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The Extent of Association between Pregnancy Intention and Utilization of Maternal Health Care Services in India

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Introduction

Information about women's intention to become pregnant has been used for a variety of purposes, from estimating the number of unintended pregnancies to assessing the effects of pregnancy intention on behaviours during pregnancy, birth outcomes, health and development of children born as a result of unintended pregnancies (Joyce et al., 2002). Over the last several decades, researchers and policy makers have devoted considerable attention to women's pregnancy intentions (Pulley et al., 2002). According to NSFG (1995), a pregnancy is unwanted when the woman had not ever wanted to have any other child. A pregnancy is classified as mistimed if the woman did not want it at the time it occurred. Intended pregnancies are those that were wanted at the time they occurred and those that were wanted earlier (cited in Pulley et al., 2002). Women's behaviour during pregnancy, which can affect the health of their infants, may be influenced by their attitude towards the pregnancy (Kost et al., 1998). Accurate measurement of pregnancy intendedness, including women's attitudes toward pregnancy and motivations to achieve or avoid a pregnancy, is important in understanding fertility-related behaviours, estimating unmet need for contraception and building stronger family planning programs (Speizer et al., 2004). Developing a more complete understanding of pregnancy intentions should advance efforts to increase contraceptive use, to prevent unintended pregnancies and to improve health of women and their children (Santelli et al., 2003).

Unintended pregnancies affect the well being of women, children and families. In fact, some health experts believe that unintended pregnancies carried to term are more likely to involve complications. Women with unintended pregnancies may be subject to increased physical abuse by their partners during pregnancy (cited in IGWG and WHO, 2005). The planning status of births is a factor in maternal behaviour during pregnancy. In the specific behaviours examined, whether pregnancies were wanted exhibits significant net relationships with timing of prenatal care (Weller et al., 1987). The pregnancy intention can have its implication on the utilization of the maternal and child health care services. However, pregnancy intention has little or no effect on medical supervision at delivery, child vaccination or adequacy of growth, once the impact of socioeconomic and demographic characteristics is accounted for; intendedness does appear to independently affect the odds of obtaining adequate prenatal care (Remez, 2003).

Women with unwanted pregnancy may initially attempt to deny their pregnancy to themselves and to conceal them from others, either from a desire that the pregnancy "go away" or because of fear of the consequences. Thus these women may be less likely to obtain prenatal care, especially early in pregnancy (Weller et al., 1987). There is a negative discrimination in the use of antenatal, intranatal, and post-natal care in cases where pregnancies are unwelcome (Marston and Cleland, 2003). It seems reasonable to assume that a woman who has planned a pregnancy will be more highly motivated to seek early prenatal

care to ensure a highly successful outcome, more concerned about the well-being of the foetus, and less reluctant to adopt what may be major changes in life style to increase foetal well-being (cited in Weller et al., 1987).

Pulley et al. (2002) found that the extent of mistiming can be associated with selected maternal characteristics, maternal behaviours and pregnancy outcomes, with the most positive behaviours and outcomes, for example, early pre-natal care, breast feeding etc. Data from the National Survey of Family Growth (1995) were examined to assess association between pregnancy mistiming and maternal characteristics. Among the mistimed pregnancy, 50 percent were mistimed by 24 months or less, 32 percent were mistimed by 25-60 months and thirteen percent were mistimed by more than 60 months. A pregnancy that is mistimed by a matter of a few months probably has minimal consequences for the mother, child or family. However, the consequences of pregnancies that are mistimed by more than a few months can be great for the mother, child and family and thus represent a public health problem that needs to be addressed by researchers, programme planners and policy-makers. The distribution of moderately mistimed pregnancy differed significantly from those of both seriously mistimed and unwanted pregnancies according to most maternal characteristics; there were few differences between intended and moderately mistimed pregnancies and between seriously mistimed and unwanted pregnancies.

