



Working Paper

24

**Evaluating Group Disparities
in Educational Outcomes:
An Age Cohort Perspective**

Vachaspati Shukla

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Evaluating Group Disparities in Educational Outcomes: An Age Cohort Perspective

Vachaspati Shukla*

Abstract

Group disparities in socio-economic outcomes are often associated with the evaluation of progress in such outcomes. Progress is said to be ideal when accompanied by reduced disparities and *vice versa*. However, disparities in educational outcomes continue to persist or reduce in a gradual manner, given that these outcomes are realized at a certain age and stage of life. Hence, changing disparities in educational outcome need to be assessed across age cohorts, which will vary depending on the likelihood of the educational achievement of the different age cohorts. This study is an effort towards unfolding this aspect while evaluating the progress in educational attainment in India. It argues that mapping of educational attainment across age cohorts would offer a robust understanding of educational progress, as it would inform on the change in the likelihood of being educated for every younger age cohort in comparison to older ones. This is an attempt at evaluating differential progress in educational attainment across population sub-groups based on age cohorts. The population subgroups considered here are not based on a single characteristic, but rather a combination of them as every individual has multiple characteristics. The study evaluated eight disjointed sub-groups of the population generated based on three common characteristics--sector (rural-urban), social group (SC/ST-Others), and gender (male-female) frequently adopted considerations to assess group disparities in India. The analysis covers the five levels of educational attainment, viz., literate, elementary, secondary, higher secondary and graduates. It reveals that group disparities tend to be lower among the younger age groups and increase along with rising levels of educational attainment. Gender disparity nearly disappears in the youngest age cohort for Urban Others. This is true for all education levels. For Urban SC/ST, gender disparity absents up to the elementary level. This exercise offers an optimism that differentials seem to narrow down in recent times which remains disguised in the aggregate differential that has a very gradual decline particularly due to the differential in the stock of those who have crossed the age to make any difference.

Keywords: Educational Progress, Group-disparity, Gender disparity, Social disparity, Rural-Urban disparity, Age cohort analysis

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Evaluating Group Disparities in Educational Outcomes: An Age Cohort Perspective

1. Introduction

As a fundamental capability attribute, education is considered a vital instrument in shaping the social and economic development of a nation. It is argued that the education enriches people's understanding of themselves and the world. It improves the quality of an individual's life and generates extensive social and economic benefits for both individuals and society at large. Education raises peoples' productivity and opens up opportunities for better employment and earnings. From a welfare point of view, it is not only the expansion of educational opportunities but also its distribution that is important. This is because education builds new assets and improves social welfare by its spill-over effect, without making anyone worse off. Perhaps there are hardly any development outcomes that are not related to education!

Nevertheless, expanding educational opportunities has always been a key policy challenge for governments in all countries, including India. India has observed rapid educational expansion in recent years, and this is evident in terms of the increasing number of educational institutions and improvement in enrolment at each level. With the expansion of educational opportunities, there is also the challenge of ending group disparity in educational attainment. It is well known that development outcomes in India are not evenly distributed across various sub-groups of the population. The most frequently discussed aspects of group disparity in India are gender, social group, and rural-urban.

Given this background, the present study is an attempt to evaluate educational progress in India from a distributional perspective. The focus of the paper is to evaluate group disparity in educational attainment. Group disparities in educational outcomes need to be considered differently from other outcomes as educational outcomes are accomplished or not accomplished at a certain age in life course and continue to remain with an individual throughout his/her life.

1. Hannum and Buchmann (2005) provide a detailed survey of empirical studies in sociology, demography, economics, political science and anthropology and listed several consequences of educational expansion.

Age specific analysis seems to be more appropriate for providing a better presentation of educational progress/disparity. Therefore, the evaluation of educational progress/disparity in the present paper was carried out by comparing the educational attainment of younger age cohorts with that of older ones.

The relevance of age cohort analysis arises from the fact that every young age cohort enjoys better educational opportunities than older ones as educational opportunity expands over the years. The likelihood of a person's educational attainment is determined by the schooling opportunities available at their school/college-going age. Such information on educational attainment can be utilized to plan responsive, feasible, and effective educational policies. The second section of the paper discusses the approach followed and data source. Educational progress in India is analysed in the third section of the paper. The fourth and fifth sections present the group disparity in educational progress. Last section of the paper discusses the findings.

2. Data and Analytics

The importance of the present study lies in the data source and approach used to analyse group disparity in educational attainment. The indicators used to analyse educational progress/group disparity can be broadly categorized into two groups: flow variables and stock variables. Flow variables include the enrolment ratio at different levels of schooling, such as primary, secondary and tertiary enrolment ratios. Enrolment ratio is defined as the number of pupils in a given educational cycle expressed as a percentage of 'the population of related school age'. The population of related school age is defined by the legal age of admission to the cycle and duration in years. The enrolment ratio is the most frequently used indicator to assess educational progress in India. The enrolment ratio is undoubtedly very useful in policy formulation. It not only describes entry into education but also progress in participation in education. It helps in understanding the potential to improve participation at any specific level of education and to assess related resource requirements. However, the enrolment ratio is not a true representation of a society's

educational progress. Besides not accounting for repetition and drop out, one of the problems of using enrolment ratio to assess educational progress is that it only measures the flow of the population's education or access to education. It does not show the cumulated educational attainment/outcome.

Educational variables such as literacy rate, elementary completed, secondary completed or graduation completed in the working age population or proportion of the population are known as the stock variables. They represent the human capital of the population with the specific ability. These variables are frequently used in the literature to analyse the impact of education on various aspects of development. These variables present the specific capability of the individual and the population. The change over the years in the human capital, measured in terms of the stock variables, can be used to represent the overall educational progress of a society. However, the changes in the stock of human capital fail to inform about the expansion of educational opportunities. This limitation is largely due to the generational shift in the population. If every older generation experiences lower educational attainment than their younger counterparts at any point of time, the overall educational attainment of the whole population tends to improve even without any explicit advantage of the greater educational potential of the population in coming years. While it is necessary that analysis of educational progress should inform about the expansion in educational opportunities, it can alternatively be captured by comparing the educational attainment of the younger generation to the older ones.

Many studies in India have evaluated educational progress/disparity for the aggregate population, despite the fact that every individual does not have the opportunity to obtain formal education beyond a particular age. Individuals attend formal educational institutions up to a specific age. However, any aggregate analysis of educational progress/disparity overlooks this reality. For example, in a recent study, Agrawal (2014) evaluated educational inequality in Indian states during the period 1993-94 to 2009-10, where educational inequality was measured using the

Education Gini for the population age 15 years and above. This analysis suffers from two major shortcomings, viz., inclusion of the younger population that is in the initial stage of their educational cycle and the older population that has passed the school going age. With this kind of comparison, we end up in a situation where a large share of the population is at a stage with the potential of nearly no improvement or in an incomplete educational cycle. Therefore, this type of analysis cannot provide a proper understanding of the changing state of educational inequality and the effect of expansion in educational opportunities, and the generational shifts in shaping such inequality.

