

Livelihood Volatility in the Urban Labour Market: Reflections from India's PLFS Data (2017-18)

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Abstract

This study aims at capturing the labour market volatility which is conceptualized in terms of the lack of sustainable sources of livelihood round the year. Though we are not able to identify the number of times workers change their jobs, the change in the job status which cannot occur unless the job changes, unravel important findings as retrieved from the quarterly repeated surveys of the same households. Two sets of multinomial logit model, representing labour market outcomes and the number of times of change in the type of employment (job status), and the wage function estimated after overcoming the endogeneity bias, bring out the susceptibility of the lower castes, illiterates and those belonging to the large households. The urban informal economy is subjected to income volatility which is connected to employment instability. In fact, the anomalies of the informal economy are not confined to meagre earnings only; the fluctuations reflect greater vulnerability.

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1. Perspective

Labour market volatility may be defined as frequent movement from being employed to becoming jobless though it can be considered in detail in terms of different labour market variables such as unemployment, vacancies, tightness and the job-finding rate (Faccini and Ortigueira, 2010). With three key features of the economy namely, firms are large (employing many workers), adjusting capital and labor is costly and wages are the outcome of an intra-firm Nash-bargaining problem between the firm and its workers, Faccini and Ortigueira (2010) noted that shocks to investment-specific technology explained 40 percent of the observed volatility in U.S. labor productivity, 55 percent in unemployment and 75 percent in labor market tightness. Jump (2014) proposes an explanation for observed differences in the business cycle volatility of employment and unemployment across a sample of 14 OECD countries and shows that increases in the gross replacement rate of public unemployment insurance raise the volatility of employment, and reduce the volatility of real wages, *ceteris paribus*. The gross replacement rate is seen to be positively correlated with the business cycle volatility of hours worked. The role of social spending in reducing the labour market volatility with the degree of financial development, and more specifically for low skilled workers, through compensation mechanisms has been explained by Darcillon (2013) again in the context of the OECD countries.

In a developing country context when people cannot afford to remain unemployed for long, a large majority of the workforce may be engaged in petty activities in the informal sector and in the formal sector in informal capacity, both comprising the informal economy. However, within the informal economy rapid fluctuations in the sources of employment can take place, which we define here as volatility in livelihood sources. In fact, one of the reasons of poverty is related to the instability in the sources of livelihood. On the other hand, wage fluctuations in the same source of livelihood can also arise over different seasons, pushing some of the households below the poverty line. At times both employment and wages may change though it is difficult to decipher the employment changes very distinctly from the aggregate data available for broad occupational categories. For example, within a broad activity (agriculture, manufacturing, services etc.) or within a broad type of employment (self-employment, casual, regular) livelihood source may change, but those changes cannot be captured unless a primary survey is conducted to document the occupational details of the individuals inter-temporally. In the rural areas, agriculture being seasonal, frequent variations in the employment around different quarters in a year may not be an uncommon phenomenon. Even in the urban areas a large body of the work force engaged in the informal economy may have to undergo alterations keeping in view the demand situation. The casual and the self-employed workers in the informal economy are susceptible to conversions with a view to avoiding any major shock in income or consumption. They may shift from one activity to another maintaining their status of employment or the status may also vary along with the job, at times. For example, a self-employed worker in packaging industry may convert

himself to a self-employed worker in petty trade or transport activity, or may choose to join as a casual worker in the construction activity. Similarly, a casual worker may have to participate in a wide range of activities on a day-to-day basis, to balance the wide variations in demand. If we need to talk about the provision of income support programmes for the urban poor, then we must first have a broad idea about the employment and earning fluctuations in the urban informal economy. Secondly, what factors or individuals with which type of characteristics must draw the attention of the policy makers in this regard is an important issue. Urban informal economy is highly heterogeneous in nature (La Porta and Shleifer, 2014 and Rauch, 1989), and it will be impractical to follow a homogeneous approach in providing safety-net to all types of workers. If at least the vulnerable lot can be identified, their candidature may be justified for interventions and income/consumption smoothing. This issue of employment fluctuation is very different from what we understand by time independent long term upward or downward mobility, and the factors explaining such phenomenon (Fields, 2000). Here the objective is to capture the precarity of the urban labour market and to identify the individuals who suffer it on a daily basis. Since daily or weekly information is not available, we try to gauge it from the quarterly variations. An important hypothesis in this regard is that those with less skill, inferior social background, large household size and poor levels of living are under compulsions to explore new avenues frequently in the urban labour market as they lack in terms of job security. The mitigating strategies are not necessarily adopted as an intelligent way of maximizing household income; they are rather the options of the last resort.

As the sources of livelihood change, the earnings also vary. Even within a given source of employment income can change depending on the demand-supply situation. Particularly the wages of the casual workers are susceptible to strong variations. Even the self-employed workers' earnings change as demand for their products and services keep fluctuating widely. Those receiving business subcontracts from the formal sector also undergo significant variations depending on the market situations, which result in income deviations. In other words, within the informal economy we may identify two broad segments: one catering directly to the demand generated by the households and the other, linked to the formal sector firms as suppliers or manufacturing and processing units (Pieters, Moreno-Monroy, and Erumban, 2010). The wide range of intermediaries having control over the inter-sectoral transactions may not allow the benefits offered by the firms operating in the formal economy to flow to their partners in the informal economy.

Only the regular workers are not expected to experience any change in their income unless they shift from one job to another, which is possible both at the lower and upper ends. The highly skilled professionals shift from one organisation to another with varying pay packages while at the other extreme the sales assistants move out from one shop to another with different monthly salaries.

The informal economy being dominated by the trade, services and construction activities (Udall, 1976) with the prevalence of the casual and the self-employed workers - and even when regular wage/salaried workers are present their employment is of temporary nature -

the volatility in the job market is a strongly predictable outcome. As the manufacturing activities have decelerated considerably in the core of the cities (Beeson, 1990), this instability in jobs is expected to have increased considerably, particularly when we consider the profile of the semi-skilled and the unskilled workers. The industrial wage jobs were more tangible, in which workers could spend their entire working life even when they were casually employed (World Economic Forum, 2016), though industrial strikes and lockouts could result in longer spells of unemployment. While the services-led growth in the economy tends to reduce the duration of unemployment, the frequency of change in livelihood sources may have shot up as jobs in services at the lower rungs are fragile and the demand is more sporadic than permanent. Those who are self-employed in the trade and other services also change their occupations as market conditions vary rapidly. So, an important line of enquiry can be to investigate if the income increase is related to job change. In other words, it is pertinent to assess the effectiveness of the job change initiative adopted as a strategy by the household to secure/raise income.

