PUNJAB EXAMINATION COMMISSION

Secondary Analysis of Examination Results 2010
Performance of 5th and 8th Grade Students in Punjab, Pakistan

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Report 2010

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REPORT

ON

Performance of 5th and 8th Grade Students in Punjab Based on Examination Results 2010

Written by:

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ACKNOWLEDGEMENT

It is a matter of pleasure that PEC is publishing its first report on students' performance without involving external expertise. This is the result of successful cooperation of School Education Department, District Governments and all the working group members at PEC. We are grateful to all those, from School Education Department to students and parents who facilitated, participated and conducted any activity at any level to assess learning achievements of 5^{th} and 8^{th} grade students in Punjab.

Muhammad Aslam Komboh, Secretary School Education contributed with zeal and vigor in PEC examination and deserves our heartfelt gratitude. We highly appreciate the cooperation extended by Director Public Instruction (SE), Mian Abdul Haq and Director Public Instruction (EE), Islam Siddique who always owned the task of conducting the examination in the province. We also appreciate the cooperation extended by EDOs, DEOs, DMOs, Head of institutions and all the supervisory and scoring staff who contributed in making this huge activity of examination successful. Any activity of such a big volume can never be completed without assistance, cooperation of a team of committed individuals, especially the staff working at PEC office. The role of operation manager PEC, Iqbal Ahmad Awan is of great importance in organizing the whole activity; I highly appreciate the contributions of PEC staff to complete the tasks successfully.

Thanks are also due to Mr. Tariq Saeed Education Specialist, UNICEF who always extended financial support to PEC in technical area and printing of students report.

Chief Executive Officer
Punjab Examination Commission

LIST OF ABBREVIATION

CEO	Chief Executive Officer
DEO	District Education Officer
DMO	District Monitoring Officer
DPI (EE)	Director Public Instruction (Elementary Education)
DPI (SE)	Director Public Instruction (Secondary Education)
DSD	Directorate of Staff Development
EDO (Edu)	Executive District Officer (Education)
PEC	Punjab Examination Commission
PST	Primary School Teacher
SED	School Education Department
SLOs	Students' Learning Outcomes
UNICEF	United Nations Children Fund

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EXECUTIVE SUMMARY

This report presents a secondary analysis of the data arising from the examinations 2010 for grades 5 and 8 in the Punjab. The report is mainly concerned with a comparison of mean levels of student performance between districts, the sils, and schools within districts. The secondary analysis complements the primary analysis of the 2010 Grade 5 and 8 examinations which assessed candidates' performance and their ability in a subject, calibrated curriculum competencies according to level of difficulty. The 2010 Grade 5 and 8 examinations were conducted by the Punjab Examination Commission (PEC) with administrative and logistical support provided by the School Education Department, Government of the Punjab and districts education departments. The financial and technical assistance was provided by UNICEF. The number of students who appeared in grade 5 examination was more than 1.25 million (1,252,718), and more than .88 million (8,86,657) students appeared in grade 8 examination 2010. The students were from public and private schools and secondary analysis is based on six subjects: Mathematics, English, Urdu, Social Studies, Islamiyat, and Science. The major findings of the secondary analysis were: 1). For grade 5 and 8 there were major differences between districts in mean levels of student performance. For grade 5 Muzaffargarh, Jhang and D G Khan performed very well while Rahim Yar Khan and Attock performed poorly. For grade 8 again Muzaffargarh, Jhang and D G Khan did well, but Attock, together with Mandi Bahauddin performed poorly. 2). For grade 5 and 8 students' performance among districts, tehsils and schools within districts exhibited large variances. Thus, there were tehsils in high performing districts in grade 5 such as D. G. Khan that performed at low level, and tehsils in low performing districts like Rahim Yar Khan that performed at a comparatively high level. In grade 8 same was the situation, D.G. Khan tehsil from high performing districts performed at lower level whereas Fateh Jang tehsil of low performing districts performed comparatively better. That diversity was also evident in the distribution of performance levels by schools within tehsils and districts. 3). In general, for grade 5 and 8, private schools performed at a higher level than public schools though that was not the case in every district. Grade 5 public school students in D.G. Khan, Sheikhupura, Gujranwala, Lahore did better than those in private schools, while for grade 8 only public school students in Multan and Sialkot did better than those in private schools. 4). In most districts of the Punjab as a whole, for grade 5 and 8, female schools students performed better than male schools students except in districts of Bhakkar, D.G.Khan, Jhang, Khanewal, Lodhran, Multan, Muzaffargarh, Nankana Sahib and Rajanpur for garde 5, and in districts of Bahawalnagar, Bhakkar, Multan, Muzaffargarh and Nankana Sahib for garde 8. 5). In most districts grade 5 students attending schools located in urban areas did better than those attending schools in rural areas. However, for grade 5 in 16 districts rural students performed better and for grade 8 in districts of Bahawalnagar, Bhakkar, Multan, Muzaffargarh and Nankana Sahib students attending rural schools performed better. 6). For grade 5, and 8 overall English Schools performed better in Punjab Districts. However Urdu Schools for garde 5 in districts of Kasur, D.G.Khan and Multan performed better.