Life circumstances, support from family and friends, attitudes toward children and abortion, and general feelings of readiness for a pregnancy may be more correlated to wantedness than they are to intending or planning to become pregnant (Fischer et al., 1999). Few researches have been published on the possible effects of intention status of pregnancies carried to terms (Marston and Cleland, 2003). Hence there is a need to study the prevailing situation in India and analyze the underlying factors for the intentions of pregnancy planning. Births or pregnancies may be unwanted because they either pose a serious threat to health of mothers or children or they do not conform to certain social norms or they occur after specific family size desired by couples has been achieved (Kulkarni and Choe, 1997). The prevalence of unwanted births typically increases with age and parity because women who have already reached their desired family size do not want any more pregnancies (Kaufmann et al., 1997). The research on pregnancy intention enables one to weigh the pros and cons of fertility transition. Accordingly, the broad objective of the paper is to examine the pregnancy intentions in India and study the maternal behaviour with respect to the antenatal care.

Data and Methodology

National Family Health Survey-3 (NFHS-3) conducted in the year 2005-2006 has been used for the analysis. The NFHS-3 interviewed men of the age group 15-54 and women (never married as well as ever married women) of the age group 15-49. It included questions on several emerging issues such as perinatal mortality, male involvement in maternal health care, adolescent reproductive health, higher risk sexual behaviour, family life education, safe injections and knowledge about tuberculosis. In addition, NFHS-3 carried out blood testing for HIV to provide for the first time in India, population-based data on HIV prevalence. NFHS-3 collected information from a nationally representative sample of 109041 households, 124385 women of the age group 15-49 and 74369 men of the age group 15-54. The NFHS-3 sample covers 99 percent of India's population living in 29 states (IIPS, 2007).

In order to determine the pregnancy intention of currently married women, the variable considered is the time women wanted pregnancy. The specific question asked in the survey regarding this variable is "At the time you were pregnant with (NAME), did you want to become pregnant then, did you want to wait until later or did you want no (more) children at all?" (IIPS, 2007). This question is asked for the last three children born in the last five

years preceding the survey. For the analysis, currently married women have been considered. The unit of analysis are children. For the ease of writing, at places women have been referred which implies pregnancy intentions of children born to women.

The Bivariate and multivariate techniques have been applied for the analysis. A number of explanatory variables have been used to study the factors determining pregnancy intentions among currently married women in India such as, age of the women, age at first birth, age at first marriage, total children ever born, birth interval, place of residence, religion, ethnicity, education, husband's education, exposure to mass media, number of household members, autonomy, standard of living and women's current working status. Further bivariate analyses have been done to study the utilisation of maternal health care services among currently married women by pregnancy intention. The variables included are- "Did you see anyone for antenatal care for this pregnancy?". This question has been asked for the last birth. Accordingly, the response has been categorised as doctor, ANM/nurse/midwife/LHV, other health personnel, anganwadi/ICDS worker, Dai/TBA or none; further it has been asked "Where did you receive antenatal care for this pregnancy?". This question has been grouped into home (own, parent's, others), public medical sector (Government/Municipal hospital, Government dispensary, UHC/UHP/UFWC, CHC/rural hospital/PHC, Sub-centre, Anganwadi/ICDS centre, village clinic by ANM, other public sector health facility), private medical sector (NGO/TRUST hospital/clinic, private medical sector/private hospital/clinic/maternity home, other private sector health facility) and others; "How many times did you receive antenatal check-up during this pregnancy?" This variable has been categorised as none and one or more times; "How many months pregnant were you when you first received an antenatal care for this pregnancy?" This variable has been reformed into first, second and third trimester; "At any time before this pregnancy, did you receive any tetanus injections?". "Where did you give birth to (NAME)?" This response has been divided into three categories namely, home (own, parent's, others), public (Government/Municipal hospital, Government dispensary, UHC/UHP/UFWC, CHC/rural hospital/PHC, Sub-centre, other public sector health facility), private (NGO/TRUST hospital/clinic, private medical sector/private hospital/clinic/maternity home, other private sector health facility), others (IIPS, 2007).

Multinomial logistic regression models are used to study the factors determining pregnancy intentions. The basic assumption of multinomial logistic regression model that should be strictly followed is that the categories of the response variable should be mutually exclusive and exhaustive i.e. a sample member should fall in one and only one of the categories. The above assumption is fulfilled in the analysis. Accordingly, pregnancy intention has three categories i.e. wanted, mistimed and unwanted.