In order to overcome the above limitation, inequality needs to be verified within well-defined characteristic groups of the population. Such characteristic groups may comprise age cohorts like 25-29, 30-34...65-69 and comparing these would be more appropriate to analyse the dynamics of educational progress/disparity. Many studies analyse educational progress/disparity in India by comparing the overlapping population where a substantial proportion of individuals have little or no possibility of altering their educational status. Some recent studies in this category include Ray and Mujumdar (2010); Asadullah and Yalonetzky (2012); Bhakta (2015); and Katiyar (2016).

Adopting an alternative approach, Desai and Kulkarni (2008) evaluated social disparity by comparing the educational attainment of the age cohort (24-29) over the NSS rounds-1983, 1987-88, 1993-94 and 1999-2000. Such an attempt offers a clear message as it compares non-overlapping population. However, the age cohort analysis adopted in the present study is a further refinement in the sense that it provides much longer term assessment.

The present analysis exclusively relies on the data provided by the 'Office of the Registrar General and Census Commissioner of India' collected under the decadal population census. The latest data is available for the year 2011. Information on educational achievements is released under the Social and Cultural series of the census, best known as C-series. It contains detailed information about individual

educational achievements such as the level of education completed. The census divides the population into ten categories according to the completed level of education: illiterate, literate without the educational level, below primary, primary, middle, secondary (lower secondary), higher secondary, non-technical diploma not equal to degree, technical diploma not equal to degree and graduate & above. For the purpose of the present analysis, the population is rearranged into seven educational categories: Illiterate, Partial Primary, Primary, Middle, Lower Secondary, Higher Secondary, and Graduate & above. In the present article, educational progress has been analysed through five educational indicators, viz., literacy rate, elementary completed, lower secondary completed, higher secondary completed and graduation completed. These indicators are computed for nine age cohorts aggregated at a 5-year interval, where the first age cohort (70-74) is made up of individuals born between 1937-1941, and the youngest age cohort (10-14) includes individual born between 1997-2001. Throughout the analysis, the oldest age cohort remains the same for all the educational indicators while youngest age cohort varies. In case of literacy, (10-14) is considered as youngest age cohort, followed by elementary completion (15-19), secondary and higher secondary (20-24) and graduation (25-29).

3. Educational Progress in India

Figure-1 presents the educational progress in India by age cohort. It is observed from the figure that for a typical age profile, at one point in time, there is a higher proportion of educated people in the younger age cohort than in older ones. This is primarily due to the greater access to education among the most recent cohorts compared to those who are older. This is called a cohort effect (or a generation effect) in social sciences. A cohort (generation) is defined here as a group of person born in the same year or a period and who therefore get older with the passage of time. In almost every country in the world, older cohorts are less educated than younger cohorts because education is concentrated in the younger age groups and most education systems have expanded over time.

It is observed that the proportion of people with a specific level of educational

attainment increases over the age cohort. This reflects a negative relationship between age cohorts and educational attainment. The educational attainment of the youngest age cohort, when compared with that of the older ones, reflects improvement in the expansion of educational opportunities. Once the youngest age cohort achieves an optimum point—from where no further improvement is possible—overall educational improvement can be experienced only through age cohort replacement. For example, once full literacy is achieved for the youngest age cohort (10-14) further improvement in overall literacy can be observed only by replacement of the immediate older age cohort by the youngest age cohort. The population will attain full literacy when this youngest age cohort becomes the oldest age cohort. The age cohort analysis provides the long-term dynamics of progress in educational attainment with the help of the data collected at one point of time (Census 2011 in the present case). It provides a picture of the progress in educational attainment for a period of sixty years and enriches one's understanding about educational progress by indicating the changes in educational attainment at every five years.

India has seen tremendous improvement in educational attainment over the age cohorts. The literacy rate improved from 39 % for the age cohort (70-74) to 91% per cent for the age cohort (10-14), the elementary completion rate 16 % for the age cohort (70-74) to 65.4 % for the age cohort (15-19), the secondary completion rate from 11.4 % for the age cohort (70-74) to 44.4 % for the age cohort (20-24), the higher secondary completion rate from 6.9 % for the age cohort (70-74) to 31.9 % for the age cohort (20-24) and the graduation completion rate from 3.4 % for the age cohort (70-74) to 13.9 % for the age cohort (25-29).

What needs to be achieved is an important aspect in the assessment of any development outcome, of which education is not an exception. *Elementary education* is considered a basic human right. In fact, the Universal Declaration of Human Rights (United Nations, 1948) considers elementary education as a basic human right to which every individual is entitled. Article 45 of Indian Constitution has made a provision for free and compulsory education for all children up to the age

of fourteen years within ten years of promulgation of the constitution, and later, the 86th amendment of the Indian Constitution, 2002, included it in the fundamental rights (Article 21A in Part III) and fundamental duties (under Article 15 A) of a parent and guardian to provide opportunities for education to their children between age six and 14. The implicit assumption at the policy level seemed to be that elementary education would enable people with the basic capability of reading and writing. However, elementary education provides this basic skill to the people 6-14 years of age and not to the people who already have crossed this age. For them, there is the adult literacy scheme.

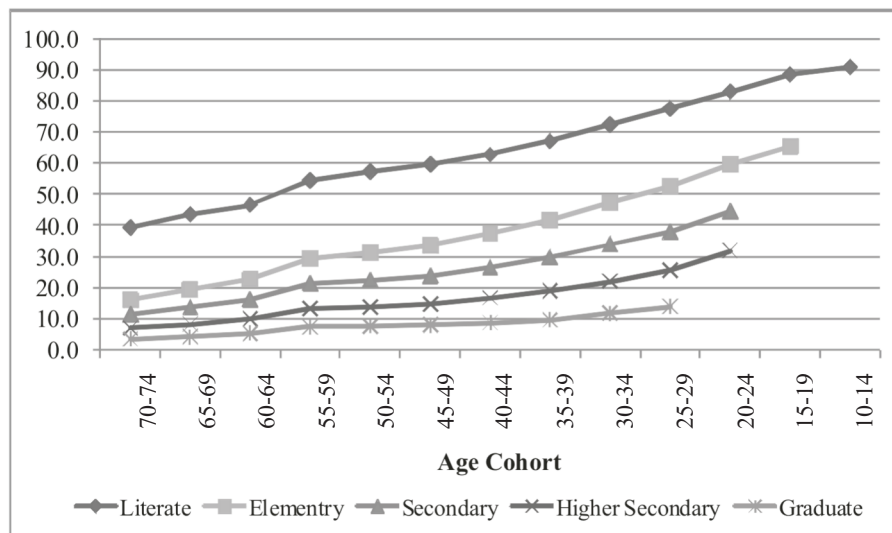
Secondary education is considered a necessary condition to faster economic growth and poverty reduction. It is critical for breaking the intergenerational transmission of poverty. In the 11th Five Year Plan document, the Planning Commission of India, states that *“In view of the demands of rapidly changing technology and the growth of knowledge economy, a mere eight years of elementary education would be grossly inadequate for our young children to acquire necessary skill to compete in the job market. Therefore, a Mission for Secondary Education is essential to consolidate the gains of SSA and to move forward in establishing a knowledge society.”*

Tertiary education includes all university education, graduation and above, general and technical. In today's information society, knowledge drives economic growth and development. Tertiary education is the main source of that knowledge--its production, dissemination, and absorption by society. Economic growth currently depends on the capacity to produce knowledge-based goods. Therefore, it is recommended that tertiary education should be expanded in order to meet the demand for high skilled labour and to bridge the regional, social and gender gap. There should be equal opportunities for all without any discrimination. In its Universal Declaration of Human Rights, the United Nations states that *“Everyone has the right to education. Education shall be free at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.”*

Therefore, assessment of educational progress is carried out with a view to universalize literacy and elementary education and reduce group disparities at the higher educational level. Looking through this lens, educational progress in India comes out as unsatisfactory. The elementary education completion rate is found to be far lower from the universalization level. It is observed to be only 65.4% for the age cohort (15-19). This is the age group that might have been in the 5-9 age groups when elementary education was announced as a fundamental right. Moreover, the literacy rate for the age group (10-14) is also not yet universalized, further revealing the failure to achieve this goal.

