as rural areas.^{vii}

A careful look at census data, however, shows that although many rural settlements are moving away from farming, the process is not unidirectional. We have found that while there is a significant chance that an Indian village experienced an increase in the proportion of workforce

engaged in the non-farm sector in 2011, there is an equally good chance that it experiences a decrease. In other words, a settlement that is urban today might be rural tomorrow, and vice versa. Contrary to popular perception, India’s villages are not moving irrevocably away from agriculture. It is a process of ebb and flow, characterised by variation and unpredictability.

Data

One of the key conditions used by the Registrar General of India (RGI) to separate urban from rural areas is whether or not 75% of the male main^{viii} working population is engaged in non-agricultural pursuits. As per the office of the RGI, in order to calculate the percentage of workers engaged in non-agricultural pursuits, only main male workers are to be considered and workers involved in agricultural activities, namely cultivators, agricultural labourers and workers engaged in plantation, livestock, forestry, fishing, hunting and allied activities, are to be excluded.

Focusing especially on this point, we matched rural settlement data from the Primary Census Abstract^{ix} from Census 2001 and 2011. Using the rural directory released by the Census, which provides the 2001 village codes with the corresponding 2011 codes based on the recommendations of the MDDS committee, we were able to merge the data from the two censuses. This unique database enabled us to compare the status of the workforce in a given village in the two time periods. Only those settlements that were ‘rural’ in both 2001 and 2011 have been considered for this analysis (~ 5.9 lakh). (see Table 1)

Table 1 - Number of Rural Units

Number of Villages in 2001*	6,38,588
Number of Villages in 2011*	6,40,867
Number of Matched Villages (Rural in 2001 <i>and</i> 2011)#	5,90,281

*Includes uninhabited villages – 44,856 in 2001 and 47,136 in 2011

#Does not include uninhabited villages

Source: Census 2001 & 2011

Results

It can be argued from the outset that smaller settlements are bound to be less stable in terms of workforce proportions since the absolute sizes of the population and workforce are small, which would mean that small changes in the workforce composition will lead to large changes in the

workforce proportions. Thus, in the analysis, to get an idea of how differently sized settlements behave over time, we have divided the settlements into three groups based on the initial population size (population in 2001): “Less than 1,000”, “Between 1,000 to 5,000”, and “Greater than 5,000”. The distributions of number of matched villages and their share of population in terms of initial size and initial proportion of main male non-farm workforce (MNFW) are given in tables 2a and 2b. Since we are looking at how the proportion changes over a 10-year period, these distributions pertain to 2001, which is the starting point.

Table 2a - Distribution of Villages by Category in 2001

Population 2001	Male Main Non-Farm Workforce Proportion (2001)									Total
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-75	>75	
0-1,000	25%	12%	7%	5%	3%	3%	2%	1%	5%	61%
1,000-5,000	7%	9%	7%	4%	3%	2%	1%	1%	2%	36%
>5,000	0%	0%	1%	0%	0%	0%	0%	0%	0%	3%
Total	32%	21%	14%	9%	6%	5%	3%	1%	7%	5,90,281

Table 2b - Distribution of Population by category in 2001

Population 2001	Male Main Non-Farm Workforce Proportion (2001)									Total
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-75	>75	
0-1,000	8%	5%	3%	2%	1%	1%	1%	0%	1%	23%
1,000-5,000	11%	15%	11%	7%	5%	3%	2%	1%	3%	58%
>5,000	1%	3%	3%	3%	2%	2%	2%	1%	2%	19%
Total	20%	23%	17%	12%	8%	6%	5%	2%	6%	83,14,36,379

Examining median numbers helps us understand the scope of these analyses. Median settlement size for each population size group in 2001 412, 1,711 and 6,733. The median 2001 size of the male main labour force in the settlements of these three groups was 86, 391 and 1,606 respectively. This means that a 10% change over a period of ten years in the proportions is driven by changes in occupation of 9 workers in the “Less than 1,000” category, 39 workers in the “Between 1,000 to 5,000” category, and by 161 workers in the “Greater than 5,000” category. (see Table 3)

Table 3 - Category-wise summary (2001)

Group	Total number of villages	Median Population Size	Median size of Main Male Workforce
0-1,000	3,61,082	412	86
1,000-5,000	2,11,967	1,711	391
> 5,000	17,232	6,733	1,606
Total	5,90,281	735	162

Trends in the proportion of main male non-farm workforce

Figure 1 is a scatterplot of the proportion of male main non-farm workforce in 2011 against the proportion in 2001 (each point represents a village). If the common understanding that rural-urban transformation is unidirectional were true, the points would lie on or above the diagonal. The diagonal represents all points where the MNFW proportion of a village is equal for both 2001 and 2011. Thus, falling on or above the diagonal implies that the proportion of MNFW of a village engaged in non-farm pursuits is as much in 2011 as it was in 2001, or more.

Figure 1 - Male Main Non-Farm Workforce Proportion in 2001 and 2011 by Population in 2001

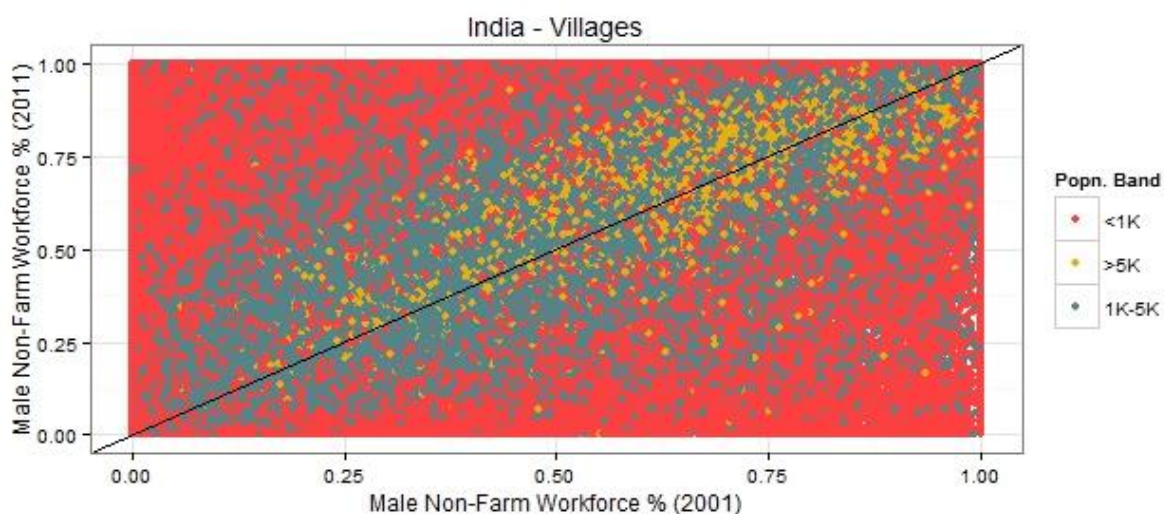


Figure 1 shows us that an initial high level of MNFW does not necessarily imply a high proportion in the next time period. In other words, the assumption that the rural-urban spectrum is a one-way street is not supported. Significantly, this is true for both small and large rural settlements. This implies that there is the transformation from rural to urban is not simple and that the process itself is highly complex and volatile.

Figure 2, which plots the change in the proportion of MNFW against the initial size of the settlement brings this out even more clearly. While the variability does go down as the settlement size goes up, there is evidently still a lot of variability in settlements larger than 10,000. Additionally, from Figure 2 it appears that a workforce is as likely to become less agrarian as it is more. This is also evident from Table 4, which gives the population band-wise distribution of villages by change in the proportion of MNFW over the ten years, which shows that there is a lot of variability for all three size categories. This supports the hypothesis that this aspect of urbanisation is not unidirectional, irrespective of the initial size of the settlement.

Figure 2 - Change in the Proportion of Male Main Non-Farm Workforce by Population in 2001

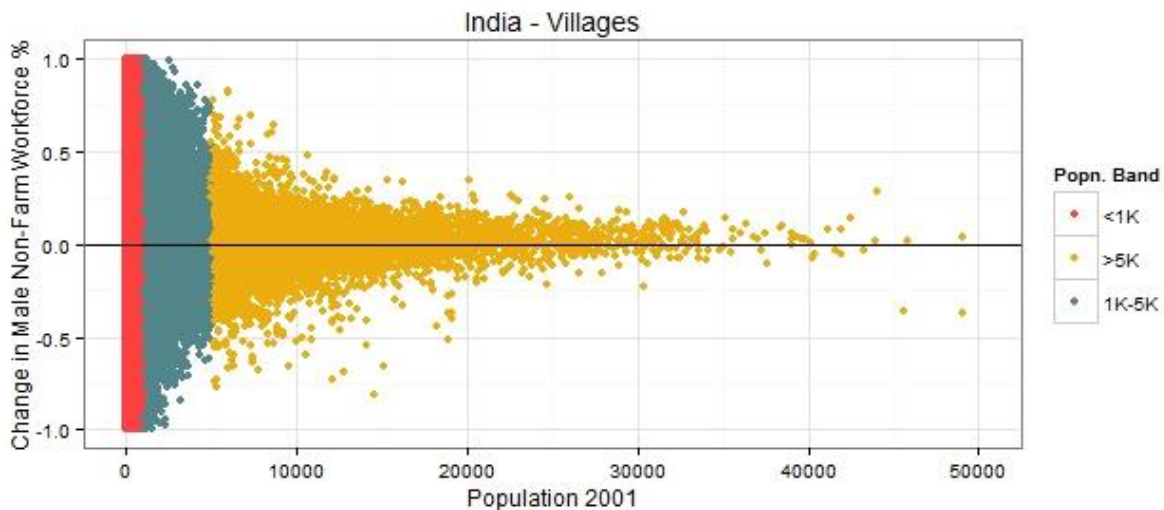


Table 4 - Population Band-wise distribution of settlements by Change in Male Main Non-Farm Workforce Proportion

Population Band	Change in Male Main Non-Farm Workforce Proportion (2011 - 2001 levels)								Total
	< -50%	-25% to -50%	-10% to -25%	-10% to 0%	0% to 10%	10% to 25%	25% to 50%	> 50%	
0-1,000	3%	6%	12%	22%	27%	13%	9%	7%	3,61,082
1,000-5,000	1%	4%	14%	30%	28%	16%	6%	2%	2,11,967
>5,000	0%	2%	11%	35%	34%	15%	2%	0%	17,232
Total	2%	5%	13%	25%	28%	14%	8%	5%	5,90,281

Fluid Rural Labour Market

Apart from non-farm workers, the Census provides data on agricultural labourers^x—wage labourers working on another person’s land who do not reap the benefits or face the risks associated with cultivation—and cultivators—people who cultivate land and whose fortunes are tied to the land they cultivate.^{xi} Keeping these definitions in mind, one would expect agricultural labourers to have been causing this instability, changing jobs and shifting in and out of the non-farm workforce. Not only would it be easier for agricultural labourers to adapt to non-farm activities as compared to cultivators, they might be more willing to explore other opportunities in order to get a more stable source of income. Also, unlike cultivators, agricultural labourers have weaker ties to the land that they work on.