The following multinomial logistic regression model has been used in the study:

$$Z_1 = \text{Log} (P_1/P_3) = a_1 + \sum b_{1j} * x_j$$

$$Z_2 = \text{Log} (P_2/P_3) = a_2 + \sum b_{2j} * x_j$$

And

$$P_1 + P_2 + P_3 = 1$$

Where,

$A_i, i=1,2$: constant

$B_{ij}, i=1,2; j=1,2,\dots,n$: multinomial regression coefficient

P_1 : Estimated probability of women having mistimed pregnancy

P_2 : Estimated probability of women having unwanted pregnancy

P_3 : Estimated probability of women having wanted pregnancy

Here, P_3 is the reference category

For the sake of simplicity in interpretation, multinomial logistic regression coefficients are converted into adjusted percentages. The procedure consists of following steps:

Step 1: By using regression coefficient and mean values of independent variables, the probability is computed as: $P_i = \exp(Z_i) / \{1 + \exp(Z_i)\}$, $i=1,2$ and $P_3 = 1 - P_1 - P_2$

Where, Z is the estimated value of response variable for all categories of each variable.

Step 2: To obtain the percentage values, the probability P is multiplied by 100.

Results and discussions

National scenario

In India, about 80 percent of the women have intended pregnancies whereas mistimed and unwanted pregnancies account for nine and eleven percent respectively (Table 1). Wanted pregnancies are uniformly high in all the regions. It is highest in the West (86.75 percent) followed by North (84.61 percent), South (83.32 percent), North east (81.11 percent), East (78.22 percent) and Central (73.35 percent). Among the states, Manipur and Maharashtra have highest wanted pregnancy i.e. around 90 percent whereas lowest have been found in Mizoram and Meghalaya. 68.6 percent of pregnancies are wanted in Uttar Pradesh. The other states record wanted pregnancy above 70 percent.

Unwanted pregnancies are high particularly in the central regions (15.8 percent) comprising of Chhattisgarh (6 percent), Madhya Pradesh (8.41 percent) and Uttar Pradesh (19.19 percent). Uttar Pradesh has the highest unwanted pregnancies. Interestingly, it can be observed that the hilly states namely, Sikkim, Mizoram, Nagaland, Uttarakhand and others have high percentage of unwanted pregnancies. Lowest unwanted pregnancies are found in the West followed by South. Among the states, it can be seen that Goa, Maharashtra, Manipur, Kerala, have the lowest unwanted pregnancies. Another point worth to be noted is that Punjab, Himachal Pradesh and Haryana have low unwanted pregnancies. Mistimed pregnancies are more in the North and North eastern regions.

Factors determining pregnancy intentions

The factors influencing pregnancy intentions vary across states. There can be numerous aspects responsible for such dismal scenario of unwanted pregnancies. However, in order to get an overall idea about the determinants of pregnancy intentions, an all India analysis has been done by taking into consideration various demographic, socio-economic aspects (Table 2).

Demographic factors

It can be seen that unwanted pregnancies increases with age. This increase is also significant. The women above age 35 years have drastic increase in the percentage of unwanted pregnancies as compared to the preceding age groups. It is 5.46, 8.57 and 14.60 percent in the age group 15-24, 25-34 and 35 and above respectively. Mistimed pregnancy, however, has an inverse relation with age of the women i.e. 14.43, 10.73 and 7.54 percent respectively. Wanted pregnancy is around 80 percent in all the age groups. Another significant factor that determines unwanted pregnancy is the age of the women at first birth which shows a negative relation. Unwanted pregnancy is around eight percent if the age at first birth is less than 20 years whereas it is around six percent if the age at first birth is more than 20 years. Mistimed pregnancy shows an increase of a percent with increase in the age at first birth i.e. 11 and

12.6 percent respectively. Wanted pregnancy is however the same (around 81 percent). Mistimed pregnancies show a decreasing trend with increase in the total children ever born whereas the unwanted pregnancies depict a steep upward gradient. Unwanted pregnancy is around 4, 11 and 20 percent if the total children ever born are less than two, between two and four & four and above. Mistimed pregnancy is 13, 9.72 and 9 percent respectively. Wanted pregnancy also shows a decline i.e. 82, 79 and 70.4 percent respectively. Birth interval too plays a role but it is more prominent in case of mistimed pregnancies where it shows a negative trend with increase in the birth intervals.