Access to higher levels of education, that is, secondary, higher secondary and graduation & above, are being discussed with the view to assess equal opportunities without any discrimination. The most frequently discussed aspects of discrimination in this respect are gender and caste. Rural-urban differentials are also discussed in the literature, but less frequently. These are detailed in the next section.

Figure 1: Educational progress in India over the age cohort



Source: Estimated from Table-C 2308, Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

4. Group Disparity in Education

Gender, Social Group and Rural-Urban are widely discussed aspects of group disparity in Indian development literature of which education is not an exception. Educational disparity on all these stated dimensions are discussed in detail in this analysis.

Gender Disparity

Gender equality in terms of participation in, and attainment of education is considered the first step towards overall gender justice. Figure 2-6 present educational progress for both males and females for all levels of educational attainment--basic literacy, elementary, secondary, higher secondary and graduation. Educational attainment is measured by computing the proportion of individuals attaining a specific level of education. The age cohort analysis reveals the continuous progress in educational attainment for both genders. The progress is observed for all the levels of educational attainment. The continuous progress over the age cohorts is a reflection of the fact that every younger age cohort enjoys better educational opportunities than their older counterpart. The oldest age cohort suffers with the lowest level of educational attainment, while the younger age cohort enjoys the highest attainment.

Females have a lower educational attainment rate than males. The gap in educational attainment rate between both the genders is found to be continuously declining from the oldest to youngest age cohort. It is lowest for the youngest age cohort and highest for the oldest. In the case of the literacy and elementary completion rate, equalization is achieved for the youngest age cohort. Gender equalization in education for the youngest age cohort is the first step for overall gender equity. It can be achieved when the youngest age cohort with gender equality in educational attainment replaces the oldest age cohort. Gender disparity at a higher educational level as indicated by the secondary, higher secondary and graduation completion rate, too declines from the oldest to youngest age cohort. If gender equality achieved at the elementary completion rate persists towards a higher educational level, it could be observed at

every educational level. Therefore, policies are needed to prevent the dropout of females at the higher levels of education. However, gender equality in the aggregate outcome cannot be materialized ever rather it is to be read in terms of the experience in younger age cohorts' *vis-à-vis* the older ones.

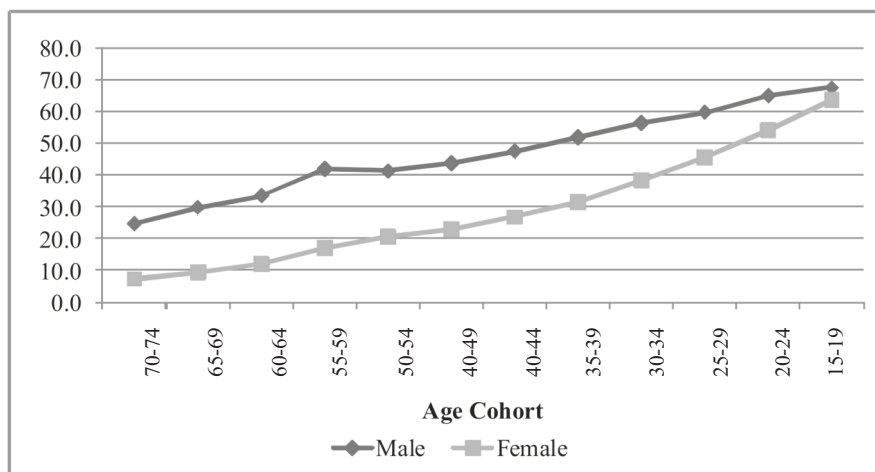
Figure 2: Gender-wise literacy progress in India over the age cohort



Source: Estimated from Table-C 2308, Census 2011, Office of the Registrar General and Census Commissioner of India.

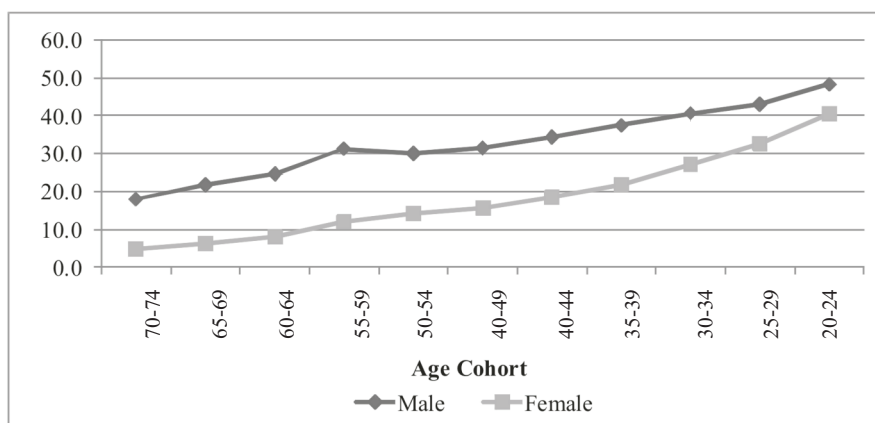
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 3: Gender-wise attainment of elementary education in India over the age cohort



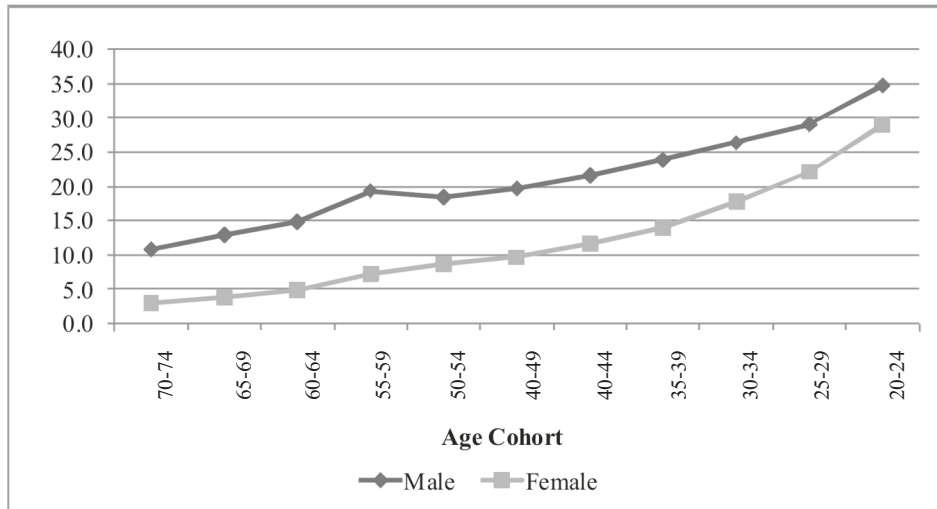
Source: Estimated from Table-C 2308, Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 4: Gender-wise attainment of secondary education in India over the age cohort