The following major recommendations are offered:

I. PEC undertakes a secondary analysis every year of the examination results. The analysis includes trends over time and contrasts over grouping factors, extending back to 2006. These kinds of analysis are necessary to optimise the efficacy of the investment required to improve Elementary Education in the Punjab.

II. PEC undertakes field-based, qualitative studies to uncover reasons for the wide diversity of learning outcomes across and within districts.
III. PEC, DSD and districts education departments collaborate to provide district level workshops to explain and interpret district level findings of the secondary analysis with a view to identifying those schools, and tehsils which are most in need of urgent intervention to improve education quality in primary and middle schools.
IV.PEC undertakes dissemination of results to all the stakeholders at provincial and districts level to keep them aware about students learning level at elementary level.

SECTION 1

INTRODUCTION

1.1 Purpose

The main objective of this report is to present a secondary analysis of the data arising from the 2010 Grade 5 and 8 examinations. The report compares mean levels of student performance at districts, tehsils and schools level within districts. Additionally, the report presents performance comparison between genders, locale groups. It also presents overall and subject wise performance level of various groups.

1.2 Background

In 2006 for the first time grade 5 examinations were conducted by then newly established Punjab Examinations Commission (PEC) with administrative and logistical support provided by The Education Department, Government of the Punjab, and with financial and technical assistance provided by UNICEF. In 2007 PEC again held examinations for grade 5 students and for the first time for grade 8 students which was declared cancelled due to administrative grounds. From year 2008 to this year 2010 PEC is successfully conducting grade 5 and 8 examinations. In July 2010 The Punjab Examination Commission Act was promulgated for improving the examination system of elementary education. Since 2006 the examinations conducted by PEC covered the following six subjects: English, Islamiyat, Mathematics, Science, Social Science and Urdu for both 5^{th} and 8^{th} grade students.PEC is also conducting examination of 8^{th} grade elective subjects which are not included in the analysis. PEC examinations are designed to measure students learning achievement level with reference to national curriculum learning outcomes. PEC uses item response theory (IRT) to explore students' ability and to transform students' raw scores into scaled scores. The transformed scores may be used in multiple regression studies that build causal models of students' performance. Moreover, the RASCH model (one parameter IRT model) allows researchers to estimate levels of difficulty for curriculum competencies. This methodology enables examinations to be used not only as a gate keeping mechanism for determining who should be promoted to the next grade but, also, to identify what each student knows, understands and can do in direct relation to the curriculum.

The 2010 examinations had a candidature of approximately more than 1.25 million (1,252,718) for grade 5, and more than .88 million (8,86,657) students for grade 8 examination from 36 districts of Punjab. Candidates were from both public and private sector schools as well as individual private candidates. The primary analysis of the examination results is focused on individual student performance and the calibration of curriculum competencies. The focus of the present secondary analysis shifts from students and curriculum to district, tehsil, and school level performance. As such, the secondary analysis is mainly directed at policy analysts and education planners at both department and districts levels.