Social factors

Unwanted pregnancies are more in the rural areas as compared to the urban areas. However, mistimed and unwanted pregnancy does not show any notable difference. Religion, caste, education are other factors that determine pregnancy intentions. Women's education particularly, does not have considerable variation with respect to unwanted pregnancy and show a u-shaped pattern. Mistimed pregnancy has shown a rising pattern with increase in the level of educational attainment of women. However, the difference is negligible. Both mistimed and unwanted pregnancies have direct relation with the number of household members.

Economic factors

Women belonging to high standard of living have low percentage of unwanted pregnancies. Working women are less likely to have mistimed or unwanted pregnancy. The wanted pregnancies are high irrespective of any factors with negligible variations. With regard to mistimed pregnancies, notable difference is not seen.

Prenatal care

The women with unwanted pregnancies have higher percentage of not having any prenatal care as compared to women with wanted pregnancies (Table 3). Moreover, it can be seen that about one-fourth women with unwanted pregnancies have their prenatal check-up from doctors whereas it is about 38 percent among women with wanted pregnancies. The percentage of pregnancies attended by ANM is around 30 percent and 33 percent among unwanted and wanted pregnancies respectively. Births attended by other health personnel, anganwadi workers and dai are negligible.

Women with unwanted pregnancies (12.4 percent) have their prenatal care at homes more than women with wanted pregnancies (10.33 percent). They go to public medical sectors more than their counterparts i.e. 50 and 45 percent respectively whereas 37 percent with unwanted pregnancies and 44 percent with wanted pregnancies go to private sectors. Further it has been observed that more percentage of women goes for their first ANC visit at later stage of their pregnancies if they perceive their pregnancies as unwanted. 46 and 59 percent pregnancies which are unwanted and wanted respectively have first ante natal check-up in their first trimester. Similarly, it is 43 and 33 percent respectively in the second trimester. Women having first ANC in third trimester are relatively small.

More percentage of women with unwanted pregnancies (28 percent) are not having any tetanus toxoid injections as compared to women with wanted pregnancies (15 percent) whereas those having above two tetanus toxoid injections are 64 and 79 percent respectively. Surprisingly, three-fourth women with unwanted pregnancies have their deliveries at homes. Place of delivery for wanted pregnancies are 59, 19 and 22 percent in home, public and

private sectors respectively whereas it is 76, 11.6 and 12 percent for unwanted pregnancies respectively.

Conclusions

In India, about 80 percent of the women have intended pregnancies whereas mistimed and unwanted pregnancies account for nine and eleven percent respectively. Wanted pregnancies are uniformly high in all the regions. However, unwanted pregnancies are high particularly in the central regions comprising of Chhattisgarh, Madhya Pradesh and Uttar Pradesh. Uttar Pradesh has the highest unwanted pregnancies. Interestingly, it can be observed that the hilly states namely, Sikkim, Mizoram, Nagaland, Uttarakhand and others have high percentage unwanted pregnancies. Lowest unwanted pregnancies are found in the West followed by South. Among the states, it can be seen that Goa, Maharashtra, Manipur, Kerala, have the lowest unwanted pregnancies. Another point worth to be noted is that Punjab and Haryana have low unwanted pregnancies. Mistimed pregnancies are more in the North and North eastern regions.

It can be seen that unwanted pregnancies increases with age. This increase is also significant. The women above age 35 years have drastic increase in the percentage of unwanted pregnancies as compared to the preceding age groups. Another significant factor that determines unwanted pregnancy is the age of the women at first birth which shows a negative relation. Mistimed pregnancies show a decreasing trend with increase in the total children ever born whereas the unwanted pregnancies depict a steep upward gradient. Birth interval too plays a role but it is more prominent in case of mistimed pregnancies where it shows a negative trend with increase in the birth intervals. Unwanted pregnancies are more in the rural areas as compared to the urban areas. However, mistimed and unwanted pregnancy does not show any notable difference. Religion, caste, education are other factors that determine pregnancy intentions. Women's education particularly, does not have considerable variation with respect to unwanted pregnancy and show a u-shaped pattern. Mistimed pregnancy has shown a rising pattern with increase in the level of educational attainment of women. However, the difference is negligible. Both mistimed and unwanted pregnancies have direct relation with the number of household members. Women belonging to high standard of living have low percentage of unwanted pregnancies. The wanted pregnancies are high irrespective of any factors with negligible variations. With regard to mistimed pregnancies, notable difference is not seen.