Educational and social/caste background are hypothesized as the key determinants of the labour market volatility. Another important variable instead of a regular control, which is included in the analysis relates to age. The younger participants are expected to undergo rapid mobility as many of the jobs are accepted by them on experimental basis. Even some of the educated workers may hop around jobs which are similar in nature though their employers can be different. Hence, in such situations, income variations can be substantial for the younger workers. Though within certain age range the income changes in response to age, the sensitivity is expected to decline beyond a certain threshold limit. Even the unskilled or semi-skilled workers in the informal sector are less likely to undergo any major rise in income at higher age brackets. While the formal sector may have the provision of adding increments to the salary, the senior and elderly workers in the informal sector remain stagnant. Besides, migration among those who are relatively young within the working age brackets is more prevalent in comparison to the senior/elderly workers. This strengthens the relationship between the job/income change and age.

On the whole, this paper in an attempt to capture the volatility in the labour market actually ends up pursuing only a minute component of this wide issue given the data constraints. For example, a person may be changing his job daily but the industry of employment or the nature of employment being the same, the movements are non-traceable. We try to reflect on the data of the households which were surveyed repeatedly in different quarters, and analyse the following issues: (a) occupational choices of individuals who may be working in the same or different types of activities such as self-employment, casual wage employment and regular wage employment, in different quarters in a year, (b) income variation of the workers and its relationship with employment type, and finally, (c) the factors which prompt changes in employment type of an individual over different quarters.

The rest of the paper is organized as follows. Section 2 explains the intricacies of the data collected over different quarters in the urban areas and unfolds the broad patterns. The

econometric analysis is presented in section 3 and the major findings are summarized in section 4.

2. Data and Broad Patterns

The focus of PLFS is primarily on two aspects. The first is to measure the dynamics in labour force participation and employment status in the short time interval of three months for the urban areas only, as per the Current Weekly Status (CWS). Secondly, for both rural and urban areas, the annual estimates of all important parameters are generated both on usual status and CWS basis.

A rotational panel sampling design has been used for the urban areas. The PLFS (2017-18) divided the sample into four equal parts to be covered in four quarters (Q1V1, Q2V1, Q3V1 and Q4V1; see Table 1). However, the first set covered in the first quarter (Q1V1) was revisited in the second, third and fourth quarters as well (Q2V2, Q3V3 and Q4V4). Similarly, the households visited for the first time in second quarter (Q2V1) were revisited in the third and fourth quarters (Q3V2 and Q4V3). And finally, the households visited for the first time in the third quarter (Q3V1) were revisited in the fourth quarter (Q4V2). Hence, there are three sets of repeated households: group 1 was visited four times (Q1V1, Q2V2, Q3V3, and Q4V4); group 2 thrice (Q2V1, Q3V2 and Q4V3) and group 3 twice (Q3V1 and Q4V2). Though different groups of households in the same quarter (for example, Q2V2 and Q2V1; Q3V3, Q3V1 and Q3V2) can be compared, our focus is to capture the differences, if any, of the same set of households, over different quarters.

Table 1: Repeated Surveys Across Quarters in the Urban Areas

Quarters/Visits	V1	V2	V3	V4
Q1	Q1V1			
Q2	Q2V1	Q2V2		
Q3	Q3V1	Q3V2	Q3V3	
Q4	Q4V1	Q4V2	Q4V3	Q4V4

Note: Q stands for quarter and V for visits.

Source: Periodic Labour Force Survey (PLFS), 2017-18.

Table 2 presents the employment patterns in terms of percentage distributions and the appendix tables give the average income in different types of employment and the variances in incomes in different categories of employment for different quarters and visits.

The employment types calculated over different quarters of the same set of households do not show major changes - the shares varied marginally within the same groups interviewed in different quarters. Particularly the shares of casual employment and self-employment changed in opposite directions while the change in the share of regular wage employment is noticeable in six out of ten cases (Table 2). As indicated in the previous section it will be difficult to capture the job change unless the type of employment also changes across quarters. But the change in the type of employment is less likely to occur as individuals prefer to maintain the similar status despite job change or they are rather compelled to

maintain the same status at the lower echelons given their poor resource and skill endowment. However, in spite of this tendency the employment structure from Table 2 unravels changes, which do reflect volatility in the sources of livelihood.

Table 2: Share of Employment in Urban India, 2017-18 (for all Quarters & all Visits)
CWS in %

Q1 (July- September, 2017)				Change in Quarter and Visit				
Employment Type	Q1V1			Q2V2-Q1V1				
Self-Employed	36.9			0.82				
Regular/Salaried	46.7			0.12				
Casual Worker	16.41			-0.95				
Q2 (October- December, 2017)				Change in Quarter and Visit				
Employment Type	Q2V1	Q2V2		Q3V3-Q2V2	Q3V3-Q1V1			
Self-Employed	37.87	37.72		0.54	1.36			
Regular/Salaried	46.25	46.82		0.65	0.77			
Casual Worker	15.88	15.46		-1.19	-2.14			
Q3 (January- March, 2018)				Change in Quarter and Visit				
Employment Type	Q3V1	Q3V2	Q3V3	Q4V4-Q3V3	Q4V4-Q2V2	Q4V4-Q1V1		
Self-Employed	37.2	38.25	38.26	0.33	0.87	1.69		
Regular/Salaried	47.02	47.57	47.47	-0.92	-0.27	-0.15		
Casual Worker	15.78	14.18	14.27	0.59	-0.60	-1.55		
Q4 (April- June, 2018)				Change in Quarter and Visit				
Employment Type	Q4V1	Q4V2	Q4V3	Q4V4	Q3V2-Q2V1	Q4V3-Q3V2	Q4V3-Q2V1	Q4V2-Q3V1
Self-Employed	35.99	38.1	38.26	38.59	0.38	0.01	0.39	0.90
Regular/Salaried	48.53	47.27	46.85	46.55	1.32	-0.72	0.6	0.25
Casual Worker	15.48	14.63	14.89	14.86	-1.7	0.71	-0.99	-1.15

Note: Q= Quarter, V= Visit

Source: PLFS, 2017-18

The average wages and earnings calculated for workers in different activities such as manufacturing, construction and services show significant differences across gender (tables in the appendix). Also, over the quarters the wages vary significantly (Table 3), implying that the same individual might be receiving different wages over time in a given year. Secondly, the variation in the wages and earnings as measured in terms of the coefficient of variation remains large over the quarters. In fact, there is no sign of convergence except minor changes in the magnitudes. The monthly salaries of the regular wage workers and the earnings of the self-employed households show wide variations in comparison to that of the casual workers. The variations in skill and resource accessibility are reflected in the wide differences in the earnings of the self-employed and regular wage workers. Besides, the inter-quarter differences in the coefficient of variation of the earnings of the self-employed workers are

wide and that of the casual workers are the least, though the differences in the variation over different quarters are not systematic across gender (Table 3).