Source: Estimated from Table-C 2308, Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

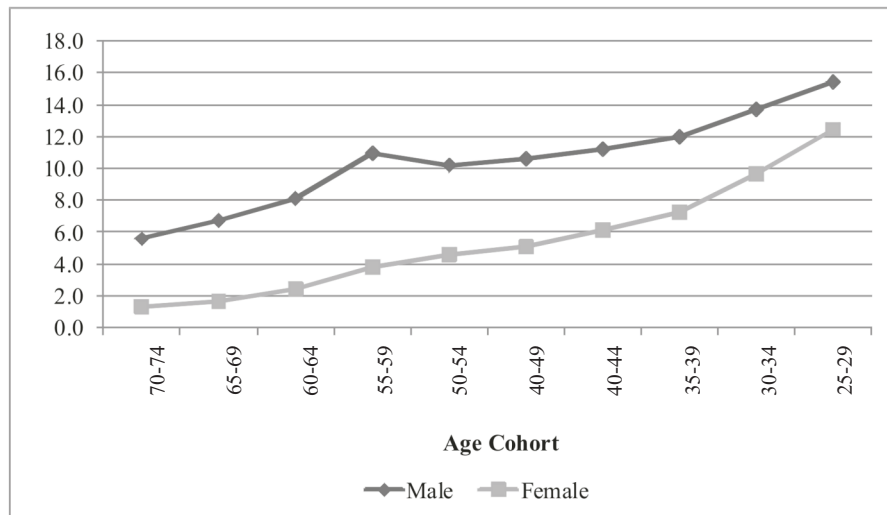
Figure 5: Gender-wise attainment of higher secondary education in India over the Age Cohort



Source: Estimated from Table-C 2308, Census 2011, Office of the Registrar General and Census Commissioner of India.

<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 6: Gender-wise graduation attainment rate in India over the age cohort



Source: Estimated from Table-C 2308, Census 2011, Office of the Registrar General and Census Commissioner of India.

<http://www.censusindia.gov.in/2011census/C-series/C08.html>

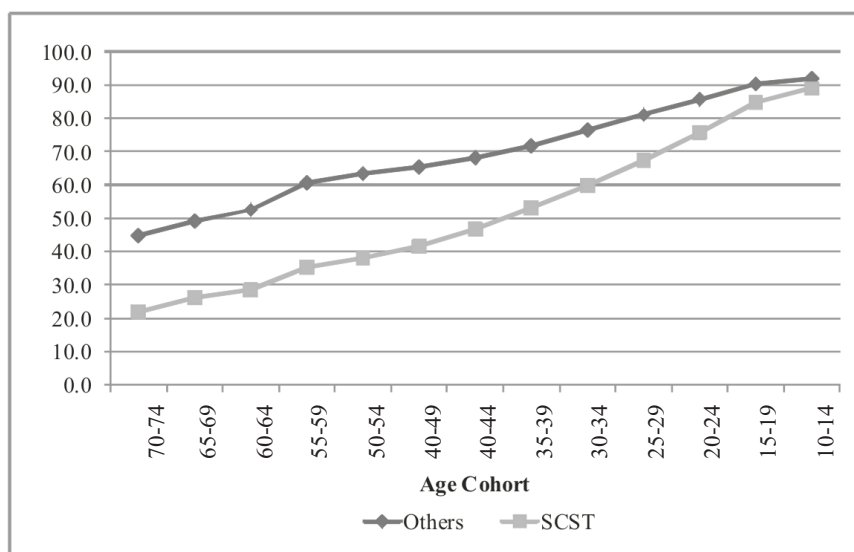
Social Disparity

Social disparity is another important aspect of group disparity. It is well established that people belonging to the SC/ST social group are in a disadvantaged position compared to the rest of the population for almost every aspect of development. Therefore, addressing the social disparity in education has always been one of the prime policy objectives in India. Figures 7-11 presents the educational attainment for two broad social groups--'SC/ST' and 'Others'. A continuous improvement is observed in the educational attainment rate for both social groups over the age cohort. Social group 'others' have an advantage over the 'SC/ST' group over the entire age cohort. The gap in the educational attainment rate between both the social groups continuously declines from the oldest to the youngest age cohort.

Like gender dichotomy, social group equity in literacy has been almost achieved for the youngest age cohort (10-14). If such a trend continues, there would be no social disparity in literacy when this youngest age cohort becomes the oldest age cohort of the population. However, for other educational indicators, there still exists quite a large gap between both the social groups. In the case of elementary education, a regular decline in the elementary completion rate is observed starting from the age cohort (30-34) onwards. A similar pattern is also observed in case of the secondary completion rate. A slight decline in the gap is observed for the younger age cohorts.

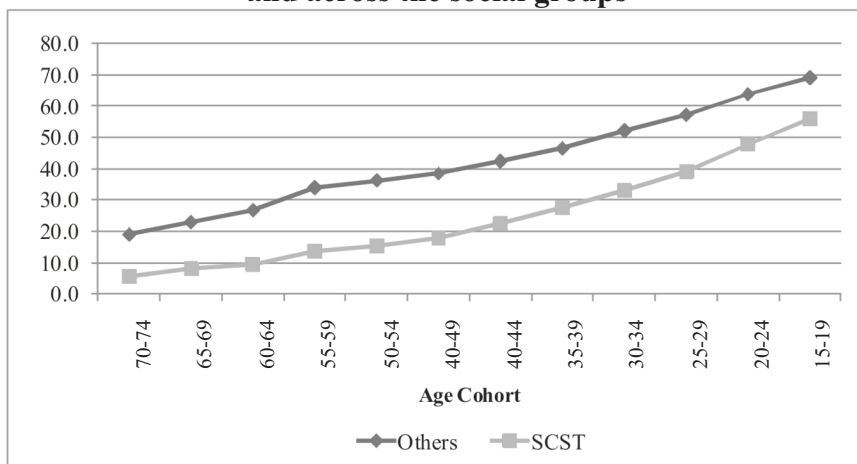
Group disparity is found to be increasing in case of the higher secondary completion rate as the gap between both the groups widens. The percentage point gap between both the groups, which was 12 % for the age cohort (35-39), increased to 15% for the age cohort (20-24). Increase in the social disparity in education is also observed at the graduation level. The gap between both the social groups, measured in terms of percentage point difference, continuously increases from the oldest to youngest age cohort. It is observed to be the lowest at 3.6 percentage points for the oldest age cohort (70-74) and the highest at 9.1 percentage point for the youngest age cohort (25-29). The graduation completion rate for the youngest age cohort (25-29) was 7% among SC/ST and 16 % for 'Others'.