1.3 Methodological Issues for Comparison Purpose

Before presenting the secondary analysis it is important to draw attention to two methodological issues. The first is that the examination data provide only an internal frame of reference, or standard, to assess performance. This is because the examination papers were set to reflect the school curriculum of the Punjab, and the only candidates were those drawn from schools in the Punjab. Consequently, all comparisons apply only internally to students and schools in the Punjab. In the analysis, if a school's level of performance, or that of a district, is said to be "very well" that judgment refers only internally to the Punjab. It may be that students or schools assessed in this analysis to have performed at a "very well" level would also have been deemed to be "very well" if their performance had been compared with Grade 5 and 8 students in other provinces of Pakistan or in other countries, but that kind of external comparison cannot be made from the data of the 2010 Grade 5 and 8 examinations in the Punjab.

The second methodological issue refers to the large number of students and schools participating in the examinations. When comparisons of mean scores are made between districts where there are hundreds of thousands of students small differences in district means can be significantly different when testing at an α level of .05 or .01, which is international standard practice in education studies. This should be borne in mind when considering mean score comparisons illustrated in the tables and figures presented in later sections of this report.

1.4 Organization of the Report

This report is organized in 4 sections. The present introduction is Section 1. Section 2 provides an analysis of comparison of mean scores by districts, school sector (public and private), school gender (male, female), school location (urban and rural), and medium of instruction (Urdu and English). Section 3 provides classification of districts, and tehsils, according to levels of student performance. Section 4 provides a summary of the findings and recommendations.

SECTION 2

MEAN SCORES COMPARISONS

2.1 Overall Comparison of Districts Mean Scores

Figure 1 shows districts overall mean scores. The mean scores have been computed taking into account all schools in each district; that is, the mean scores refer to all schools whether public or private, English or Urdu medium, boys or girls schools, urban and rural schools, primary, middle, high and mosque schools and private individual candidates.