Table 3: Average Wages/Earnings (in INR) and Coefficient of Variation (%) over Different Quarters and Visits

Quarter/ Visit	Sex	Average Daily Wages of Casual Workers	Monthly Earnings of Regular Workers	Monthly Earnings of Self- employed Workers
Q1V1	M	312.02 (33.94)	17362.53 (85.54)	16173.17 (82.95)
	F	194.1 (46.19)	13771.98 (101.5)	7578.68 (150.28)
	P	292.78 (38.33)	16548.05 (89.04)	15039.58 (89.65)
Q2V2	M	316.78 (35.56)	17387.8 (89.19)	16668.50 (139.6)
	F	192.69 (43.74)	13984.92 (108.59)	7793.11 (153.02)
	P	298.11 (39.43)	16622.37 (93.26)	15427.41 (144.23)
Q3V3	M	326.63 (38.87)	17712.80 (90.19)	16847.38 (116.77)
	F	201.63 (49.14)	14174.69 (112.64)	7475.16 (150.26)
	P	309.2 (42.31)	16913.80 (94.84)	15590.16 (122.08)
Q4V4	M	343.86 (42.34)	17664.29 (84.36)	17001.57 (110.28)
	F	214.71 (49.08)	13820.13 (99.26)	7748.05 (149.91)
	P	328.46 (44.9)	16830.97 (87.57)	15772.79 (115.63)
Q2V1	M	312.02 (33.94)	18563.06 (91.52)	16005.96 (79.15)
	F	194.10 (46.19)	15904.66 (109.44)	7383.41 (145.97)
	P	292.78 (38.33)	17984.82 (95.17)	14737.43 (115.31)
Q3V2	M	319.52 (37.75)	18269.78 (91.39)	15721.06 (76.83)
	F	197.58 (50.93)	15934.52 (107.7)	6703.77 (122.64)
	P	297.46 (42.46)	17739.48 (94.88)	14383.63 (83.58)
Q4V3	M	330.79 (37.22)	18661.15 (90.87)	16648.74 (105.38)
	F	193.89 (60.89)	15848.46 (106.92)	6807.81 (118.92)
	P	309.20 (42.73)	18034.88 (94.24)	15267.27 (110.67)
Q3V1	M	333.649 (35.56)	18921.88 (104.95)	15761.67 (72.45)
	F	201.55 (43.61)	13980.61 (110.16)	5770.64 (119.08)
	P	312.86 (39.65)	17794.61 (93.26)	14424.61 (79.3)
Q4V2	M	342.12 (38.02)	18385.35 (105.27)	15820.52 (73.29)
	F	212.19 (45.64)	13636.18 (105.28)	6543.10 (143.01)
	P	325.47 (41.04)	17331.21 (106.56)	14449.43 (81.4)
Q4V1	M	336.68 (40.19)	18610.07 (91.42)	16457.65 (76.82)
	F	207.44 (42.72)	14176.22 (120.52)	5902.66 (123.04)
	P	314.48 (43.71)	17583.91 (97.43)	14956.52 (84.1)

Note: Coefficient of Variation (CV) is in parenthesis, Q= Quarter, V = Visit, M = Male, F = Female, P= Persons

Source: PLFS, 2017-18.

The fact that in addition to the earnings inequality at a given quarter the possibility of the same workers receiving different wages in different quarters is very much distinct prompts us to infer that the changes are time independent even in the short run and different factors causing such variations need to be identified. So, this brings us to pose a pertinent question as to which type of workers in the urban labour market are susceptible to such fluctuations in wages and earnings? What role the caste, religion and more importantly education, plays in determining such earning variability or vulnerability associated with income fluctuations? Do the earning differences get reduced for the educated workers, highlighting the role of skill in mitigating the earning risks? Another important issue relates to the impact of consumption expenditure on earnings. In the standard conceptualization higher wages are expected to raise the living standards measured in terms of consumption expenditure. However, in the low-income households when consumption is already at the minimum threshold levels households struggle to maintain it for bare survival. Thus, they take recourse to various income augmenting strategies though such livelihood diversification or job change efforts are primarily initiated to maintain the subsistence consumption, and not really to progress and prosper. Hence, in what way consumption expenditure per capita prompts a worker to shift job and maintain the wage income from falling is a pertinent question. Whether the number of visits/surveys is associated with a particular type of employment? If so, it may indicate that certain types of employment are likely to undergo frequent shifts which are being captured through the number of repeated surveys.

In order to examine these issues, we set our empirical strategy in the following manner. A wage equation is estimated for the repeated households. However, it involves a serious endogeneity problem relating to the occupational choice variable in the wage equation. So, we try to estimate the occupational choice function first from which the estimated probabilities are generated to be used in the wage equation as instrument. Besides we have also tried to model the number of times that an individual may have undergone a change in the nature of employment.

3. Econometric Analysis

The Occupation choice function based on data from Q1V1, Q2V2, Q3V3 and Q4V4; Q2V1, Q3V2 and Q4V3; and Q3V1 and Q4V2 is conceptualized in a multinomial logit framework with the following outcomes: not in labour force =0, unemployment =1, casual work=2, regular wage work=3 and self-employment=4.

Multinomial logistic function is presented below in relation to each of the outcomes:

$$\Pr(Y_i = 1) = \frac{e^{\beta'_1 \cdot X_i}}{1 + \sum_{k=1}^{K-1} e^{\beta'_k \cdot X_i}}$$

.....

$$\Pr(Y_i = K - 1) = \frac{e^{\beta'_{K-1} \cdot X_i}}{1 + \sum_{k=1}^{K-1} e^{\beta'_k \cdot X_i}}$$

$$\Pr(Y_i = K) = \frac{1}{1 + \sum_{k=1}^{K-1} e^{\beta'_k \cdot X_i}}$$

K is the comparison category (in this case: not in labour force, designated by 0).

In the multinomial logit model, the equations for each of the categories cannot be estimated because there is identification problem. In order to avoid it, the coefficients of one of the categories, therefore, will have to be reduced to zero. Since there is no fixed norm for fixing the comparison category the estimated results for the rest of the categories remain sensitive to the selection of the base category. However, the marginal effects are independent of the selection of the base category and secondly, they can be calculated even for the base category though the coefficients of the variables are assumed to be zero. Needless to add that the coefficients are not the marginal effects as it happens in a linear regression framework. The marginal effects are calculated in the following manner to be interpreted as the effect of the variables on the probability of different outcomes.