The percentage of women with unwanted pregnancies has higher percentage of not having any prenatal care as compared to women with wanted pregnancies. Moreover, it can be seen that about one-fourth women with unwanted pregnancies have their prenatal check-up from doctors. Women with unwanted pregnancies mostly have their prenatal care at homes more than women with wanted pregnancies. They go to public medical sectors more than their counterparts. Further it has been observed that more percentage of women goes for their first ANC visit at later stage of their pregnancies if they perceive their pregnancies as unwanted. They are less probable to have even tetanus toxoid injections. Surprisingly, three-fourth women with unwanted pregnancies have their deliveries at homes.

Limitations of the study

There are certain situations where exact explanation for the queries cannot be given. There may be certain reasons behind it e.g. the question on pregnancies intention can suffer from number of limitations like- if the son is born after four daughters then that son is not considered unwanted. On the contrary, the daughters may be considered unwanted. Hence,

preferences for a particular sex composition can create bias. Another important factor is that of replacement as well as insurance effect i.e. to have more children for compensating child loss. The unwantedness of the child can become wanted after its birth e.g. Four in 10 married white women who said that they wanted no more children and subsequently had a birth reported that birth as wanted and said their reaction to it had been positive. Only seven percent of those who said they wanted more children reported a subsequent birth as unwanted (Westoff, 1980). Moreover, the respondent may respond so as to present a favourable image to the interviewer. Hence, such situation can create response bias. Besides, there are cases where there are non-numeric responses when question on ideal number of children is asked. The influence of the family members can also be important in determining the pregnancy intention.

Policy implications

The unwanted pregnancies shall require a new national understanding about this problem and a new consensus that pregnancy should be undertaken only with clear intent. For this, the mass should be educated about the major social and public health burdens of unwanted pregnancies and to undertake a comprehensive set of activities at national, state and local levels to reduce the burden of unwanted pregnancies resulting either due to contraceptive failure or unmet need of modern contraceptive methods. There is an urgent need to impart comprehensive knowledge on contraindications and side effects of different contraceptive methods, which can improve use and continuation rates of modern methods of contraception and hence reduce incidences of unwanted pregnancies. This has long lasting implications for improving the overall reproductive health status of women in India. The above findings may lay out the following specific recommendations - the mass should be educated about the repercussion, the unwanted pregnancies has on the health of the mother and the child; all the efforts to educate the people should be started from the grass-root level by reaching out to even the most outreach people; efforts should be stimulated to fully understand the determinants and antecedents of unwanted pregnancies; policy should be oriented in such a way that apart from focussing on the reproductive health of the women and the child, due emphasise should also be made about the pregnancy intentions.

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Table 1: Percentage distribution of pregnancy intentions, India, 2005-2006

States	Wanted	Mistimed	Unwanted	Total women
India	79.58	9.42	11.01	55575
North	84.61	7.58	7.81	7231
Delhi	88.80	3.86	7.34	518
Haryana	88.28	7.29	4.43	1015
Himachal Pradesh	84.15	10.16	5.69	246
Jammu And Kashmir	78.34	10.50	11.16	457
Punjab	86.71	8.05	5.24	1106
Rajasthan	84.18	6.96	8.86	3476
Uttaranchal	75.66	12.05	12.29	415
Central	73.35	10.86	15.80	16579
Chhattisgarh	87.15	6.72	6.13	1175
Madhya Pradesh	83.61	7.99	8.41	3794
Uttar Pradesh	68.60	12.22	19.19	11608
East	78.22	9.75	12.04	13964
Bihar	80.38	4.51	15.11	6161
Jharkhand	73.28	15.38	11.34	1834
Orissa	84.21	8.68	7.12	1925
West Bengal	74.31	15.65	10.04	4045
North East	81.11	10.29	8.61	2080
Arunachal Pradesh	81.54	10.77	7.69	65
Assam	85.65	6.18	8.17	1408
Manipur	89.66	6.90	3.45	116
Meghalaya	57.89	33.33	8.77	171
Mizoram	54.35	32.61	13.04	46
Nagaland	74.19	12.90	12.90	93
Sikkim	72.00	12.00	16.00	25
Tripura	72.44	16.67	10.90	156
West	86.75	7.57	5.68	6972
Goa	88.89	9.26	1.85	54
Gujarat	81.99	8.07	9.94	2576
Maharashtra	89.54	7.26	3.20	4341
South	83.32	8.94	7.74	8749
Andhra Pradesh	83.65	7.20	9.15	3070
Karnataka	79.75	11.34	8.91	2637
Kerala	84.21	11.92	3.87	1007
Tamil Nadu	87.07	6.98	5.95	2034
Total	44225	5233	6117	55574