Figure 7: Literacy progress in India over the age cohort and across the social groups



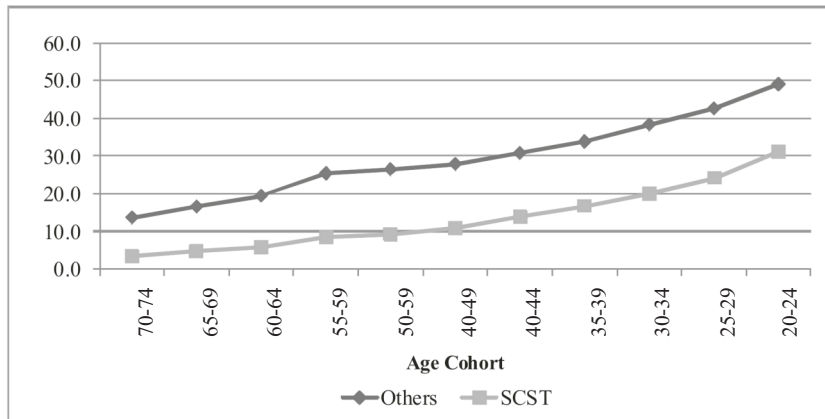
Source: Estimated from Table (C2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 8: Attainment of elementary education in India over the age cohort and across the social groups



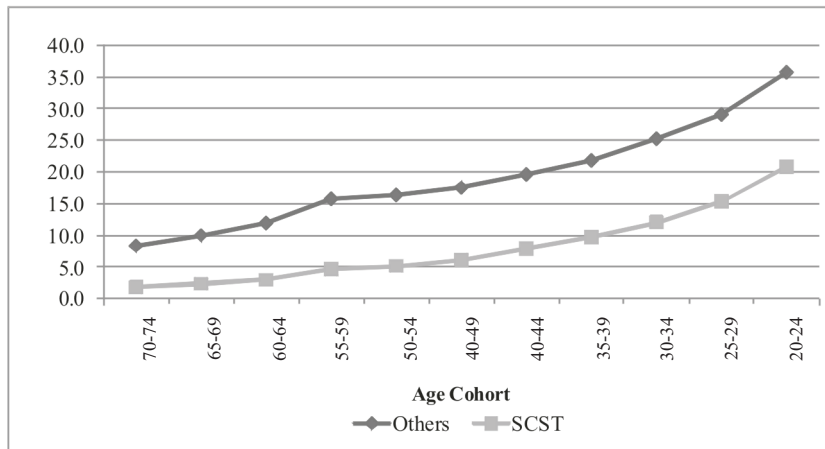
Source: Estimated from Table(C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 9: Attainment of secondary education in India over the age cohort and across the social groups



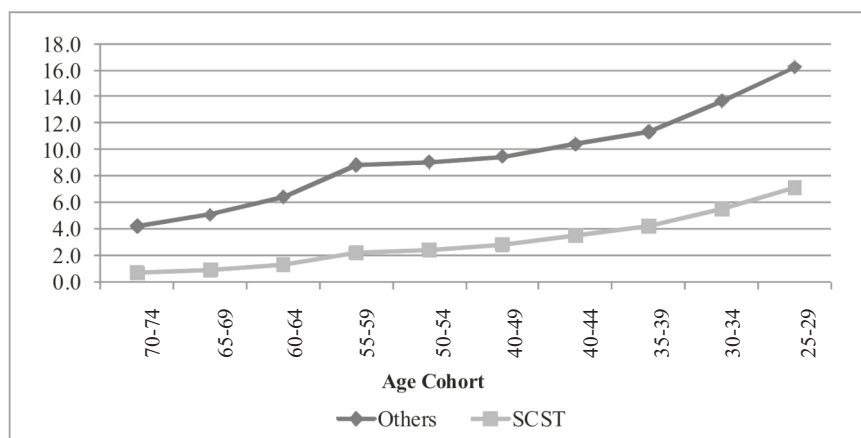
Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India. <http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 10: Attainment of higher secondary education in India over the age cohort and across the social groups



Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India. <http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 11: Graduation attainment rate in India over the age cohort and across the social groups



Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India. <http://www.censusindia.gov.in/2011census/C-series/C08.html>

Rural-Urban Disparity

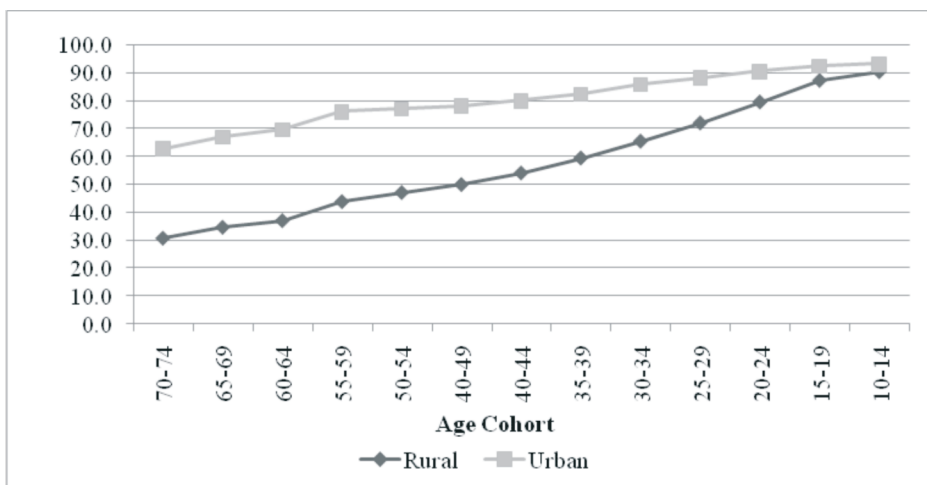
Rural-Urban dichotomy is another aspect of group disparity frequently discussed in Indian development literature. Unlike the two earlier dichotomies, it is not that much discussed in case of education except in case of literacy. Therefore, there is hardly any systemic effort at educational expansion targeting the rural population. The urban sector has a higher educational attainment rate than the rural sector. In the case of literacy, rural-urban disparity continuously declines over the age cohorts and near equity is achieved for the youngest age cohort (10-14). The decline in rural-urban disparity is observed in case of the elementary completion rate too. However, unlike literacy rate, quite large gaps exist between both the sectors for the youngest age cohort (15-19). The elementary completion rate for the youngest age cohort (15-19) is 61.5 per cent for the rural sector and 75 per cent for the urban sector, which is far short of the universal completion rate.

The secondary completion rate has continuously improved for both the sectors from oldest to youngest age cohort. However, the disparity between both the sectors,

measured in terms of the percentage point gap, declined only recently. It declined for last two youngest age cohorts. A similar trend and patterns are observed in the case of higher secondary education too.