The variables included in the occupational choice function are caste, religion, education, age, gender and marital status. Except age the rest are discrete variables. Caste and religion play an important role in determining the occupational outcome as some of the jobs are not acceptable to or accessible by the members of certain caste and religious background. Similarly, the labour market is segmented along the lines of gender. Age is expected to have a non-linear effect on occupational choice: while jobs are accessible with a higher probability in relation to age, beyond a certain threshold limit certain jobs may show a declining probability. The crucial variable for the choice of the occupation is education. In general, while lower levels of education may lead to absorption in petty jobs, higher educational attainments raise the probability of acquiring regular jobs. Even within the self-employment category highly qualified professionals coexist with petty traders and street vendors. Whether the number of visits. i.e., the number of times a household has been surveyed in a year, raises or reduces the probability of any particular occupational outcome is an important question.

The vulnerable ones, particularly in the informal economy, are likely to undergo change in their jobs and also the type of jobs more frequently than others. So, with repeated surveys of the same households the increase in the probability of low-quality jobs like casual employment or self-employment is expected to capture this aspect to some extent.

Next, we specify the Mincer earnings function which includes age, gender, marital status, caste, education, number of times surveyed and the monthly per capita consumption expenditure. Except age and the consumption expenditure per capita the rest of the variables are taken in the form of dummies. While earnings are expected to determine the consumption expenditure, we have tried to uphold the view that the bare minimum consumption forces households, particularly engaged in the informal sector, to explore possibilities of augmenting their earnings. Hence, job change and accessing multiple sources of livelihood are some of the strategies that the households adopt.

The Kernel density function given below (Figure 1) for daily wage/earnings resembles the normal distribution – rather the wage rate at which the highest frequency is noted is much less than what is implied by the normal distribution though at the upper end of the curve the frequencies are a bit larger. Besides, the variations in the wage remain within a limited range though the Kernel density shows a slightly greater variations than what is implied by the normal distribution. On the other hand, the Kernel density function for the per capita daily consumption expenditure differs widely from the normal distribution and it has a bimodal distribution (Figure 2). Besides, the variations are wide as far as the lower modal value is concerned though at the higher end the variations are marginal. The first part also has a tilt towards the lower magnitude of consumption per capita, i.e., more of a log normal shape. Such differences in the distributional aspect of these two variables prompt us to imagine that one is not the proxy of the other. Secondly, given the consumption pattern the income may be getting determined. At the lower end, while a large number of the samples are concentrated (the modal frequency for the first hump being greater than the second one) and that too with a log normal tilt, consumption seems to be already at the bare minimum, at least for a number of sample units. Hence, the possibility of further reduction being less the workers must be adopting strategies to enhance earnings which would imply that consumption is rather a determinant of income. It may have been more appropriate to take the past consumption as a determinant of current earning but due to the lack of information both the variables are chosen contemporaneously.

Figure 1: Wage/Earnings per Day

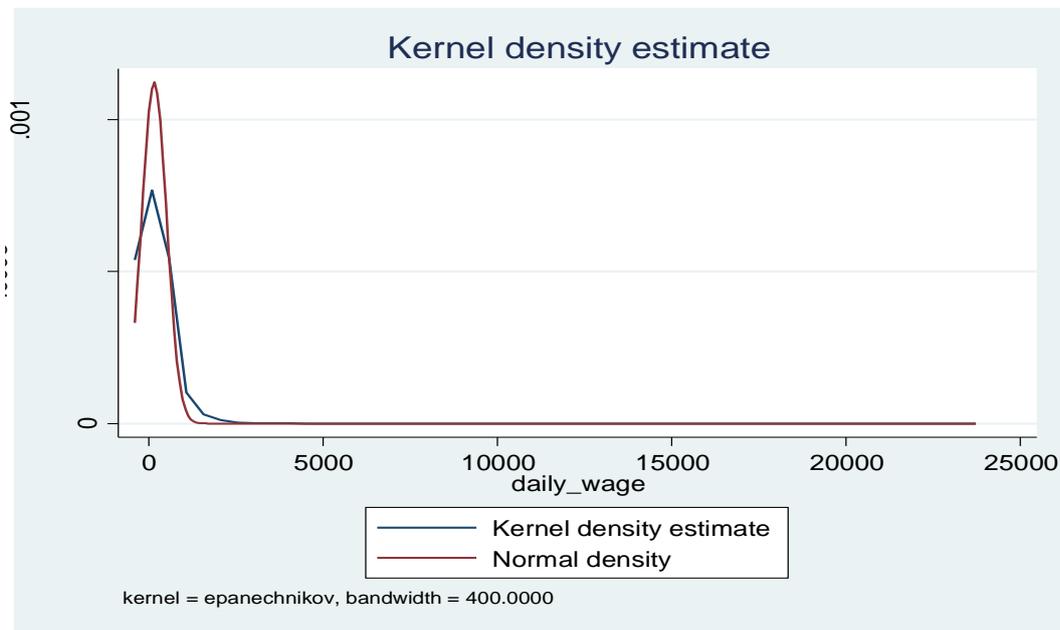
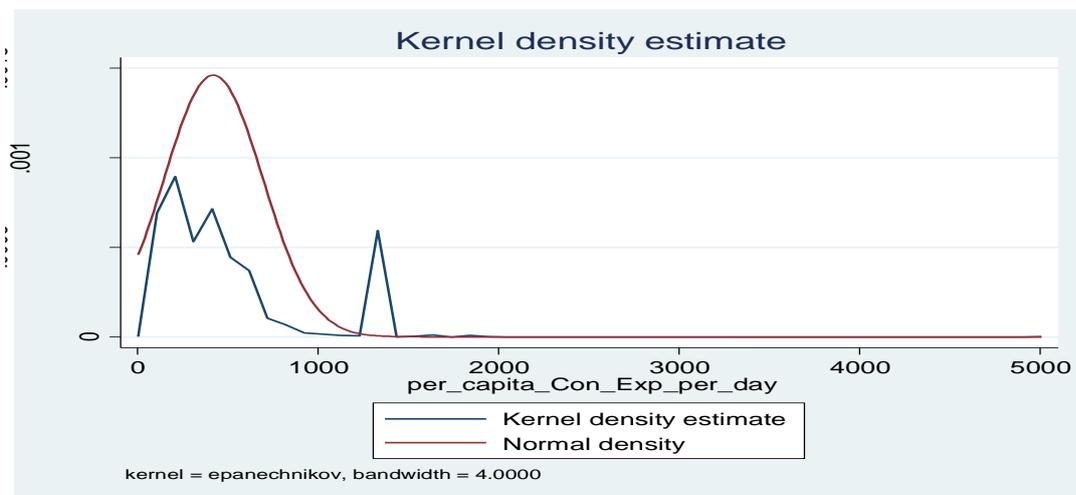