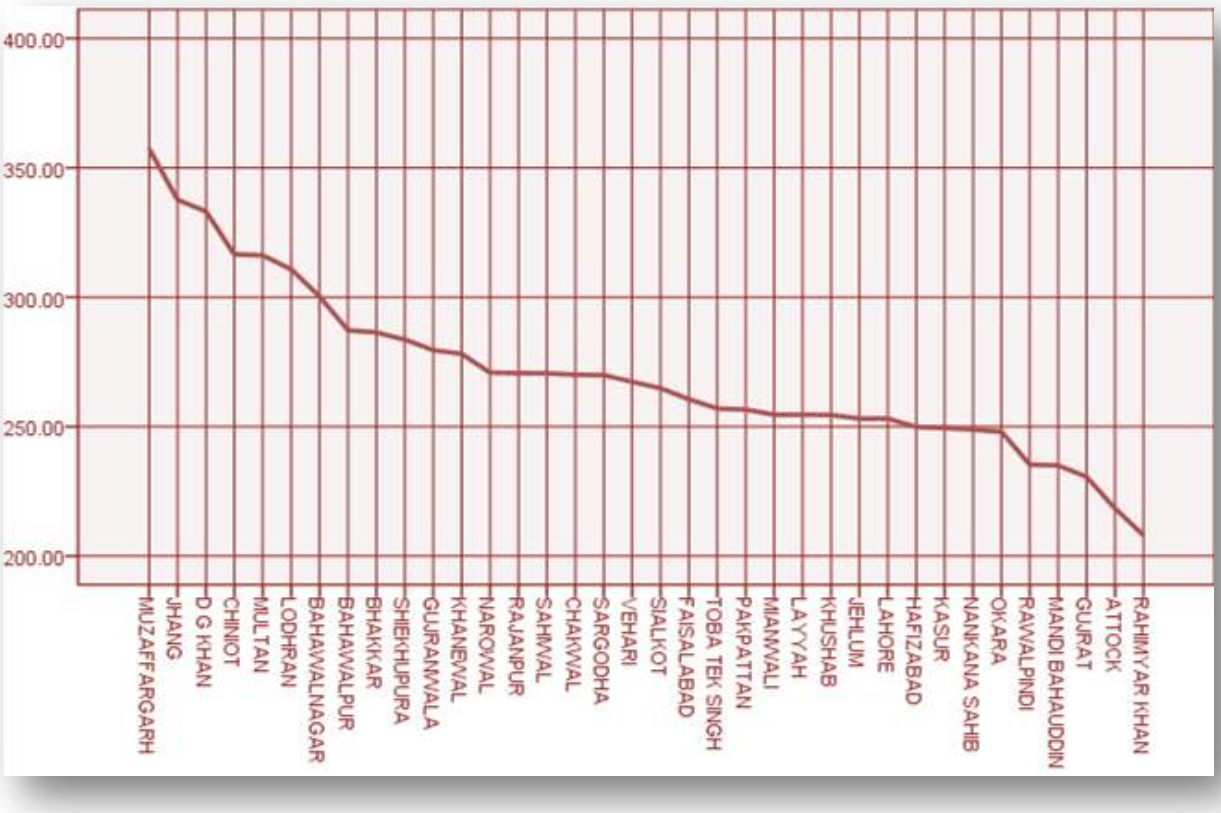

Figure 1: Districts Overall Mean Scores for Grade 5

Figure 1 has been arranged with districts listed from left to right in order of performance with the best performing districts on the left and the least well performing districts on the right of the graph. In determining overall levels of performance mean scores have been computed taking all six subjects into account. Three of the similar best performing districts for grade 5 were Muzaffargarh Jhang and D G Khan, two of the similar worst performing districts were Rahim Yar Khan and Attock.