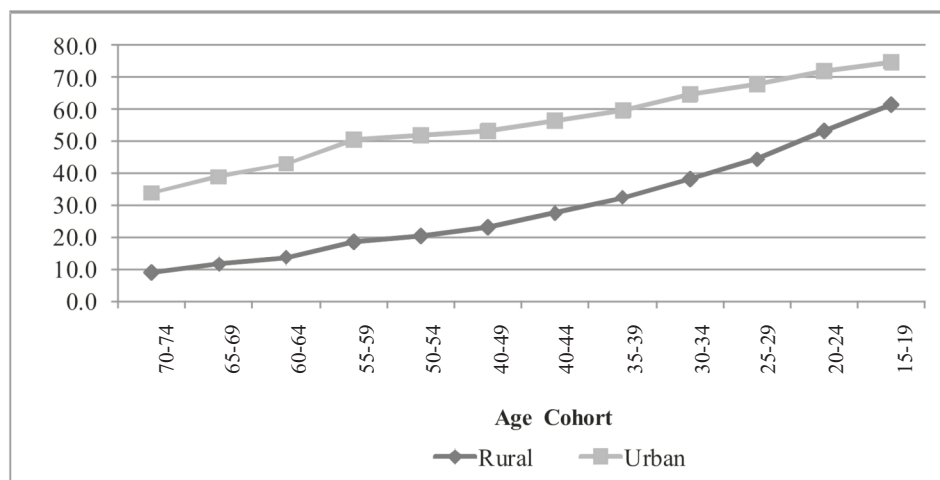
The graduation completion rate for the urban population improved at a much faster rate than for the rural population. Therefore, the percentage point gap in graduation completion rate between both the sectors increased over the age cohorts. Looking at some recent age cohorts, it is found that the percentage point gap increased from 14.7 for the age cohort (35-39) to 17.6 for the age cohort (25-29). In fact, the rural population seems to gain very little from recent expansion in higher education institutions compared to the urban population. For the youngest age cohort (25-29), the graduation completion rate of the rural sector (7.8 per cent) is more than three times lower than that of the urban sector (25.4 per cent).

Figure 12: Sector-wise literacy progress in India over the age cohort



Source: Estimated from Table-C2308, Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

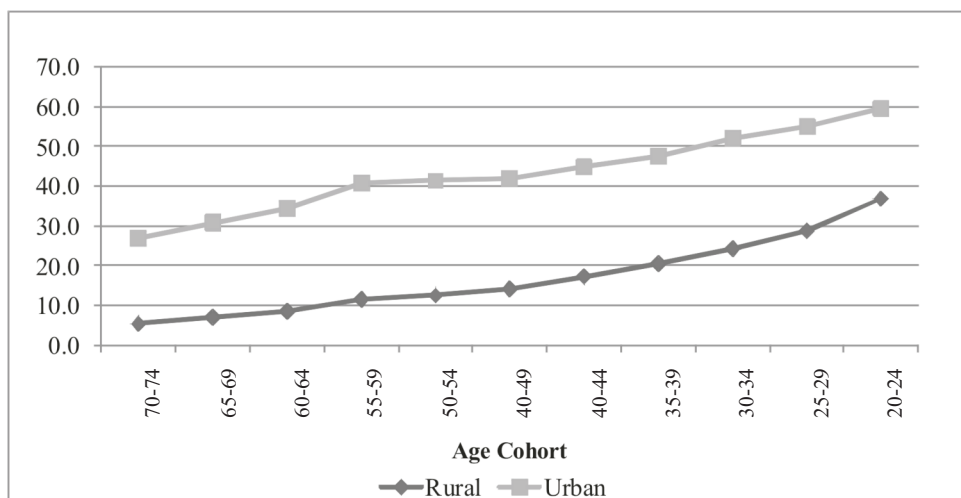
Figure 13: Sector-wise attainment of elementary education in India over the age cohort



Source: Estimated from Table-C2308, Census 2011, Office of the Registrar General and Census Commissioner of India.

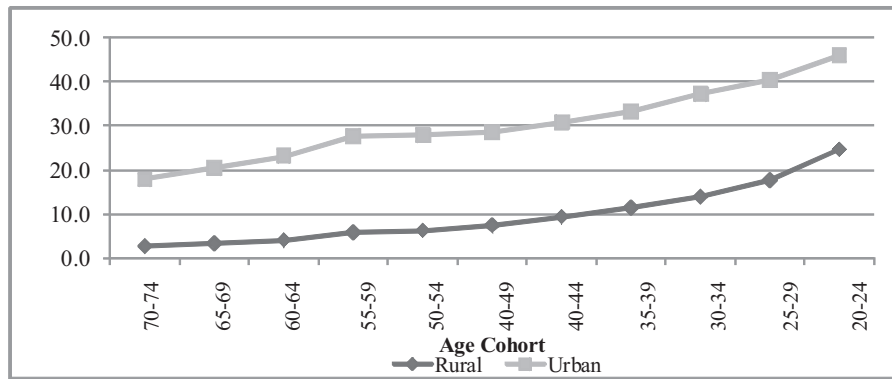
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 14: Sector-wise attainment of secondary education in India over the age cohort



Source: Estimated from Table-C2308, Census 2011, Office of the Registrar General and Census Commissioner of India.

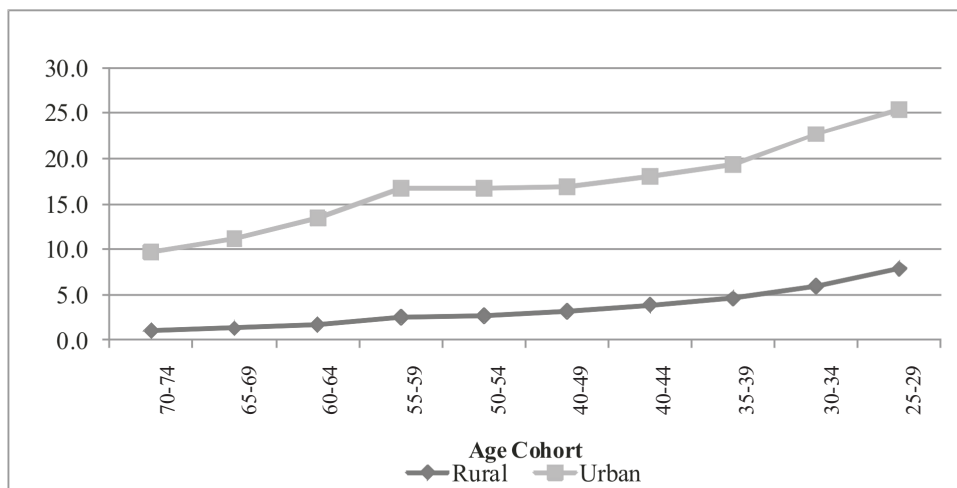
Figure 15: Sector-wise attainment of higher secondary education in India over the age cohort



Source: Estimated from Table-C2308, Census 2011, Office of the Registrar General and Census Commissioner of India.

<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 16: Sector-wise attainment of graduation rate in India over the age cohort



Source: Estimated from Table-C2308, Census 2011, Office of the Registrar General and Census Commissioner of India.

<http://www.censusindia.gov.in/2011census/C-series/C08.html>

5. Unfolding Group Disparity: An Age structural perspective

In order to obtain a more comprehensive picture of the inequitable distribution of educational achievement across various subgroups of the population, groups with multiple advantages/disadvantages were created. Given a binary classification of the population by gender ('male' and 'female') by sector of origin ('rural' and 'urban') and by social groups ('SC/ST' and 'others'), we reconstructed a set of eight mutually exclusive and completely exhaustive subgroups denoted as: Urban, Others, Male (UOM); Urban, Others, Female (UOF); Urban, SCs/STs, Male (USM); Urban, SCs/STs, Female (USF); Rural, Others, Male (ROM); Rural, Others, Female (ROF); Rural, SCs/STs, Male (RSM); Rural, SCs/STs, Female (RSF).