Figure 2: Per Capita Consumption Expenditure Per Day



The occupational choice variable which is a determinant of wage is endogenous in nature. Hence, to overcome the problem of endogeneity we replace it by the estimated probabilities obtained from the occupational choice function. We may note that both the occupational choice

function and the wage function are identified as per the exclusion principle. Relative to the illiterates those with higher levels of education are less likely to be employed as casual workers, while the probability of being in regular jobs is greater for them. However, the education dummies are mostly insignificant for the self-employment category indicating an almost equal probability for the illiterates as well as the educated ones.

**Table 4: Marginal Effects from Multinomial Logit Model for Employment Outcome
(Dependent Variable = Labour Market Outcomes; N = 137,114)**

Explanatory Variables	Not in LF	Unemployed	Casual Workers	Regular Wage/Salaried	Self-Employed
	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx
Age	-0.0595*** (0.000436)	0.00763*** (0.000172)	0.00690*** (0.000155)	0.0248*** (0.000302)	0.0201*** (0.000264)
Age Square	0.000713*** (5.24e-06)	-9.99e-05*** (2.11e-06)	-8.33e-05*** (1.89e-06)	-0.000299*** (3.68e-06)	-0.000231*** (3.10e-06)
Household Size	0.00292*** (0.000450)	0.000591*** (0.000129)	-0.000566*** (0.000102)	-0.00425*** (0.000247)	0.00130*** (0.000203)
Male	-0.431*** (0.00356)	0.0267*** (0.00104)	0.0695*** (0.00178)	0.155*** (0.00258)	0.179*** (0.00280)
Hindu	0.00860** (0.00366)	-0.00471*** (0.00113)	-0.000265 (0.000831)	-0.00114 (0.00175)	-0.00249 (0.00178)
Muslim	0.00889** (0.00418)	0.000619 (0.00125)	0.000915 (0.00102)	-0.0117*** (0.00189)	0.00126 (0.00211)
Scheduled Caste	-0.0223*** (0.00519)	0.00580*** (0.00160)	0.00848*** (0.00143)	0.00403* (0.00237)	0.00403 (0.00251)
Other Backward Caste	-0.00684 (0.00433)	-0.000630 (0.00119)	0.00290*** (0.000991)	-0.00972*** (0.00198)	0.0143*** (0.00228)
General Caste	0.0178*** (0.00418)	-0.00526*** (0.00115)	-0.00695*** (0.000923)	-0.0123*** (0.00196)	0.00669*** (0.00218)
Unmarried	-0.00701* (0.00386)	0.0367*** (0.00162)	-0.00434*** (0.000808)	-0.00371** (0.00170)	-0.0216*** (0.00181)
Up to Primary	-0.00707* (0.00410)	0.00171 (0.00178)	-0.00411*** (0.000624)	0.00754*** (0.00233)	0.00193 (0.00183)
Up to Higher Secondary Diploma	0.00901*** (0.00346)	0.00398*** (0.00150)	-0.0161*** (0.000781)	0.0109*** (0.00187)	-0.00779*** (0.00154)
Graduate & above	-0.177*** (0.0152)	0.0583*** (0.00770)	-0.0109*** (0.000683)	0.127*** (0.0104)	0.00285 (0.00379)
Second Revisit	-0.127*** (0.00637)	0.0485*** (0.00422)	-0.0171*** (0.000582)	0.0958*** (0.00431)	-0.000142 (0.00174)
Third Revisit	-0.000123 (0.00235)	-0.000485 (0.000683)	0.000602 (0.000542)	-0.00130 (0.00115)	0.00131 (0.00113)
	0.00112 (0.00238)	-0.000894 (0.000694)	0.00127** (0.000552)	-0.000998 (0.001)	-0.000493 (0.00114)

Log likelihood = -98329.938

Pseudo R2 = 0.3460

Base category for explanatory variables: Gender = Female; Religion = Other Religion; Social Category = Scheduled Tribes; Marital Status = Married; Education = Illiterate; No. of Revisit = First Revisit; Continuous Variables = Age, Age Square Household Size.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results as presented in Table 4, indicate that with age the probabilities of all the three types of employment are likely to rise though at higher age brackets they decline and the probability of not being in the labour force rises. Males as compared to the females are less likely to be outside the labour force, as in a developing country like India males are the principal bread earners. Consistent with this, they also show a higher probability of joining all the three types of employment. However, it is surprising to note that the males are more likely to remain unemployed compared to the females, though the female unemployment rates are generally higher than their male counterparts, particularly in the urban labour market. As per the PLFS (2017-18) data, the male unemployment rate shot up to an unprecedented high level which is reflected in terms of a higher probability compared to that among the females. Religion as such does not impact on the nature of employment though Muslims in relation to the comparison group are less likely to be in the regular wage/salaried employment. While the lower social categories like Scheduled castes and OBCs are more likely to be in low quality employment such as casual jobs, the general category is less likely to join this group of employment. Scheduled castes are also more likely to be unemployed and those in the general category are less compared to the scheduled tribes and the OBCs. However, the relatively better jobs (regular) are scarce for both the general category workers and the OBCs, relatively speaking. The reservation policy applicable largely to the urban organized/formal labour market has possibly enhanced the accessibility of the scheduled castes and tribes to regular jobs. On the other hand, self-employment which may involve skill or higher levels of learning as in the case of the professionals, is less reachable to the scheduled castes and tribes. With higher levels of education compared to the illiterates, the probability of joining the regular wage employment increases and casual employment declines, though there is no such clear-cut pattern in relation to self-employment. With revisits the probability of casual employment rises indicating the shifting from other types of employment to casual employment over the quarters.