Yet, in another trend that runs counter to expectations, we observe that there is a lot of fluctuation in the cultivator workforce as well, both for small and large settlements. In other words, those who we might assume are less mobile—cultivators—also contribute to this flux. Figure 3 is a scatterplot with the proportion of male main cultivators in 2001 and 2011. This plot is quite similar to the plot we got for the non-farm workforce (Figure 2) and indicates similar variability in terms of the cultivator workforce. This can also be seen from Table 5, which gives the population band-wise distribution of villages by change in the proportion of male main cultivator workforce (MCLW), which shows that there is a lot of variability for all three size categories. The table also shows that the proportion of MCLW tends to go down for a higher proportion of villages as we move up the

population band. This implies that in larger villages, a larger proportion of workers have moved away from cultivation in the last ten years.

Figure 3 - Male Main Cultivator Proportion in 2001 and 2011 by Population in 2001

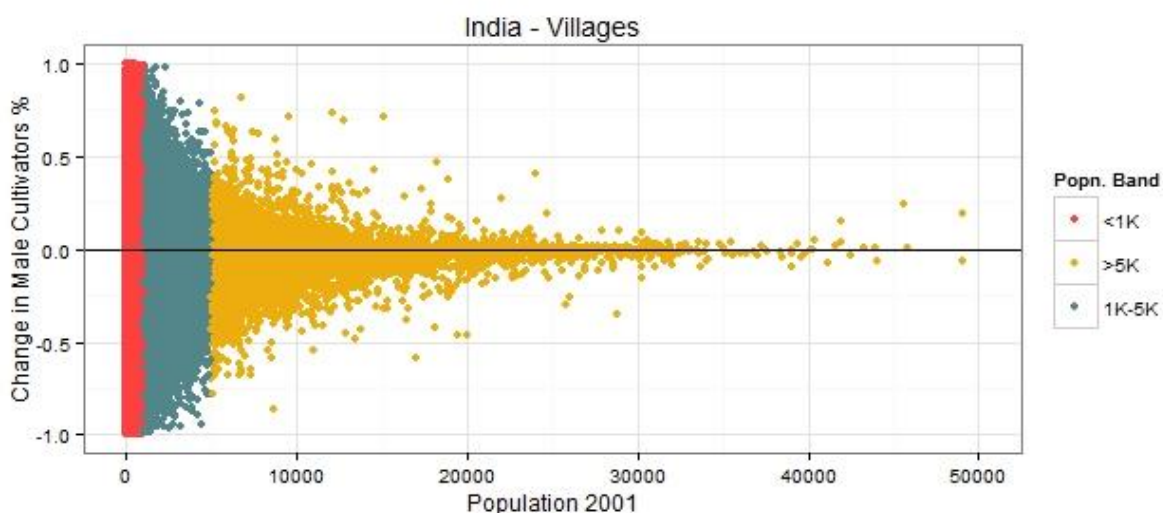


Table 5 - Population Band-wise distribution of settlements by Change in Male Main Cultivator Workforce Proportion

Population Band	Change in Male Main Cultivator Workforce Proportion (2011 - 2001 levels)								Total
	< -50%	-25% to -50%	-10% to -25%	-10% to 0%	0% to 10%	10% to 25%	25% to 50%	> 50%	
0-1,000	11%	15%	17%	16%	17%	11%	8%	4%	3,61,082
1,000-5,000	3%	13%	25%	27%	19%	10%	3%	0%	2,11,967
>5,000	0%	4%	22%	45%	22%	5%	1%	0%	17,232
Total	8%	14%	20%	21%	18%	11%	6%	2%	5,90,281

Interestingly, change in the proportion of MNFW, change in MCLW percentage, and change in the proportion of main male agricultural labourers (MALW) at the settlement level are all negatively correlated with each other. This shows that it is not just a farm vs. non-farm story and that there is fluidity of occupations in the rural settlements of the country. Overall, the change in

MNFW proportion is more negatively correlated to the change in MCLW proportion than with the MALW proportion. Also, as the village size increases, the correlation between change in non-farm and change in cultivator workforce goes down, and the correlation between change in non-farm workforce and change in agricultural labourers proportion goes up. The correlation coefficients between changes (2011 levels minus the 2001 levels) are given in Table 4.

Table 4 - Correlation Coefficients (R) and their Standard Errors (SEr) – Change in Male Main Workforce Proportion

Population Band	Non-Farm/CL		Non-Farm/AL		AL/CL	
	R	SEr	R	SEr	R	SEr
Overall	(0.54)	0.0011	(0.34)	0.0012	(0.53)	0.0011
0-1,000	(0.55)	0.0011	(0.32)	0.0012	(0.51)	0.0011
1,000-5,000	(0.48)	0.0011	(0.43)	0.0012	(0.59)	0.0011
> 5,000	(0.47)	0.0011	(0.54)	0.0011	(0.49)	0.0011

Notes: 1. Non-Farm refers to the proportion of Main Male Workforce engaged in Non-Farm activities; CL refers to the proportion of Cultivator-Landowners; AL refers to Agricultural Labourers.

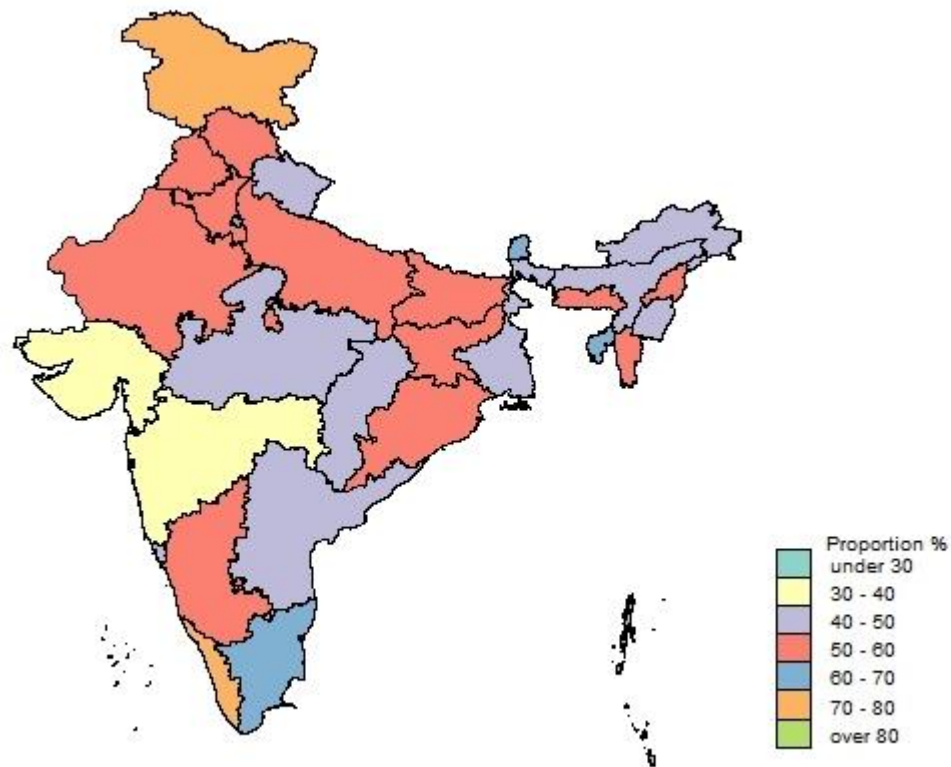
2. Figures in parenthesis are negative

3. Standard errors calculated as: $SEr = \frac{\sqrt{1-R^2}}{\sqrt{N-2}}$, where R is the correlation coefficient and N is the number of observations.

State specific variation

Looking at the proportion of villages that experience an increase in the proportion of MNFW can help in understanding the pace of urbanisation at the state level. Figure 4 maps the state-wise proportions while Figure 5 plots the change in the proportion of MNFW against the change in urbanisation rate by state (union territories excluded). It is the bigger, more developed states like Gujarat, Maharashtra and Andhra Pradesh that come right at the bottom, with the proportion 7-15% lower than the national level of 51%. Kerala, Jammu and Kashmir, Sikkim and Tamil Nadu come right at the top, with the proportion 17-23% greater than the national level.

Figure 4 - Proportion of villages with negative change in farm and positive change in non-farm workforce by State/UT

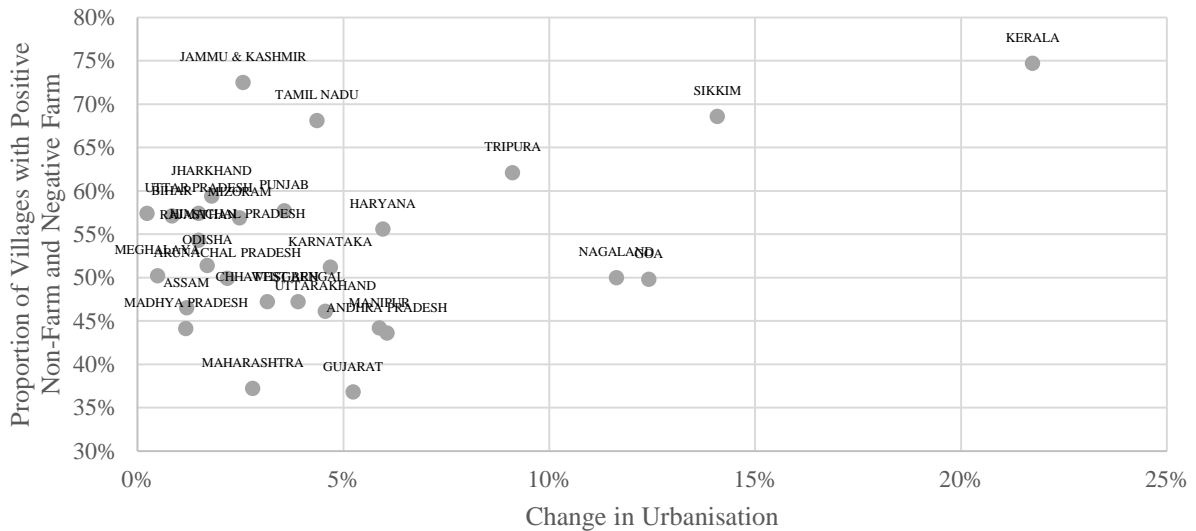


The state-level variation is brought out more clearly in the figures given in Appendix A. These are scatterplots of the proportion of MNFW in 2011 against the proportion in 2001 for every state (similar to Figure 1). The variation that we witness at the country level is reflected at the state level, and there are differences across states. Looking at only those villages that had an initial population size of at least 5,000, the differences are more visible. The rationale for looking at this is that these settlements will not be susceptible to large changes if only a small number of workers move from one sector to another (figures in Appendix B). There are three distinct categories of states based on these figures – (i) States where the majority of villages experience an increase in MNFW – this includes states like Bihar, Kerala, Tamil Nadu, Uttar Pradesh, Chattisgarh and Jharkhand, (ii) States where the majority of villages experience a decline in MNFW – this includes the bigger, more developed states of Gujarat and Maharashtra, and (ii) States where there seems

to be a more or less equal distribution – this includes states like Andhra Pradesh, Karnataka, Rajasthan and West Bengal.