Figure-16 presents the literacy rate in India over the age cohorts for eight mutually exclusive sub-groups of the population. With respect to literacy rate, all the eight sub-groups of the population are found to be converging if one moves towards the youngest age cohort. This indicates that group disparity in literacy disappears for newer age cohorts. Such disparity is typically demonstrated with age, i.e., older age cohorts are more disparate compared to the younger ones. If the group equity persists with subsequently newer age cohorts, overall group equity in literacy would be achieved when the first age cohort with group equity becomes the oldest one. If formal schooling is the only medium of improving literacy without any initiative for adult literacy, it would take a long time to achieve group equity in literacy.

The advantage of using eight disjoint sub-groups rather than a dichotomous classification to analyse educational progress can provide more detailed information about group disparity in educational outcomes. Taking the case of the literacy rate, there seems no group disparity in the dichotomous classification--be it gender, social group or rural-urban. However, there is a gap of 5.6 percentage points between the best-off (UMO) and worst-off (RFS) sub-group of the population for the youngest age cohort. Similarly, in case of the elementary completion rate, it is observed that disparity does not exist among all the subgroups of the youngest age cohort (Figure-17). Group disparity is totally absent between the first two best-off sub-groups

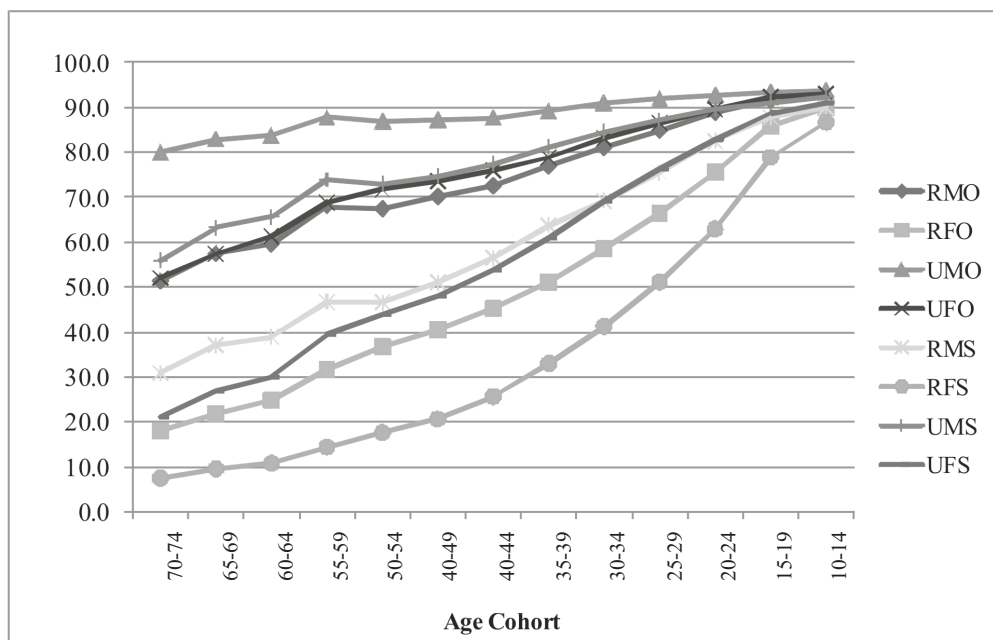
(UMO & UFO) of the population. In other words, there is no gender disparity among 'urban other'. Similarly, no disparity is observed in the elementary completion rate for the youngest age cohort between the UMS and UFS. This denotes that there is no gender disparity among the urban SC/ST in the elementary completion rate. Though there is a fairly large gap between both the social groups in the urban sector. The rural-urban disparity is clearly observed in the elementary completion rate. Out of four rural population sub-groups, three are in disadvantaged position relative to any urban sub-group. The best-off rural sub-group, RMO, placed itself with the 'worst-off' sub-group in the urban population (UMS & UFS). In the rural population, there is a clear dominance of 'others' over the SC/ST as both the 'rural others' sub-groups registered a higher elementary completion rate as in the case of both the rural SC/ST sub-groups. It also needs to be mentioned here that, for a long time, RMS were well ahead of RFO, though recently, the latter dominates over the former. Overall trends in the rural sector indicate that both the social groups are moving towards gender equality separately.

Gender equity among Urban Others-UMO & UFO for the youngest age cohort is observed for all the levels of educational attainment (Figure 16-20). Educational attainment rate of the 'Urban Others' group is much higher than the remaining sub-groups of the population. The educational attainment gap between 'urban others' and remaining sub-groups of the population is higher for higher levels of education. Although gender equality among 'Urban SC/ST' has not been achieved, gender convergence is observed for this group. It seems that gender equity will soon be achieved among them as well. Overall, it can be expected that gender equity at all the educational levels would be achieved soon.

The rural population remains in disadvantaged position at all the educational levels with varying intensity. The disadvantage is higher for higher educational levels such as higher secondary and graduation. At the higher secondary level, progress for rural sector is observed only after age cohort (40-44). The graduation completion rate for rural sector is still very low. Moreover, their relative position is seen to become worse

over the age cohort. This is true for all the sub-groups of the rural population, which is evident from the fact that best-off sub-group (RMO) of the rural population that was in a more advantageous position than the worst-off sub-group (UFS) of urban population, was pushed to a disadvantaged position. For the worst-off rural sub-group, RFS, progress is observed only recently.

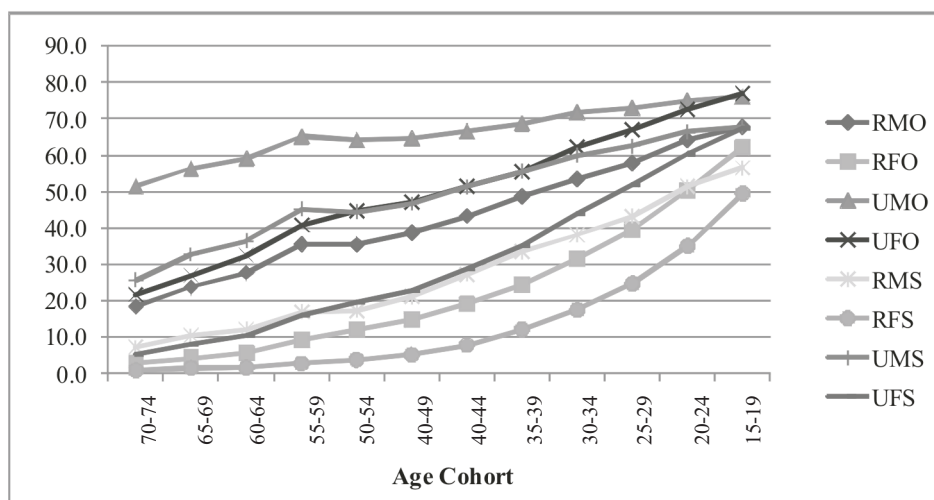
Figure 17: Literacy progress in India over the age cohort and across the sub-groups



Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India.