Table 5 presents the wage equation which has been estimated from 2SLS keeping in view the endogeneity bias, in addition to the OLS. Further, the OLS equation has been presented with and without dummies representing the type of employment. The results are not much different though the estimated probability derived from the occupational choice model is not statistically significant. In the equation with dummies for employment type the wages/earnings of the casual workers and the self-employed are much lower than that of the regular workers. The education dummies have positive coefficients and they are statistically significant, confirming the positive returns to education. Though SCs and OBCs along with the general category receive lower earnings in comparison to the base category, the magnitude of the coefficients indicate that the earnings of the lower castes (SCs and OBCs) are less than that of the general category workers. Given the level of education and other factors, the role of caste in determining wages cannot be overlooked even in the context of the urban labour market though one would expect the caste factor to have undergone erosion. It is also noted that the workers from the households which were resurveyed have earnings less than that of the workers who were surveyed only once.

Table 5: Wages/Earnings Equation Estimated from OLS and 2SLS

Explanatory Variables	OLS	2SLS	OLS
	(Without type of employment dummies)		(With type of employment dummies)
	Wages/Earnings per Day	Wages/Earnings per Day	Wages/Earnings per Day
Estimated Probabilities	-	23.28	-
	-	(27.41)	-
Age	17.05***	18.64***	17.59***
	(0.878)	(2.065)	(0.877)
Age Square	-0.156***	-0.175***	-0.160***
	(0.00985)	(0.0242)	(0.00983)
Household Size	23.88***	23.88***	24.27***
	(0.799)	(0.799)	(0.798)
Monthly per Capita Consumption Expenditure	0.0960***	0.0960***	0.0952***
	(0.000794)	(0.000794)	(0.000795)
Male	167.0***	180.6***	175.0***
	(4.219)	(16.53)	(4.244)
Scheduled Caste	-113.8***	-113.5***	-112.5***
	(7.332)	(7.342)	(7.319)
Other Backward Caste	-117.4***	-117.5***	-113.3***
	(6.381)	(6.382)	(6.373)
General Caste	-82.18***	-82.78***	-80.13***
	(6.380)	(6.419)	(6.373)
Unmarried	-78.33***	-78.21***	-81.02***
	(5.503)	(5.505)	(5.495)
Up to Primary	20.71***	20.82***	18.73***
	(6.803)	(6.804)	(6.793)
Up to Higher Secondary	78.36***	78.00***	70.85***
	(5.859)	(5.874)	(5.898)
Diploma	208.2***	210.4***	192.2***
	(11.57)	(11.85)	(11.61)
Graduate & Above	305.3***	307.2***	288.7***
	(6.651)	(7.020)	(6.765)
Second Revisit	-10.74***	-10.74***	-10.69***
	(4.013)	(4.013)	(4.003)
Third Revisit	-22.89***	-22.92***	-23.31***
	(4.043)	(4.044)	(4.034)
Casual Worker	-	-	-58.39***
	-	-	(5.193)
Self Employed Worker	-	-	-46.94***
	-	-	(3.804)
Constant	-445.1***	-493.0***	-434.5***
	(21.60)	(60.40)	(21.60)
N	44,747	44,747	44747
R-squared	0.4378	0.4378	0.4405
Adj R-squared	0.4377	0.4376	0.4403
Prob > F	0.000	0.000	0.000

Base category for explanatory variables: Gender = Female; Religion = Other Religion; Social Category= Scheduled Tribes; Marital Status = Married; Education = Illiterate; No. of Revisit = First Revisit; Category of Employment = Regular Wage & Salaried; Continuous Variables = Age, Age Square, Household Size, MPCE.

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

This reaffirms that with repeated surveys the livelihood uncertainty is captured better which results in lower earnings. In fact, the absolute magnitude of the coefficient of the dummy for the workers who were surveyed thrice is greater than that of the workers who were surveyed twice. The signs of the coefficients being negative it suggests that for several workers the quarterly fluctuations in incomes are high as a result of which their average earnings tend to be lower than those who were surveyed in one quarter only. So, it may be inferred that the urban informal economy like the rural labour market is also subjected to income volatility which may be connected to employment instability. The problem of the informal economy is not confined to meagre earnings only; the fluctuations reflect greater vulnerability.

Table 6: Marginal Effects from Multinomial Logit Model for Number of Times of Change in Employment Type

(Dependent variable= Number of Times of Change in Employment Type; N= 136,665)

Explanatory variables	No change dy/dx	Change 1 time dy/dx	Change 2 times dy/dx	Change 3 times dy/dx
Age	-0.0118*** (0.000180)	0.00853*** (0.000154)	0.00295*** (8.82e-05)	0.000350*** (2.72e-05)
Age Square	0.000132*** (2.20e-06)	-9.48e-05*** (1.88e-06)	-3.32e-05*** (1.09e-06)	-4.02e-06*** (3.44e-07)
Household Size	-0.00104*** (0.000267)	0.000530** (0.000231)	0.000479*** (0.000126)	3.44e-05 (3.84e-05)
Male	-0.0291*** (0.00129)	0.0194*** (0.00110)	0.00843*** (0.000652)	0.00132*** (0.000215)
Hindu	-4.37e-05 (0.00226)	0.00142 (0.00191)	-0.00112 (0.00114)	-0.000263 (0.000377)
Muslim	-0.0101*** (0.00295)	0.00700*** (0.00253)	0.00224 (0.00143)	0.000842 (0.000531)
Scheduled Caste	-0.0299*** (0.00385)	0.0198*** (0.00322)	0.00761*** (0.00192)	0.00254** (0.00111)
Other Backward Caste	-0.0115*** (0.00283)	0.00702*** (0.00240)	0.00313** (0.00140)	0.00131** (0.000602)
General Caste	0.00175 (0.00273)	-0.00143 (0.00233)	-0.00117 (0.00133)	0.000849 (0.000562)
Unmarried	-0.0603*** (0.00223)	0.0436*** (0.00190)	0.0146*** (0.00110)	0.00217*** (0.000361)
Up to Primary	0.0100*** (0.00212)	-0.00862*** (0.00180)	-0.000890 (0.00108)	-0.000529* (0.000278)
Up to Higher Secondary	0.0118*** (0.00194)	-0.00820*** (0.00166)	-0.00288*** (0.000964)	-0.000718*** (0.000274)
Diploma	-0.0153*** (0.00507)	0.0150*** (0.00448)	0.00115 (0.00228)	-0.000767* (0.000413)
Graduate & above	0.00932*** (0.00209)	-0.00547*** (0.00181)	-0.00304*** (0.00101)	-0.000809*** (0.000237)
Log likelihood = -45446.048		Pseudo R2 = 0.0594		

Base category for explanatory variables: Gender = Female; Religion = Other Religion; Social Category= Scheduled Tribes; Marital Status = Married; Education = Illiterate; Continuous Variables = Age, Age Square, Household Size.