Figure 5 relates this to the conventional definition of urbanisation in India, which is the proportion of population living in urban areas. This figure shows that if we remove Kerala, and to some extent Sikkim, from this analysis, there does not seem to be a trend in this relationship. What this tells us is that the relationship is not monotonic and that the jump that we see for Kerala may happen in other states as well, depending on the distribution of villages at a given point of time. Larger villages with populations more than 5,000 and having a high proportion of workers engaged in the non-farm sector today might become urban tomorrow, considering the definition of CTs, and this sudden transition can occur for any state depending on the current distribution of the villages in the state.

Figure 5 - Proportion of villages with negative change in farm and positive change in non-farm workforce vs. Change in Urbanisation by State



Conclusion

We must recognize that while movement away from agricultural activities towards non-agricultural activities is an inherent part of the process of urbanisation, the process is not unidirectional. Data shows us that having a high proportion of the workforce engaged in non-farm activities today does not necessarily mean that it will be the case tomorrow.

The observed variability raises several questions. First, is this variability real or artificial? In order to answer this question, we need to understand how difficult it is for enumerators to gauge the sector of work, which requires a study of the various responses they get from people. We also need to understand how the answers fit into the definition.

If this variability is real, then we need to understand how the non-farm sector is perceived in rural areas. Lanjouw and Murgai (2009), divide non-farm employment into three categories: regular employment (generally salaried), casual employment (daily wage) and self-employment. They note that regular non-farm employment is typically highly sought after as it is associated with both high incomes and stability, while non-farm self-employment can be both a residual, last resort option as well as high return, depending on the amount of capital put into the activity. Casual non-farm employment, on the other hand, is considered to be less “demeaning” than agriculture wage labour, but the returns from it are only marginally higher. Can it be that moving into the rural non-farm sector is considered as a step down and not a step up depending on what kind of non-farm employment is available? Would this perception discourage a person from reporting his engagement in non-farm work for the majority of the year?

On the structural front, our findings show that there is a lot of variability in all three categories of workers, namely cultivators, agricultural labourers, and workers engaged in the non-farm sector. This variability reflects, to some extent, the ease with which people are moving from one sector to another. Does this mean that rural labour markets might not be as sticky as we think they are?

Lastly, what implications does this have from the point of view of policy formation? The instability of the rural non-farm workforce shows that the rural-urban boundary is blurry, and from the policy point of view, this creates a difficulty in the formulation and application of schemes (rural vs. urban) in these settlements. Also, as Pradhan (2013) points out, 30% of the urban growth in the last decade can be attributed to new Census Towns, which, for all administrative purposes, are large villages. Our analysis finds that there is a lot of variation in the proportion of MNFW even in large villages, and this adds to the confusion regarding the implementation of policy in these settlements.

Focussing on providing villages with urban amenities and agro-based rural industries will create more employment opportunities in the rural non-farm sector, but we still do not know if it is lack of opportunities that is driving the instability or an interplay of opportunities and perceptions. The

change from farm to non-farm seems to be taking place across the country and across size class. Thus, where should the government focus its 'RURBAN' initiatives?

Endnotes

ⁱ Historically, research on ‘rurban’, in the international context, mostly deals with rurban fringes – study of areas that are rural but are geographically close to some urban area. See for example Firey (1946), or more recently Busck et. al. (2009). In the Indian context, rurban is defined somewhat differently – it deals with the provision of urban amenities to rural areas. For example, Revi et. al. (2006) use the term ‘rurban’ to highlight how there is a need for a sustainable integration of rural and urban communities, “where rural living standards come to match those in urban areas and where cities become net producers of ecological services...”

ⁱⁱ The full text of his speech can be found here: <http://164.100.47.132/debatetext/16/I/1106.pdf>

ⁱⁱⁱ Own calculations based on unit level data for NSS 68th round, 2011-12

^{iv} Calculated using ‘Statement S1: NDP by economic activity in rural & urban areas for the year 2004-05’ from the National Account Statistics, 2010

^v Meadows (1969) defines urbanism, which is the process of urbanization, as “... a pattern of existence which deals with (1) accommodation of heterogeneous groups to one another; (2) a relatively high degree of specialization in labour; (3) involvement in non-agricultural occupational pursuits; (4) market economy; (5) an interplay between innovation and change as against the maintenance of societal traditions; (6) development of advanced learning and the arts; (7) tendencies towards city based, centralized governmental structures.”

^{vi} Circular No. 2, Census of India (2011)

^{vii} For a detailed discussion on Census Towns, refer to Pradhan (2013).

^{viii} Main workers are those who worked for the major part of the year preceding the date of enumeration i.e., those who were engaged in any economically productive activity for 183 days (or six months) or more during the year.

^{ix} The Primary Census Abstract contains basic demographic data, including number of households, population, SC/STs, and distribution of workforce for all settlements.

^x The Census defines an agricultural labourer as “a person who works on another person's land for wages in money or kind or share. She or he has no risk in the cultivation, but merely works on another person's land for wages. An agricultural labourer has no right of lease or contract on land on which she/he works.”

^{xi} The Census defines a cultivator as a person “engaged in 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. A person who has given out her/his land to another person or persons or institution(s) for cultivation for money, kind or share of crop and who does not even supervise or direct cultivation of land, is not treated as cultivator. Similarly, a person working on another person's land for wages in cash or kind or a combination of both (agricultural labourer) is not treated as cultivator.

Cultivation involves ploughing, sowing, harvesting and production of cereals and millet crops such as wheat, paddy, jowar, bajra, ragi, etc., and other crops such as sugarcane, tobacco, ground-nuts, tapioca, etc., and pulses, raw jute and kindred fibre crop, cotton, cinchona and other medicinal plants, fruit growing, vegetable growing or keeping orchards or groves, etc.

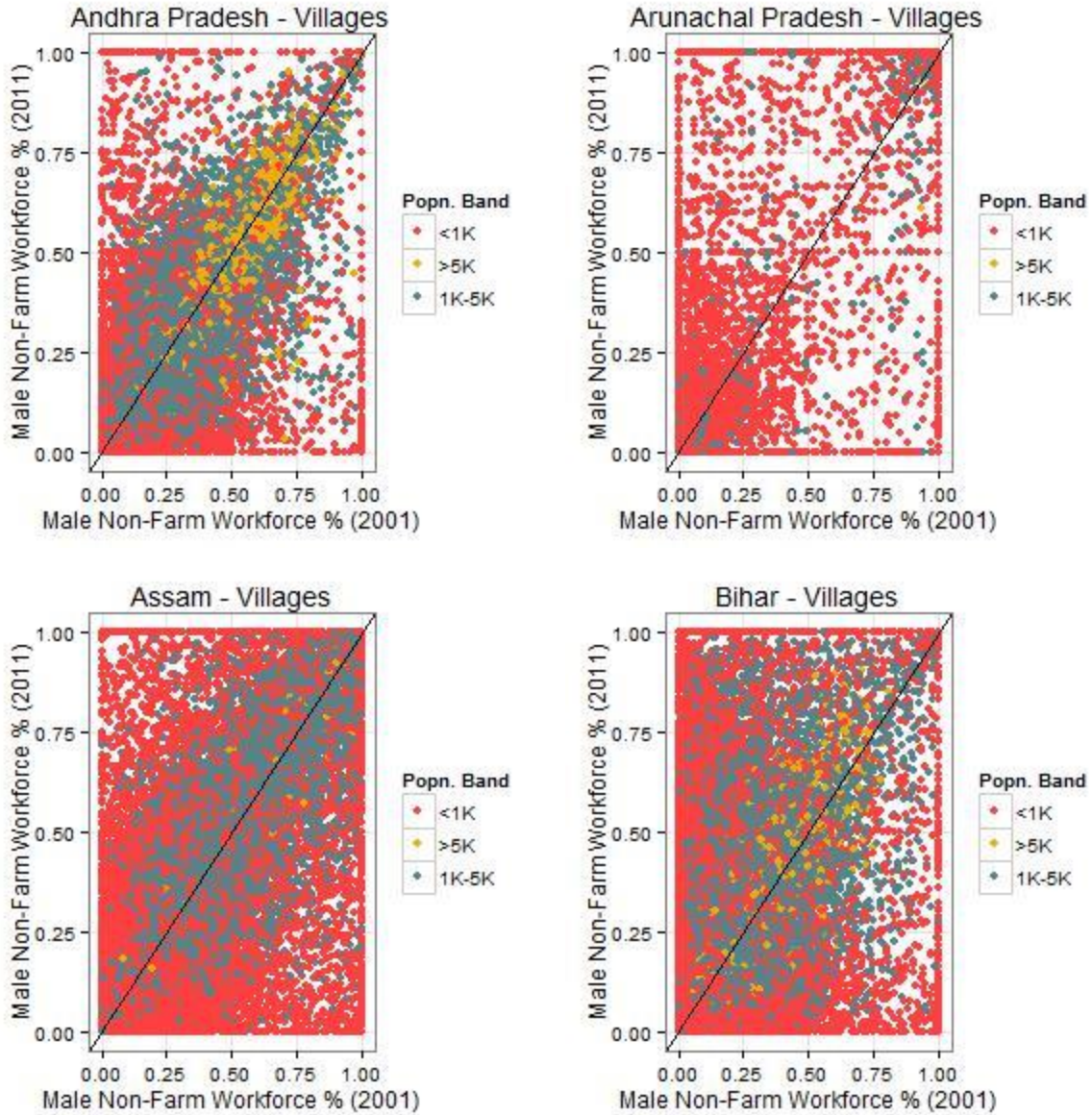
Cultivation does not include the following plantation crops - tea, coffee, rubber, coconut and betel-nuts (areca).”