Table 2: Multinomial logistic regression of pregnancy intention according to selected background characteristics, India, 2005-2006

Background characteristics	Wanted	Mistimed	Unwanted	Background characteristics	Wanted	Mistimed	Unwanted
Age (years)				Education			
15-24	80.11	14.43	5.46	No education	83.77	9.41	6.82
25-34	80.70	10.73***	8.57***	Primary	79.05	12.82***	8.14***
35 and above	77.85	7.54***	14.60***	Secondary	77.82	13.65***	8.54***
Age at first marriage				Higher	78.92	13.64***	7.43
Less than 20 years	80.67	11.50	7.82	Husband's education			
More than 20 years	80.66	12.22	7.13	No education	80.67	12.00	7.33
Age at first birth				Primary	80.41	11.52	8.07
Less than 20 years	80.54	11.09	8.36	Secondary	80.96	11.34	7.69
More than 20 years	80.75	12.60**	6.65***	Higher	79.82	12.37	7.81
Total children ever born				Exposure to mass media			
Less than 2	82.19	13.53	4.28	None	81.40	11.21	7.39
2-4	79.13	9.72***	11.15***	Medium	79.99	12.10	7.90
4 and above	70.42	9.17***	20.41***	High	81.82	10.90	7.28
Birth interval (months)				Household members			
Less than 12	70.78	21.06	8.16	Less than 4	83.99	10.24	5.76
12-24	74.76	17.74**	7.50	4-6	80.41	11.86***	7.73***
24-36	79.95	12.69***	7.36**	6 and above	78.81	12.29***	8.90***
36 and above	84.85	7.32***	7.83**	Women's autonomy			
Place of residence				Low	80.72	11.76	7.52
Urban	80.38	11.38	8.24	Medium	80.82	11.06	8.12
Rural	80.84	11.82	7.34***	High	78.78	11.81	9.41***
Religion				Standard of living			
Hindus	81.22	10.95	7.83	Low	79.74	12.11	8.14
Muslims	79.91	12.06	8.03	Medium	79.72	12.06	8.21
Christians	75.54	17.46***	6.99	High	82.08	10.99	6.93***
Others	83.77	10.61	5.62***	Currently working			
Caste				No	79.84	12.36	7.79
Scheduled Caste	79.40	12.13	8.47	Yes	82.58	10.05***	7.37**
Scheduled Tribe	81.82	12.58	5.60***				
Other Backward Caste	80.83	11.02**	8.15				
Others	80.42	11.55	8.03				

Significance level ***p<0.01 **p<0.05

Table 3: Percentage distribution of Prenatal care according to pregnancy intention, India, 2005-2005

Prenatal care	Wanted	Mistimed	Unwanted
Prenatal care during pregnancy			
None	20.99	16.23	38.28
Doctor	38.30	38.90	25.15
ANM	33.16	36.43	30.07
Other health personnel	1.37	2.14	1.25
Anganwadi worker	4.12	3.73	3.14
Dai	2.06	2.57	2.10
Prenatal care during pregnancy			
Home	10.33	11.24	12.43
Public	45.20	45.27	50.20
Private	44.24	43.33	37.18
Others	0.23	0.16	0.20
ANC visit			
No	21.12	16.31	38.45
Yes	78.88	83.69	61.55
First ANC visit			
First trimester	58.80	57.63	46.47
Second trimester	33.31	35.35	43.83
Third trimester	7.89	7.02	9.70
Tetanus Toxoid injection			
0	14.69	12.24	28.22
1	6.43	7.96	7.79
2+	78.88	79.79	63.99
Place of delivery			
Home	59.23	59.56	76.30
Public	18.73	19.17	11.61
Private	21.88	21.06	12.02
Others	0.16	0.21	0.08