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Finally, the model representing the number of times of change in the job status (casual, regular and self-employment) brings out interesting results. Taking no change as the comparison category in the multinomial logit model we note from Table 6, while lower caste background raises the probability of change in the type of employment, the workers belonging to the general category are less likely to change their job status. Similarly, the illiterates show a higher probability of changing the job status compared to those who have primary or higher levels of education. Large household size also has a positive effect on the probability of change in the employment type as these households cannot absorb the income shocks and are forced to shift from one type of employment to another. Similarly, males being the primary earners shift more frequently than the females, restoring income levels being the primary concern. With age though the probability of change picks up, beyond a certain limit it actually declines as the employability or adaptability falls. As mentioned earlier in the text, though we are not able to identify the number of times workers change their jobs, the change in the job status which cannot occur unless the job change takes place, unravel important findings. Cases where job change occurs without the change in the job status are not captured in our analysis; hence, our research on livelihood volatility based on repeated surveys is only a partial reflection of the reality. Yet, the vulnerability of the lower castes, illiterates and those belonging to the large households is evident.

4. Conclusion

This study focuses on the labour market volatility in the urban context. Though it aims at reflecting on the informal economy, the database drawn from the PLFS (2017-18) does not partition the urban labour market into two different components. However, the types or status of employment such as regular, casual and self-employment, are able to do justice to the issue to some extent as the last two categories would broadly fall into the domain of informal economy. In a developing country context, many cannot afford to remain unemployed for long and hence, they are compelled to join the labour market seeking petty jobs with meagre earnings. How stable these sources of livelihood in the urban informal economy are, is a crucial question, that requires an intense analysis. Interestingly, the PLFS (2017-18) resurveyed the households in different quarters based on which the volatility aspect in the urban job market is reflected.

The study aims at capturing the labour market volatility which is conceptualized in terms of the lack of sustainable sources of livelihood round the year. Though we are not able to identify the number of times workers change their jobs, the change in the job status which cannot occur unless the job changes, unravel important findings as retrieved from the quarterly (repeated) surveys of the same households. In spite of the fact that we are examining only the short run (quarterly) changes in the labour market outcomes of the same

individuals, the employment structure unravels changes, which do reflect volatility in the sources of livelihood. Over the quarters the wages vary significantly, implying that the same individual might be receiving different wages over time in a given year. Secondly, the variation in the wages and earnings as measured in terms of the coefficient of variation remains large over the quarters. In fact, there is no sign of convergence except minor changes in the magnitudes. The inter-quarter differences in the coefficient of variation of the earnings of the self-employed workers are wide and that of the casual workers are the least, though the differences in the variation over different quarters are not systematic across gender.

Two sets of multinomial logit model, representing labour market outcomes and the number of times of change in the type of employment (job status) have been estimated. Besides, the wage equation has been estimated keeping in view the endogeneity problem that arises due to the occupational choice variable being a determinant. Findings bring out the susceptibility of the lower castes, illiterates and those belonging to the large households in the urban labour market. Casual wage employment and self-employment largely being the components of the informal economy a great deal can be inferred about those located at the lower echelons. The urban informal economy is subjected to income volatility which is connected to employment instability. In fact, the anomalies of the informal economy are not confined to meagre earnings only; the fluctuations reflect greater vulnerability. In an attempt to maintain their consumption expenditure often persisting at the bare minimum levels, the low income households are bound to adjust to the labour demand conditions and thus, they undergo job alterations frequently. Cases where job change occurs without the change in the job status or employment type are not captured in our analysis; hence, our research on livelihood volatility based on repeated surveys is only a partial reflection of the reality. Yet, the vulnerability of those from lower social categories and lacking in terms of human capital, is distinct. While the informal economy with little entry barriers may have been offering jobs of the last resort, skill formation, training and other productivity augmenting strategies need to be initiated on a large scale. Creation of employment cells with provision of job market information, pertaining to the informal economy, may reduce the income instability.

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Appendix

Table A1: Average Daily Wages of Casual Workers Employed across the Industries in Urban India (in INR)

	Q1V1					
Industry Groups	M	F			P	
Agriculture	273	166			230	
Manufacturing	309	174			282	
Construction	329	200			315	
Mining and Quarrying	320	224			311	
Services	299	194			281	
Total	309.75	189.50			289.76	
SD	118.34	83.62			121.83	
CV	38.20	44.12			42.04	
	Q2V1			Q2V2		
Industry Groups	M	F	P	M	F	P
Agriculture	274	164	239	295	167	245
Manufacturing	295	162	262	298	173	273
Construction	284	121	266	269	-	269
Mining and Quarrying	324	231	317	336	243	329
Services	310	230	296	287	186	272
Total	312.02	194.10	292.78	316.78	192.69	298.11
SD	105.91	89.66	112.24	112.65	84.28	117.55
CV	33.94	46.19	38.33	35.56	43.74	39.43

	Q3V1			Q3V2			Q3V3					
Industry Groups	M	F	P	M	F	P	M	F	P			
Agriculture	302	162	240	279	153	235	291	177	254			
Manufacturing	302	189	267	285	151	247	317	162	288			
Construction	342	207	329	334	276	327	362	-	362			
Mining and Quarrying	352	270	346	329	241	320	342	245	334			
Services	310	194	296	331	258	319	298	207	286			
Total	333.649	201.55	312.86	319.52	197.58	297.46	326.63	201.63	309.20			
SD	118.6666	87.91	124.07	120.65	100.64	126.33	126.97	99.09	130.83			
CV	35.56	43.61	39.65	37.75	50.93	42.46	38.87	49.14	42.31			
	Q4V1			Q4V2			Q4V3			Q4V4		
Industry Groups	M	F	P	M	F	P	M	F	P	M	F	P
Agriculture	340	190	281	306	147	249	286	156	242	323	205	292
Manufacturing	294	173	265	305	184	277	309	158	262	322	179	302
Construction	247	173	240	287	204	285	295	123	274	305	-	305
Mining and Quarrying	356	243	342	364	272	357	344	268	339	360	250	351
Services	319	212	305	319	236	312	328	232	313	325	202	307
Total	336.68	207.44	314.48	342.12	212.19	325.47	330.79	193.89	309.20	343.86	214.71	328.46
SD	135.34	88.62	137.47	130.09	96.84	133.58	123.15	118.06	132.14	145.61	105.38	147.48
CV	40.19	42.72	43.71	38.02	45.64	41.04	37.22	60.89	42.73	42.34	49.08	44.90

Source: PLFS, 2017-18

Note: SD=Standard Deviation & CV=Coefficient of Variation, Q= Quarter, V = Visit, M= Male, F = Female, P= Person.