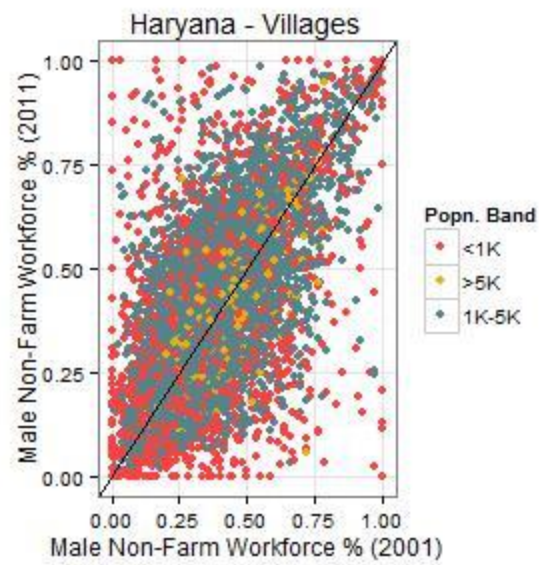
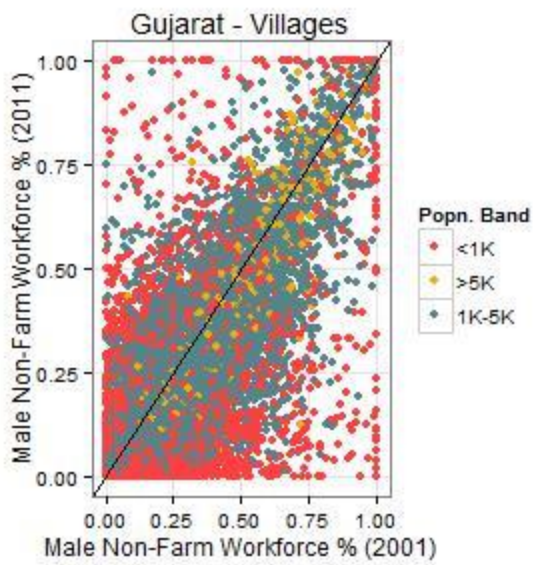
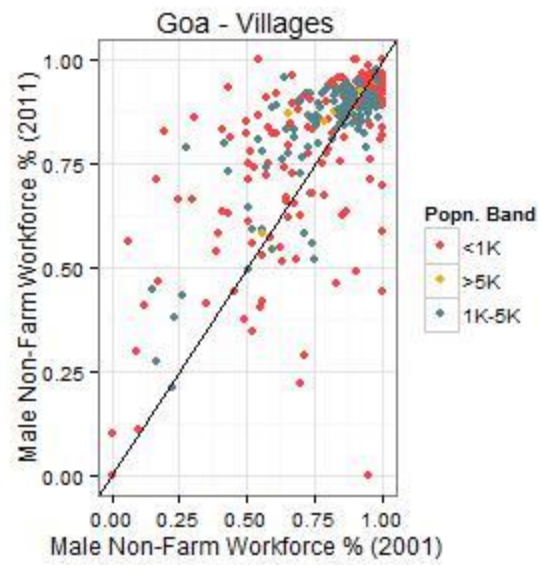
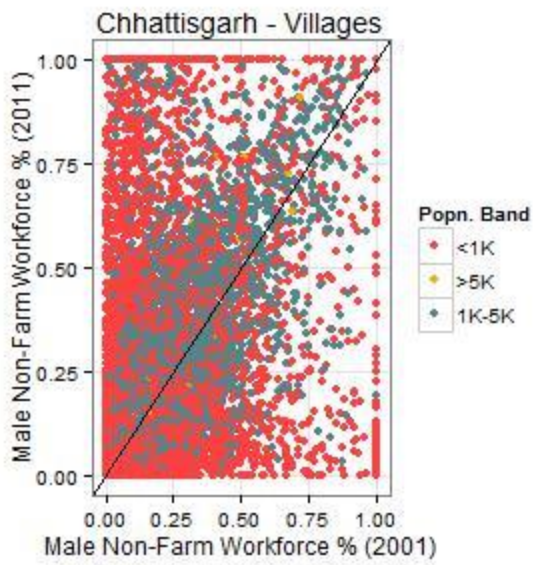
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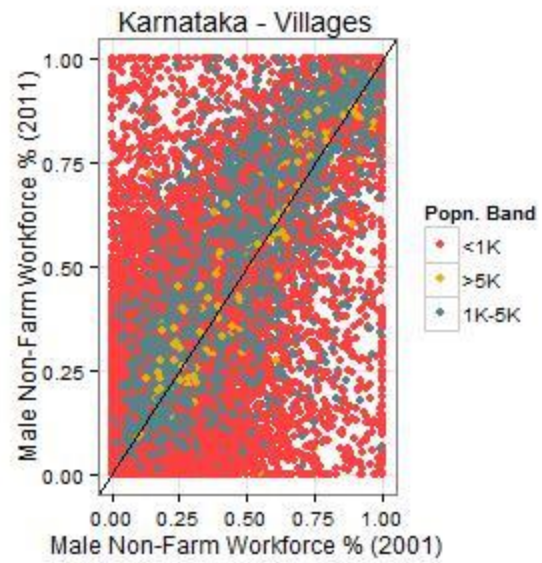
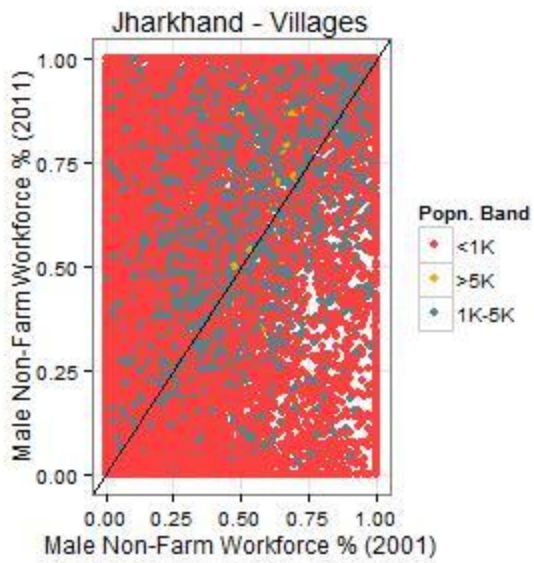
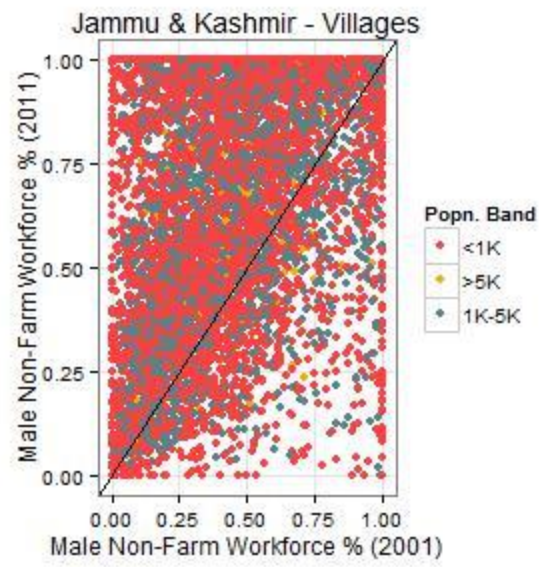
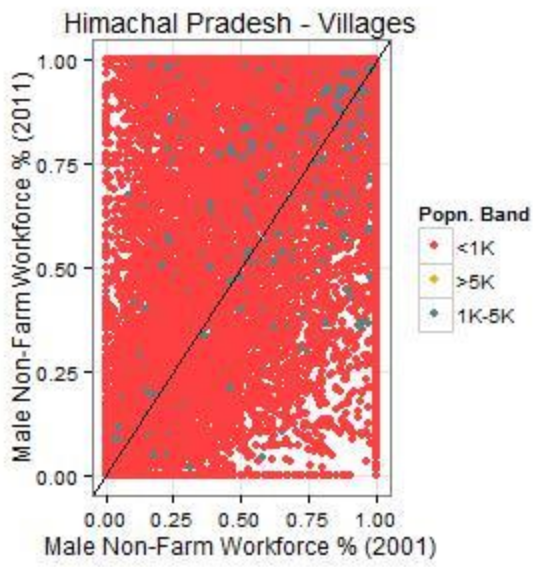
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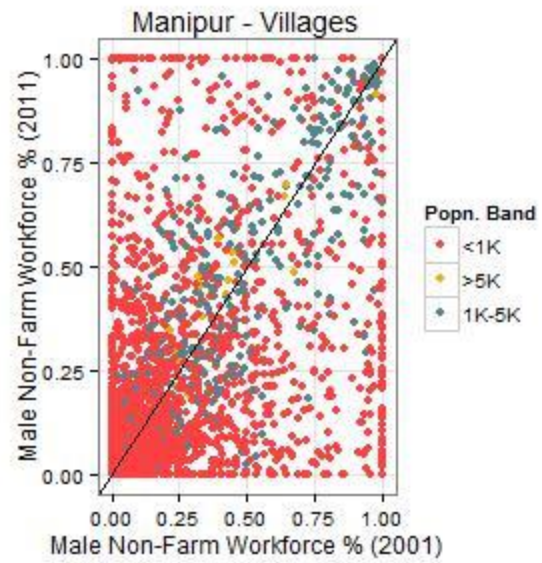
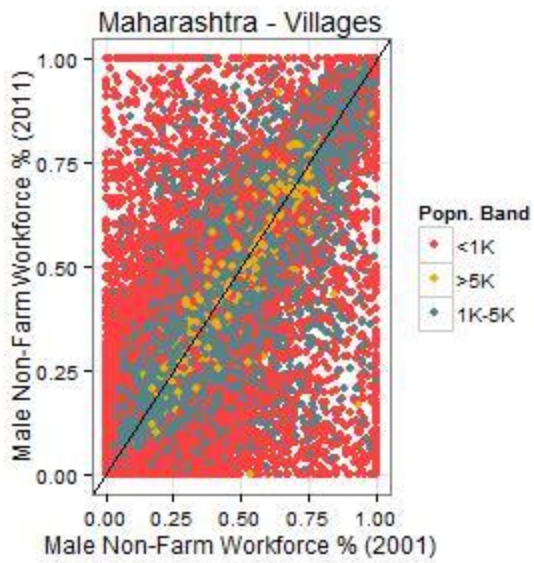
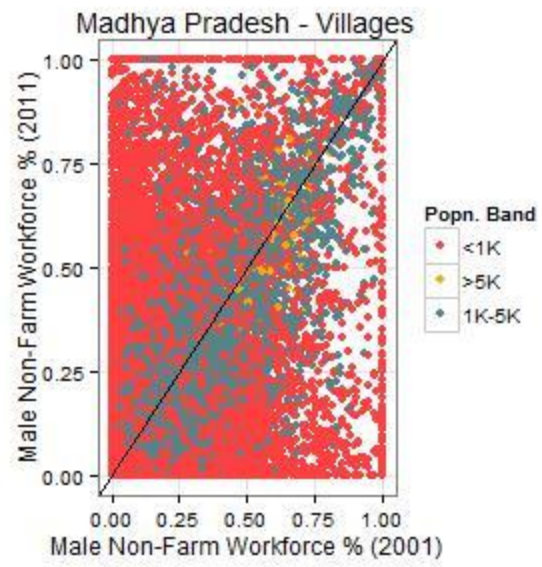
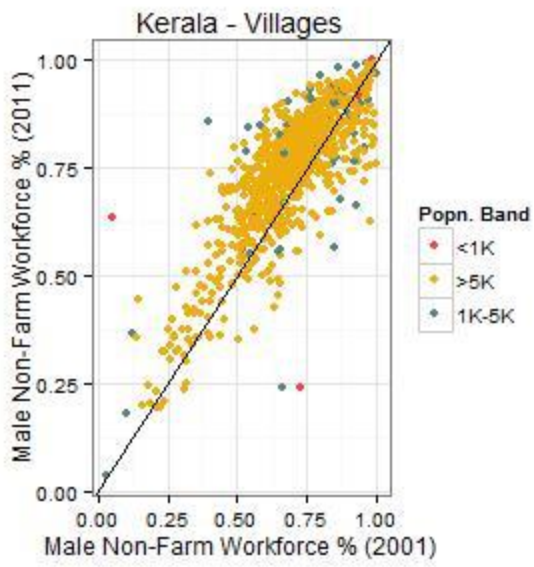
Appendices