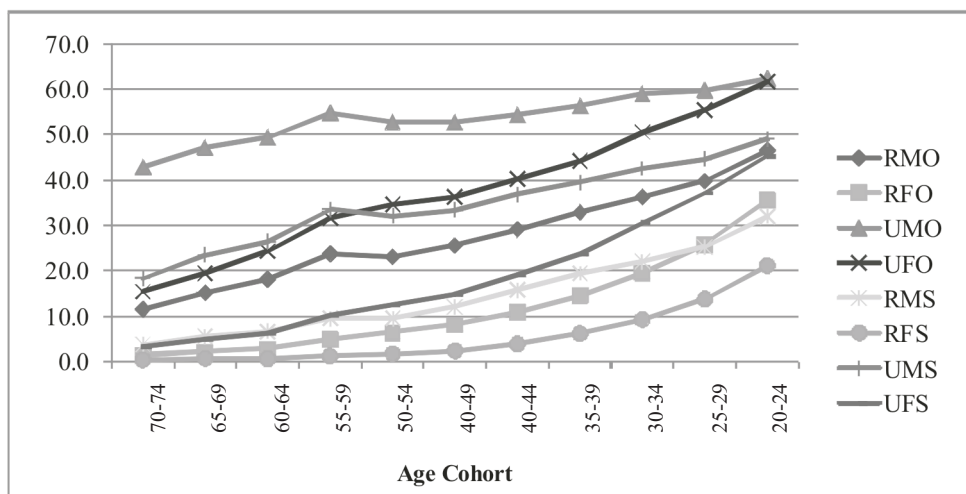
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 18: Attainment of elementary education in India over the age cohort and across the sub-groups



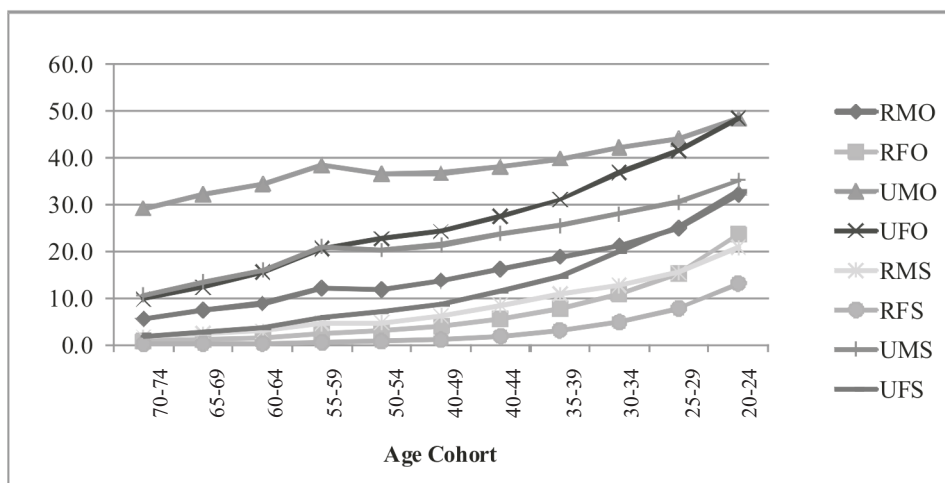
Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 19: Attainment of secondary education in India over the age cohort and across the sub-groups



Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 20: Attainment of higher secondary education in India over the age cohort and across the sub-groups



Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

Figure 21: Attainment of graduation rate in India over the age cohort and across the sub-groups



Source: Estimated from Table (C 2308; C2508SC and 2708ST), Census 2011, Office of the Registrar General and Census Commissioner of India.
<http://www.censusindia.gov.in/2011census/C-series/C08.html>

6. Discussion and Conclusion

The paper made an attempt to evaluate the group disparity in educational progress in India. Analytics adopted are superior on three counts: 1) exclusively utilizes census data for the assessment of overall educational progress as otherwise it would have been limited to merely a literacy analysis; 2) provides an analysis of long-term educational progress over the age cohorts 3) provides an assessment of group disparity in terms of consolidated deprivation/achievement rather than limiting to binary categorization.

The study demonstrates that mapping of educational attainment over the age cohorts offers a robust understanding of educational progress. It informs regarding the change in the likelihood of being educated for every age cohort of the population. It facilitates comparison of the educational attainment rate of any age cohort with other age cohorts in the population. The information obtained from this analysis would be much more useful for policy formulation and analysis than that provided by previous studies. For example; if the policy objective is to achieve gender equity, it is necessary to be informed about whether the older age cohort or the younger one is responsible for the observed disparity. Moreover, despite using a single data point, this paper provides a long-term perspective of educational progress.

The analysis confirms continuous improvement in educational attainment in India over the age cohorts. This is observed at every educational level. The literacy rate has improved to 90% for the youngest age cohort (10-14) with equitable distribution across the various sub-groups of the population. Unlike literacy, group disparity behaves differently at each educational level. The continuous decline is observed in gender disparity at all educational levels from the oldest to the youngest age cohort. Social disparity declines at elementary education but a similar trend is not observed for other educational levels. Rural-urban disparity presents a story similar to social disparity.

It provides a better understanding of group disparity in educational attainment when it is analysed for eight disjointed sub-groups of the population rather than through

binary classification. There is a huge gap in educational attainment rate between the best-off (UMO) and the worst-off (RFS) sub-groups of the population. This gap is higher for higher educational levels. This analysis observed a complete absence of gender disparity among 'urban others' for the youngest age cohort at all educational levels. Gender disparity is absent among 'urban SC/ST' at the elementary education level. For higher educational levels, a similar pattern persists, although the convergence is slow. These findings may be crucial for policy making aimed at gender equity. Moreover, both the social groups in the urban sector are also seen to be converging.

The rural sector is a disadvantaged sub-group of the population. There is a clear dominance of the urban sector over the rural sector in terms of the educational attainment rate. The educational attainment rate for all the four rural sub-groups is lower than for the urban sub-groups. The educational attainment rate is also lower for the best-off rural sub-group than the worst-off urban sub-group for younger age cohorts at all the educational levels. The graduate completion rate in the rural sector remains low despite the recent expansion in higher education.

References

Agrawal, T. (2014). Educational inequality in rural and urban India. *International Journal of Educational Development*, 34, 11-19.

Asadullah, M. N., & Yalonetzky, G. (2012). Inequality of educational opportunity in India: Changes over time and across states. *World Development*, 40(6), 1151-1163.

Bhakta, Runu (2015). *Educational attainment of young adults in India: Measures, trends & determinants*. Indira Gandhi Institute of Development Research, Mumbai, Working Paper No.2015-034.

Desai, S., & Kulkarni, V. (2008). Changing educational inequalities in India in the context of affirmative action. *Demography*, 45(2), 245-270.

Katiyar, S. P. (2016). Gender Disparity in Literacy in India. *Social Change*, 46(1), 46-69.

Hannum, E., & Buchmann, C. (2005). Global educational expansion and socio-economic development: An assessment of findings from the social sciences. *World development*, 33(3), 333-354.

Ray, Jhiliam, and Majumder, Rajarshi (2010). Educational and occupational mobility across generations in India: social and regional dimensions. *Indian Journal of Labour Economics*, 53(4), 625-647.

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