Table A2: Average Monthly Wages of Regular/ Salaried Employees across the Industries in Urban India

	Q1V1								
Industry Groups	M		F			P			
Agriculture	18141		6687			17751			
Manufacturing	13373		8347			12735			
Construction	26808		26945			26817			
Mining and Quarrying	20450		32297			20872			
Services	18258		14537			17242			
Total	17362.53		13771.98			16548.05			
S.D.	14851.63		13978.22			14734.99			
CV	85.54		101.50			89.04			
	Q2V1			Q2V2					
Industry Groups	M	F	P	M	F	P			
Agriculture	15738	6350	14250	14529	6710	14236			
Manufacturing	13951	9430	13490	13501	9962	13035			
Construction	28518	18609	27728	25803	26950	25883			
Mining and Quarrying	26472	19212	25896	17503	27344	17884			
Services	19660	16933	18930	18625	14538	17516			
Total	18563.06	15904.66	17984.82	17387.80	13984.92	16622.37			
SD	16989.24	17406.76	17116.10	15508.63	15186.33	15501.97			
CV	91.52	109.44	95.17	89.19	108.59	93.26			
	Q3V1			Q3V2			Q3V3		
Industry Groups	M	F	P	M	F	P	M	F	P
Agriculture	16853	3888	15332	17093	8005	16284	13840	18857	13858
Manufacturing	14593	9657	13999	13887	8463	13317	13555	9746	13037
Construction	29696	19122	28969	27673	18323	26927	28546	29578	28612
Mining and Quarrying	19475	11689	19279	21103	21541	21145	16112	19331	16287
Services	20263	14665	18694	19380	16954	18708	18839	14797	17750
Total	18921.88	13980.61	17794.61	18269.78	15934.52	17739.48	17712.80	14174.69	16913.8
SD	19858.49	15400.95	19047.39	16696.26	17161.44	16831.48	15974.32	15965.75	16040.75
CV	104.95	110.16	93.26	91.39	107.70	94.88	90.19	112.64	94.84

	Q4V1			Q4V2			Q4V3			Q4V4		
Industry Groups	M	F	P	M	F	P	M	F	P	M	F	P
Agriculture	13411	8702	12704	13498	4732	10901	15235	7695	14622	14316	20158	14339
Manufacturing	14975	9192	14300	14637	9728	14038	14420	8307	13800	13747	10100	13237
Construction	25592	20686	24798	27486	21008	27126	28841	17694	27718	27250	24282	27007
Mining and Quarrying	15598	14782	15563	19630	11258	19431	20602	19334	20515	18145	26445	18496
Services	20173	14859	18626	19625	14310	18162	19910	16918	19068	18761	14539	17647
Total	18610.07	14176.22	17583.91	18385.35	13636.18	17331.21	18661.15	15848.46	18034.88	17664.29	13820.13	16830.97
SD	17013.54	17084.95	17132.45	19354.62	14355.96	18468.73	16957.81	16944.78	16995.24	14901.65	13718.36	14738.62
CV	91.42	120.52	97.43	105.27	105.28	106.56	90.87	106.92	94.24	84.36	99.26	87.57

Source: PLFS, 2017-18

SD=Standard Deviation & CV=Coefficient of Variation, , Q= Quarter, V = Visit, M= Male, F = Female, P= Person.

Table A3: Average Monthly Wages of Self-Employed Workers across the Industries in Urban India

	Q1V1					
Industry Groups	M	F			P	
Agriculture	10751	4669			9821	
Manufacturing	18184	4299			14186	
Construction	20762	6394			20002	
Mining and Quarrying	17682	-			17682	
Services	15861	11230			15439	
Total	16173.17	7578.68			15039.58	
SD	13416.53	11389.64			13484.40	
CV	82.95	150.28			89.65	
	Q2V1			Q2V2		
Industry Groups	M	F	P	M	F	P
Agriculture	11743	5070	10969	11480	4762	10529
Manufacturing	16754	4427	13103	20552	3600	15596
Construction	15040	6267	13287	15312	4961	14112
Mining and Quarrying	17112	20000	17112	19827	--	19827
Services	15968	10097	15302	15942	11654	15500
Total	16005.96	7383.41	14737.43	16668.50	7793.11	15427.41
SD	12670.24	10777.64	12780.26	23270.57	11925.31	22252.14
CV	79.15	145.97	115.31	139.60	153.02	144.23

	Q3V1			Q3V2			Q3V3-					
Industry Groups	M	F	P	M	F	P	M	F	P			
Agriculture	11289	4759	10544	11113	5849	10509	11243	5392	10502			
Manufacturing	17166	3750	12968	16393	4044	12584	20105	3945	15611			
Construction	13265	6000	12719	16365	7361	15246	18636	5297	18032			
Mining and Quarrying	16404	16804	16408	16531	10433	16522	19758	7513	19657			
Services	15736	7472	14909	15929	8863	15107	16231	10832	15699			
Total	15761.67	5770.64	14424.61	15721.06	6703.77	14383.63	16847.38	7475.16	15590.16			
SD	11420.53	6871.82	11439.59	12078.52	8221.67	12022.87	19673.59	11232.85	19033.08			
CV	72.45	119.08	79.30	76.83	122.64	83.58	116.77	150.26	122.08			
	Q4V1			Q4V2			Q4V3			Q4V4		
Industry Groups	M	F	P	M	F	P	M	F	P	M	F	P
Agriculture	10790	6572	10192	11137	5376	10478	11931	4856	11009	11084	4860	10049
Manufacturing	16809	3818	12504	16491	4062	12369	16797	3726	13069	22511	4137	17363
Construction	24511	-	24511	13184	7112	12643	15521	9856	14888	15925	9000	15905
Mining and Quarrying	19256	37686	19404	16696	18840	16719	17234	9326	17222	19279	18000	19273
Services	16602	7952	15837	15846	8697	15088	16952	9473	16154	15910	11507	15500
Total	16457.65	5902.66	14956.52	15820.52	6543.10	14449.43	16648.74	6807.81	15267.27	17001.57	7748.05	15772.79
SD	12643.90	7263.15	12578.77	11594.99	9357.49	11762.46	17545.18	8096.49	16896.99	18749.34	11615.76	18238.27
CV	76.82	123.04	84.10	73.29	143.01	81.40	105.38	118.92	110.67	110.28	149.91	115.63

Source: PLFS, 2017-18

SD=Standard Deviation & CV=Coefficient of Variation, Q= Quarter, V = Visit, M= Male, F = Female, P= Person.

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