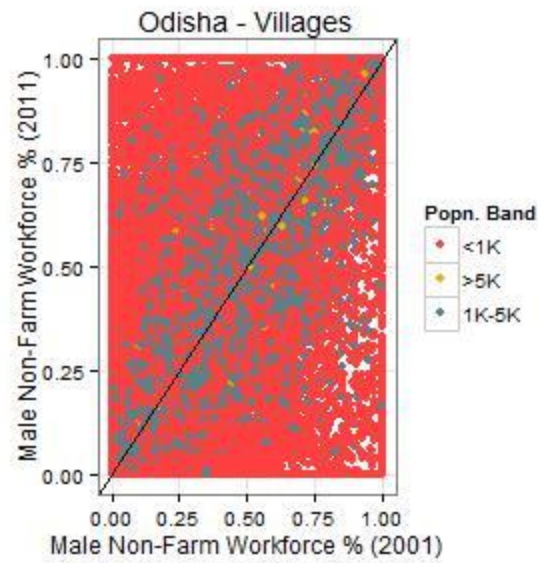
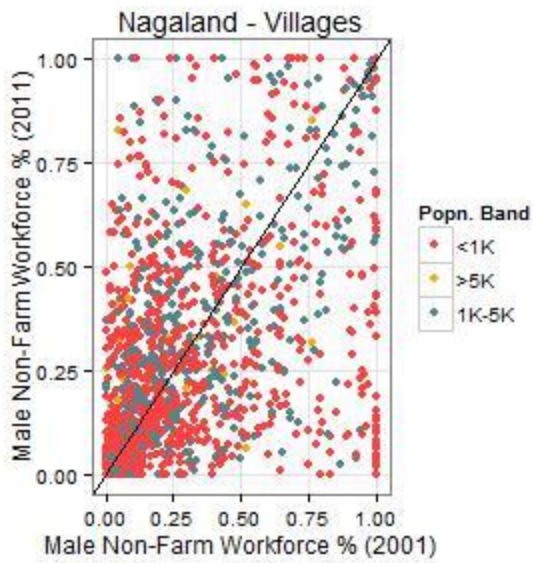
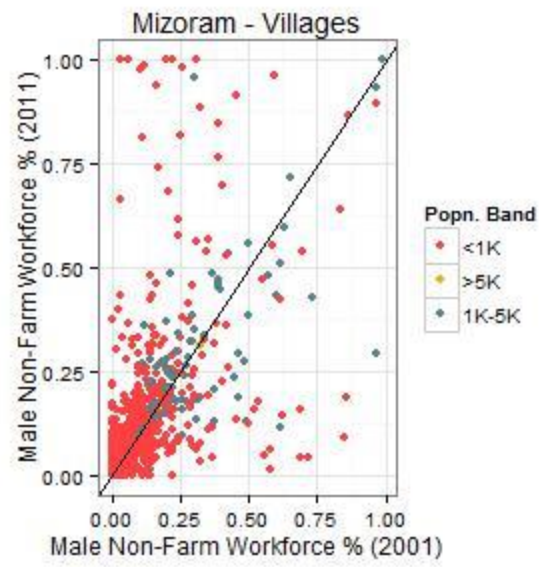
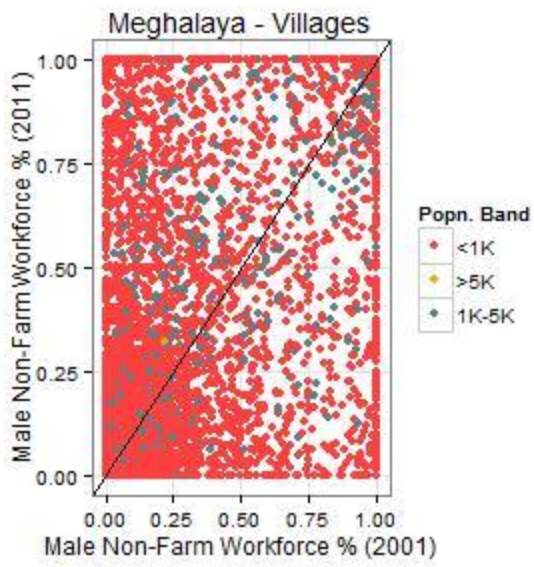
Appendix A - Male Main Non-Farm Workforce Proportion in 2001 and 2011 by Population in 2001 for States

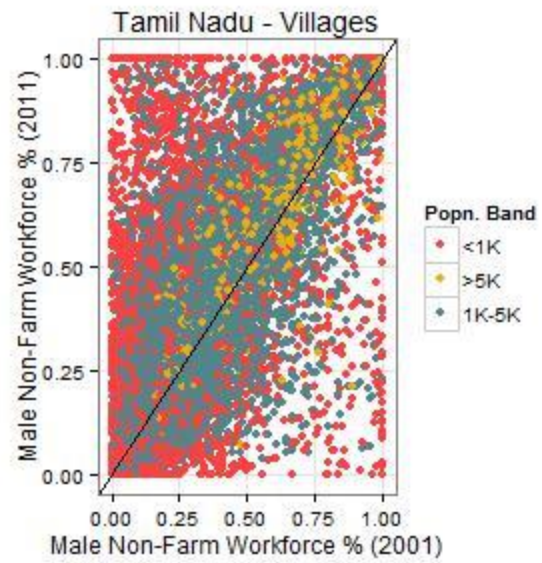
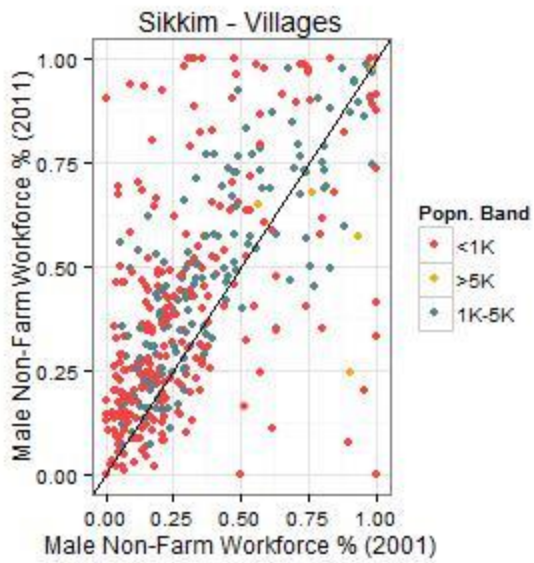
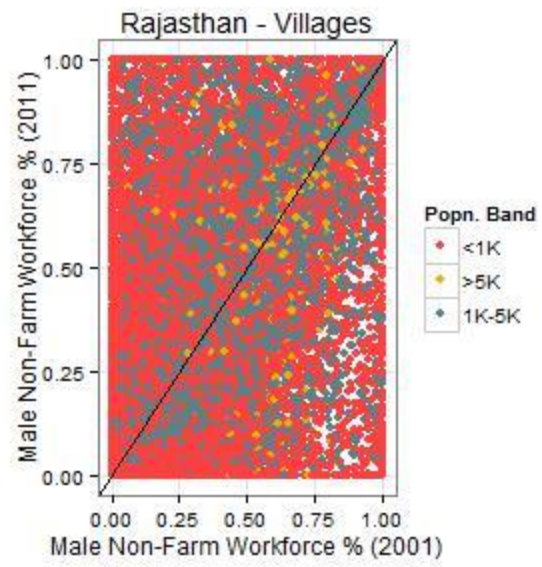
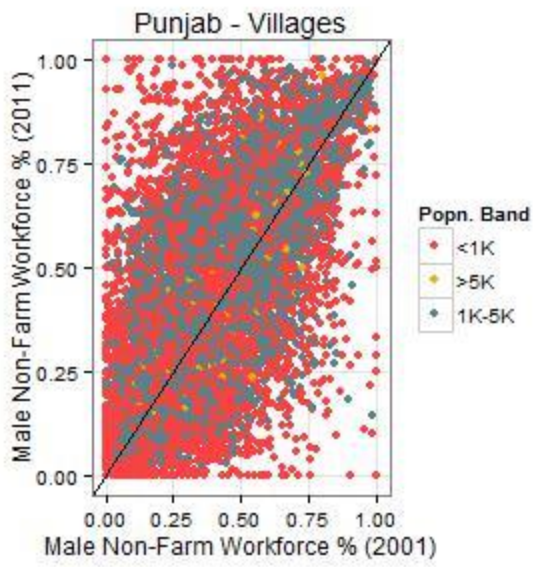


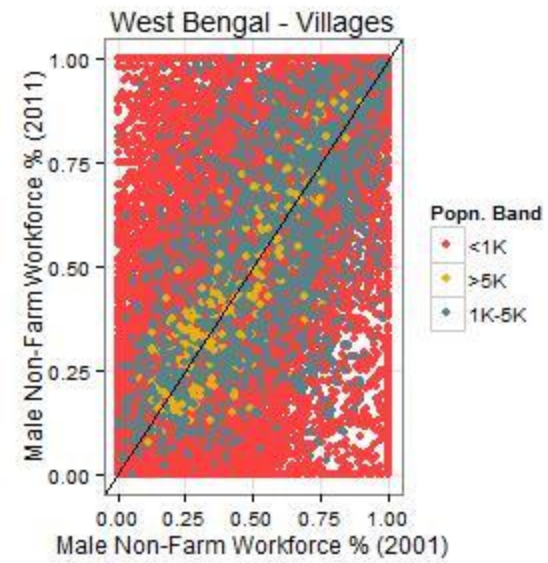
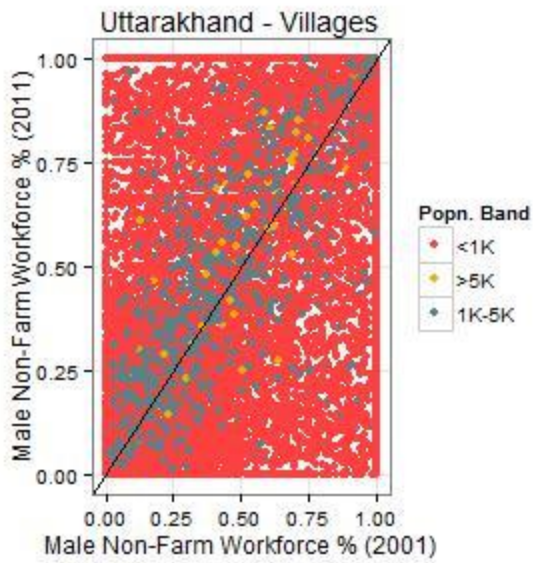
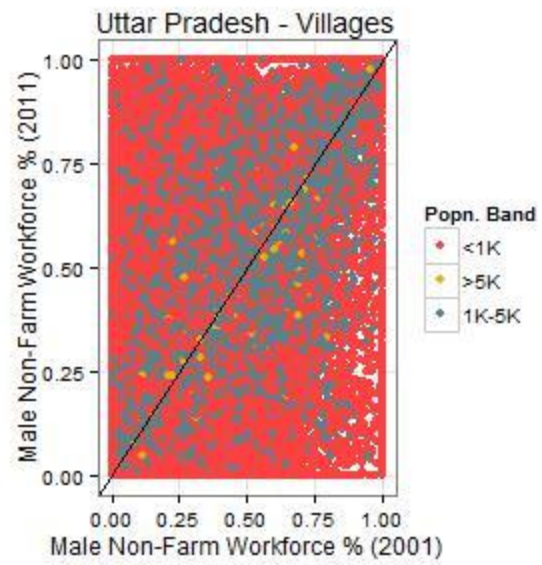
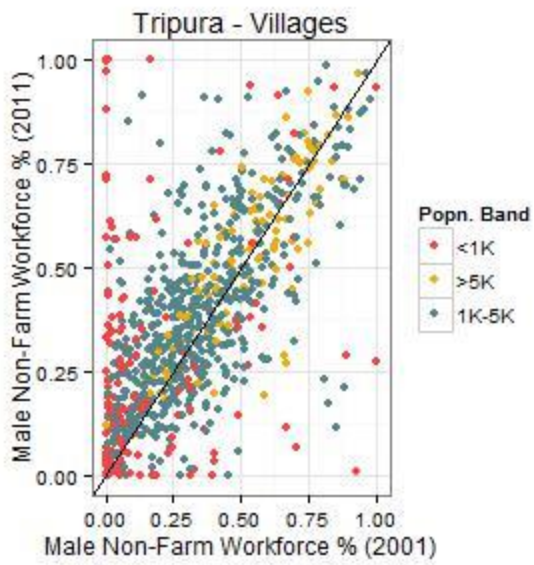




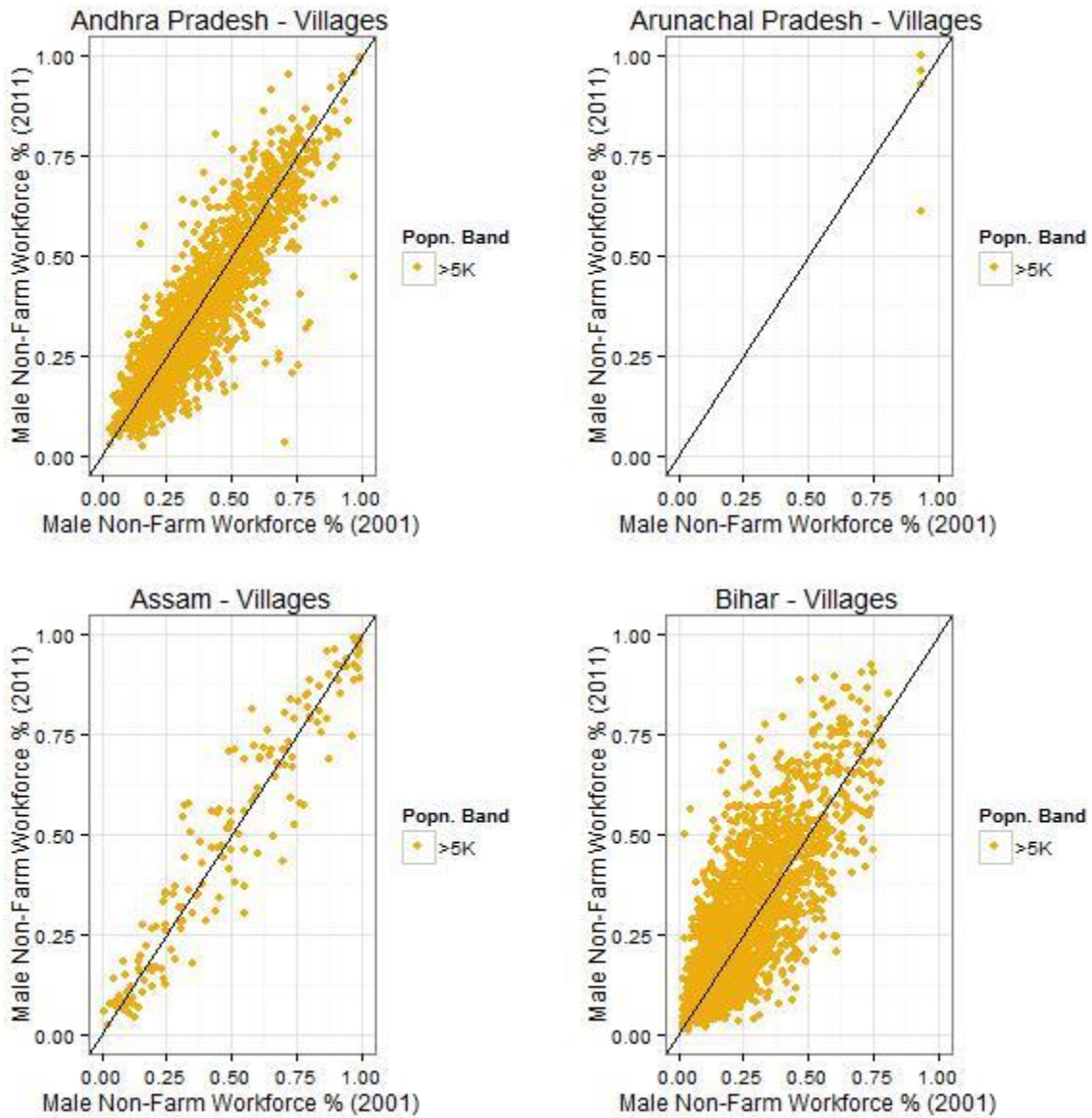


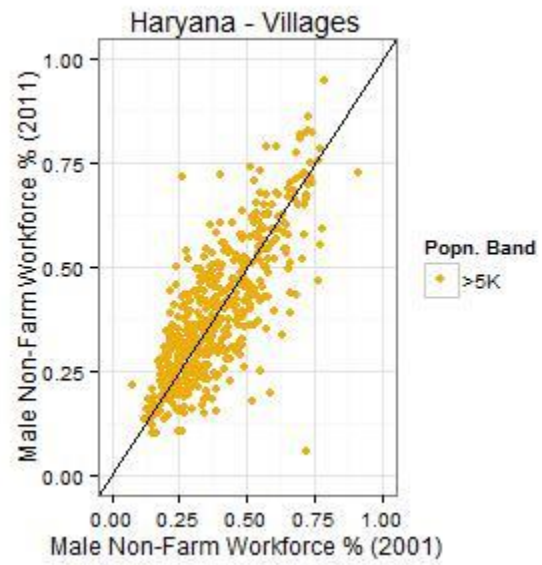
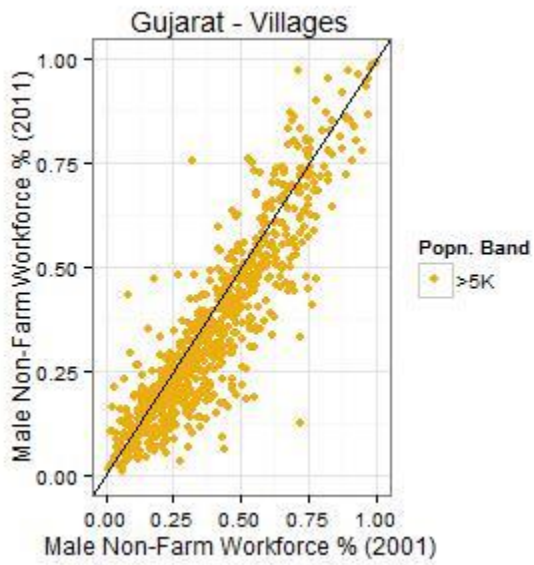
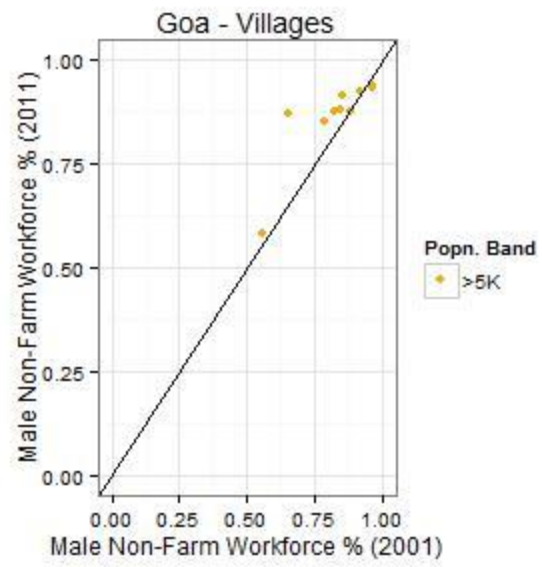
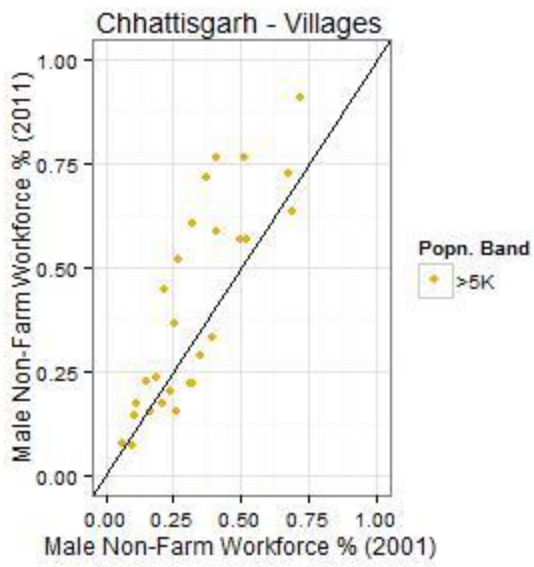


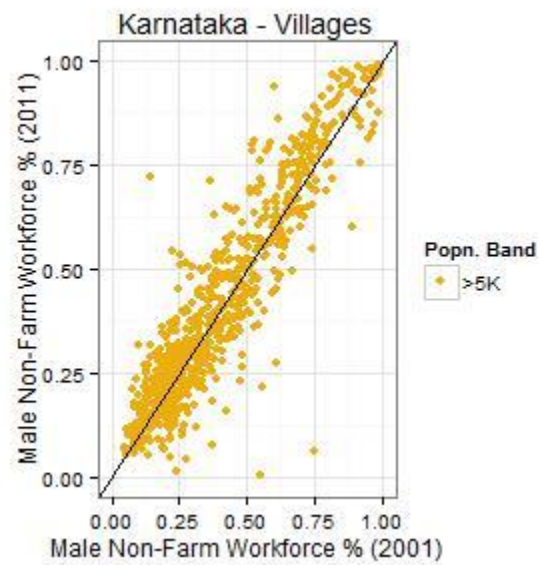
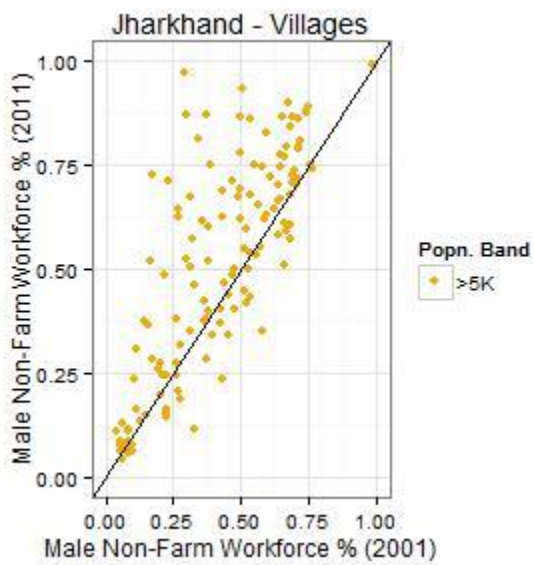
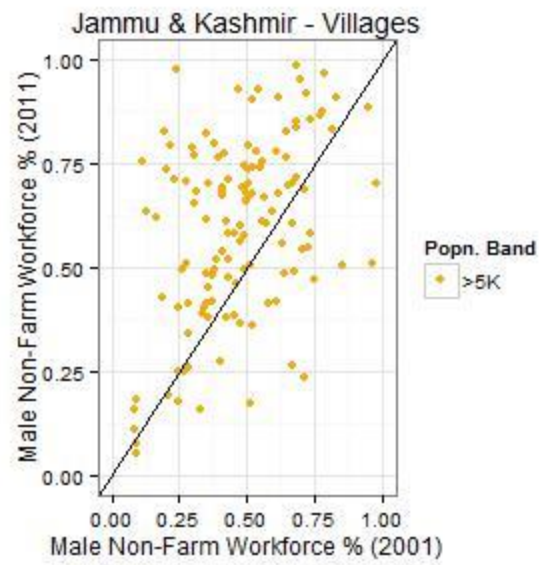
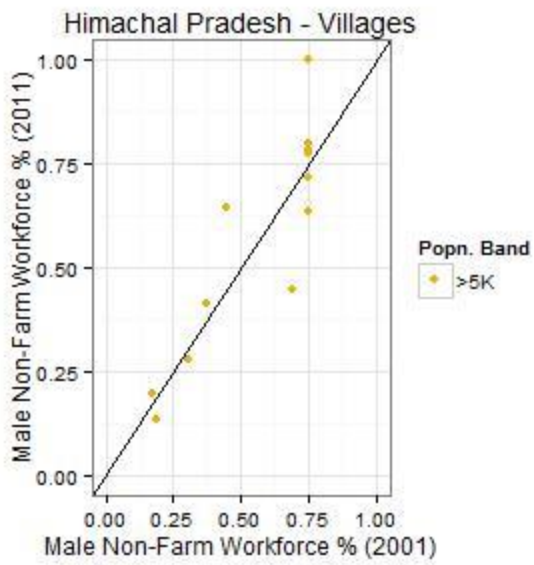


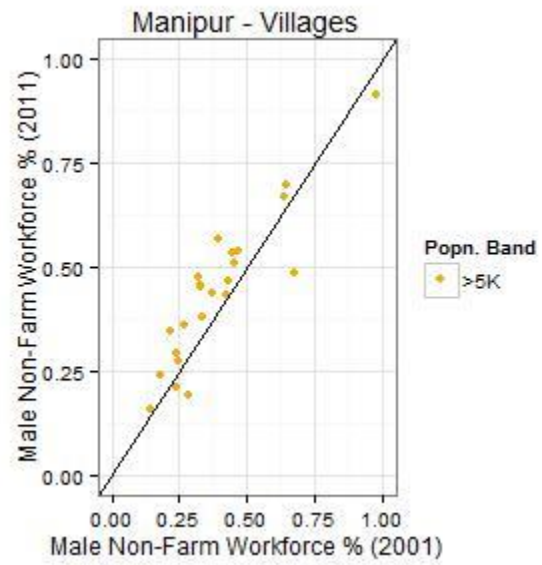
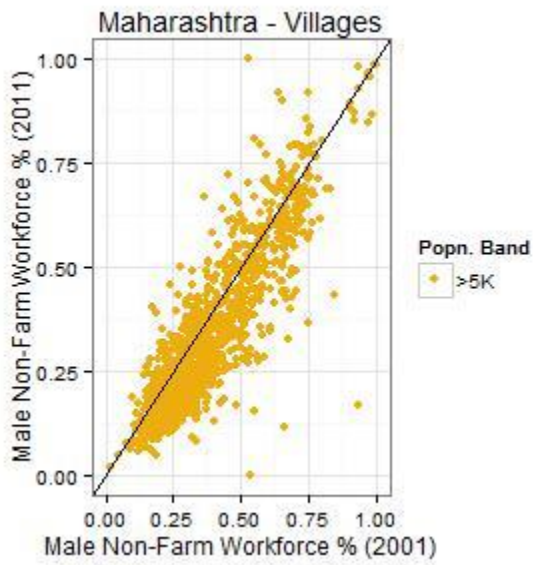
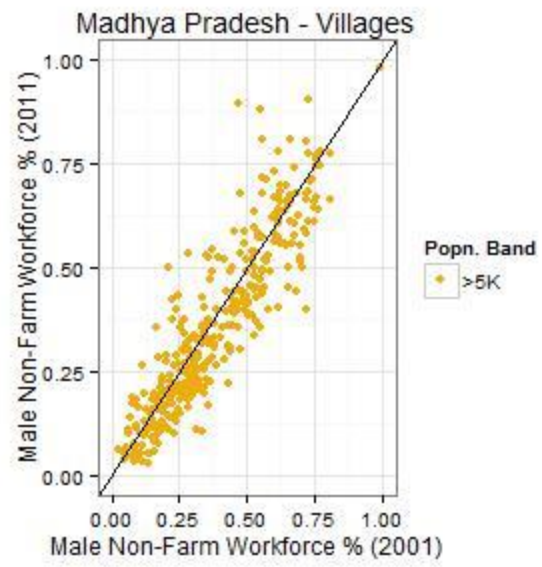
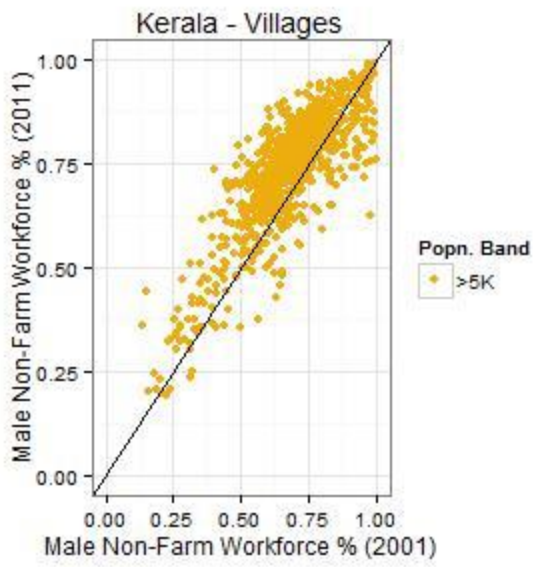


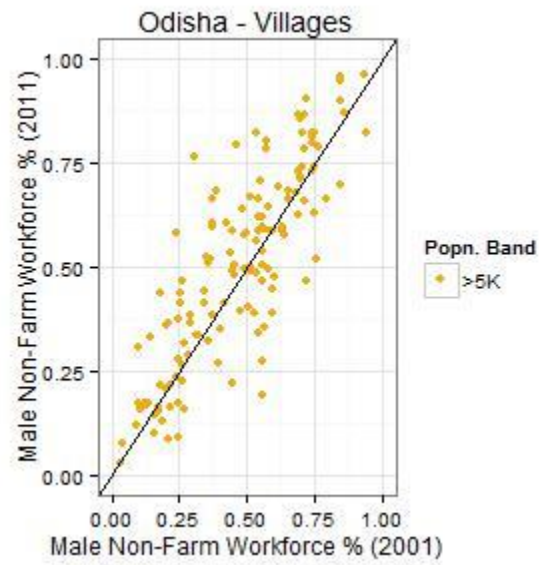
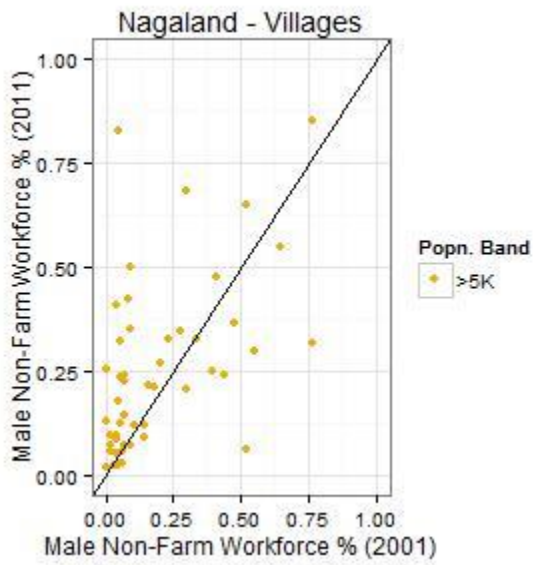
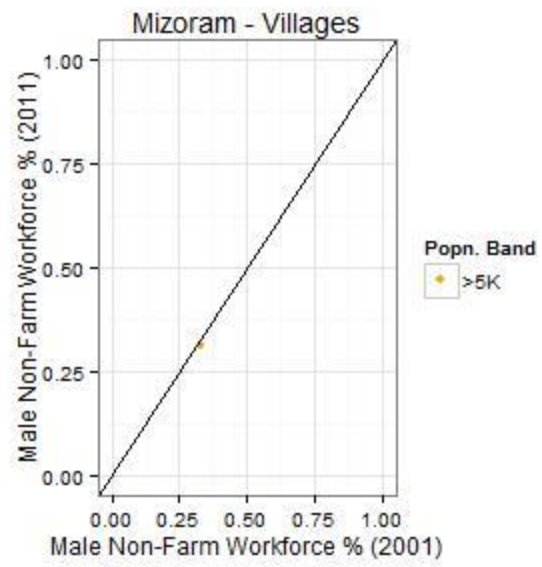
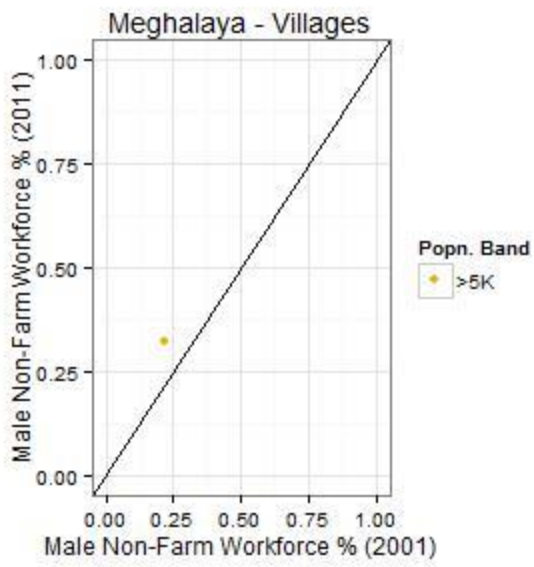
Appendix B - Male Main Non-Farm Workforce Proportion in 2001 and 2011 for settlements with Population in 2001 at least 5,000 for States

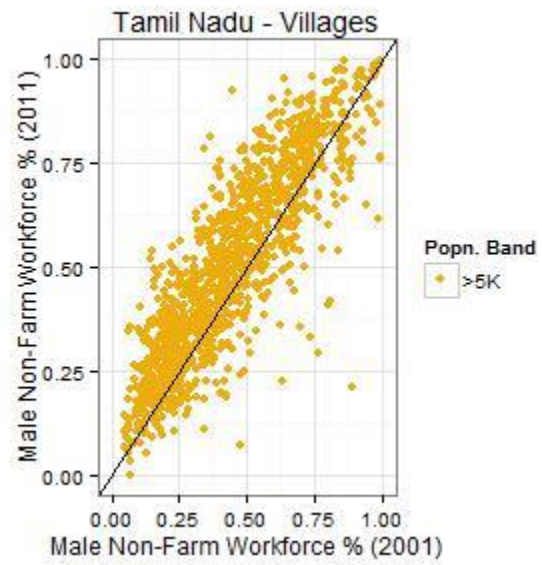
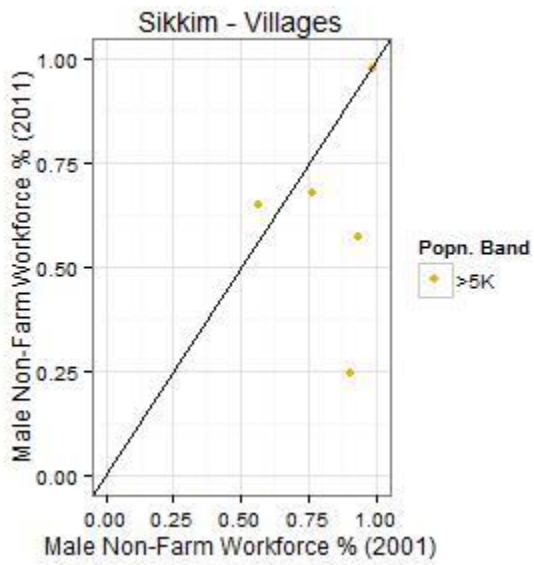
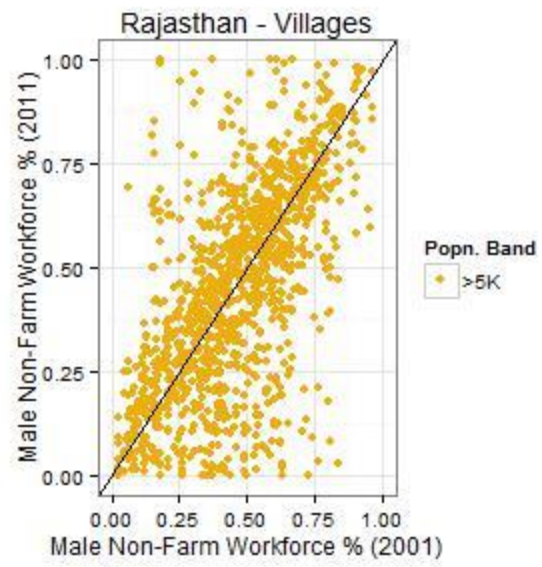
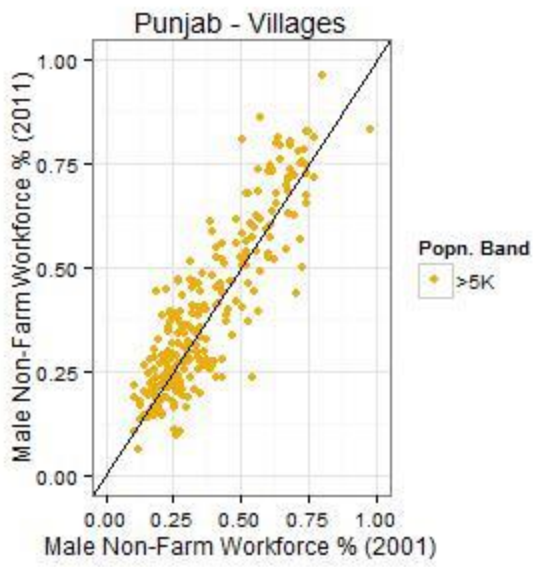


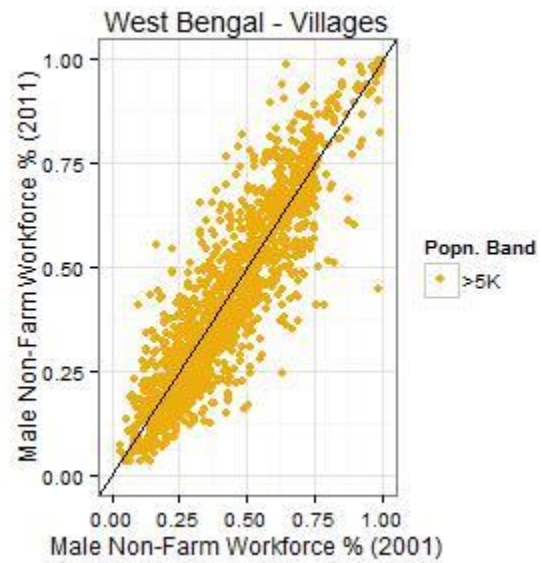
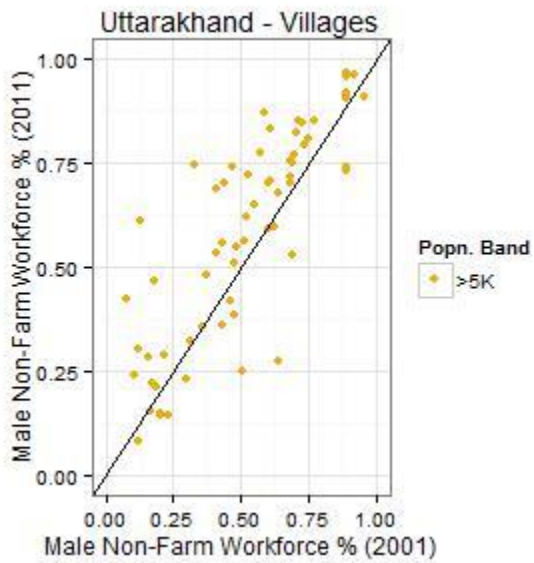
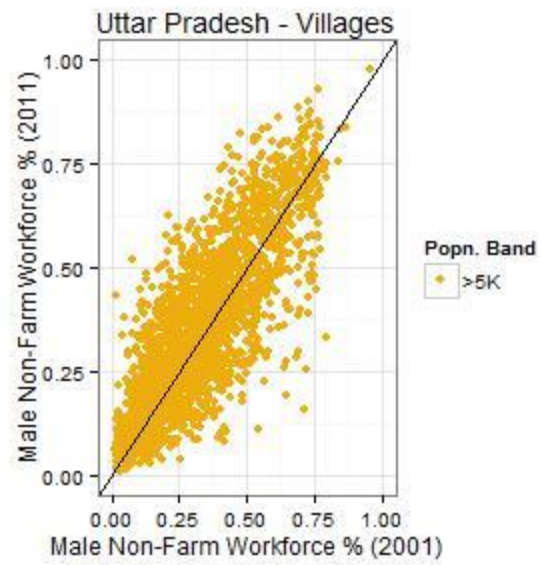
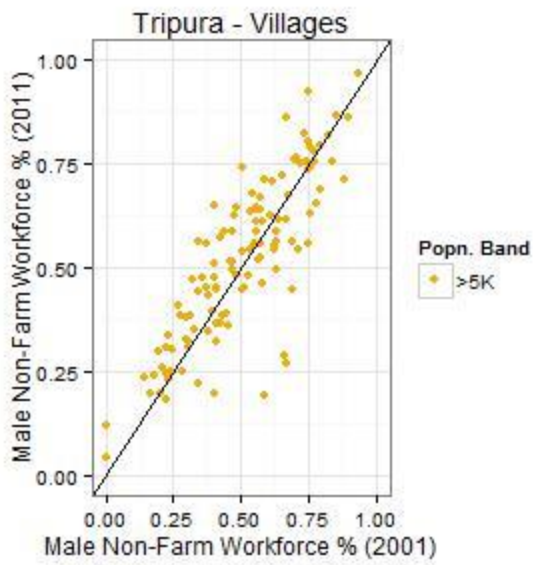












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