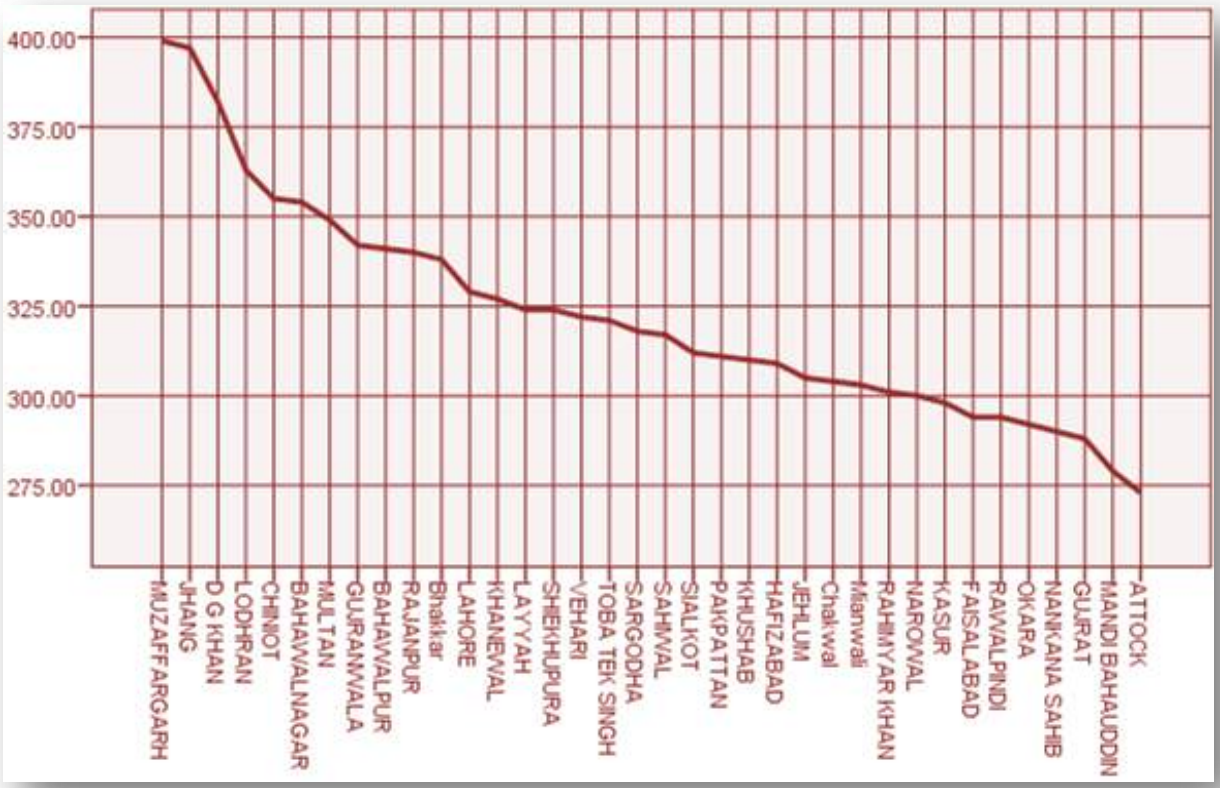

Figure 2: Districts Overall Mean Scores for Grade 8

Figure 2 presents the same analysis by district for grade 8 students. It shows districts overall mean scores for grade 8. The mean scores like grade 5 have been computed taking into account all schools in each district; that is, the mean scores refer to all schools whether public or private, English or Urdu medium, boys or girls schools, urban and rural schools, primary, middle, high and mosque schools and private individual candidates. Figure 2 has also been arranged with districts listed from left to right in order of performance with the best performing districts on the left and the least well performing districts on the right of the graph. In determining overall levels of performance mean scores have been computed taking six subjects into account. Three of the similar best performing districts for grade 8 were Muzaffargarh Jhang and D G Khan, two of the similar worst performing districts were Attock and Mandi Bahauddin.

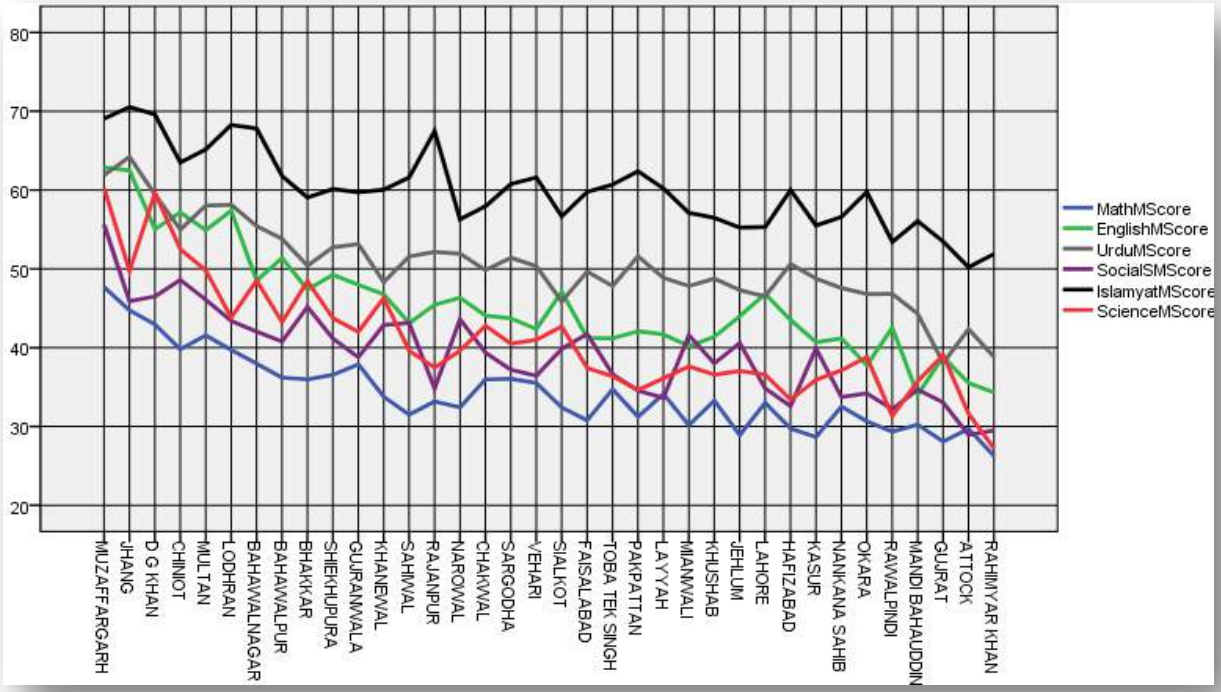

Figure 3: Districts Mean Scores by Subjects for Grade 5

Figure 3 shows district mean scores by subjects for grade 5. The mean scores have been computed taking into account all schools in each district. A characteristic of Figure 3 is the degree of parallelism between subject profiles; that is, if district mean performance in one subject is high then it is likely to be high in all other subjects. Similarly, if a district's mean score in one subject is low then it is likely to be low in all other subjects. This perception of parallelism is supported by a correlation analysis which reveals that district mean scores by subjects are significantly, positively correlated ($p<.01$). It is also noteworthy that across most districts student performance was substantially better in the Islamiyat, and substantially worse in Mathematics. More than 50% districts performed better in Science as compared to social studies.

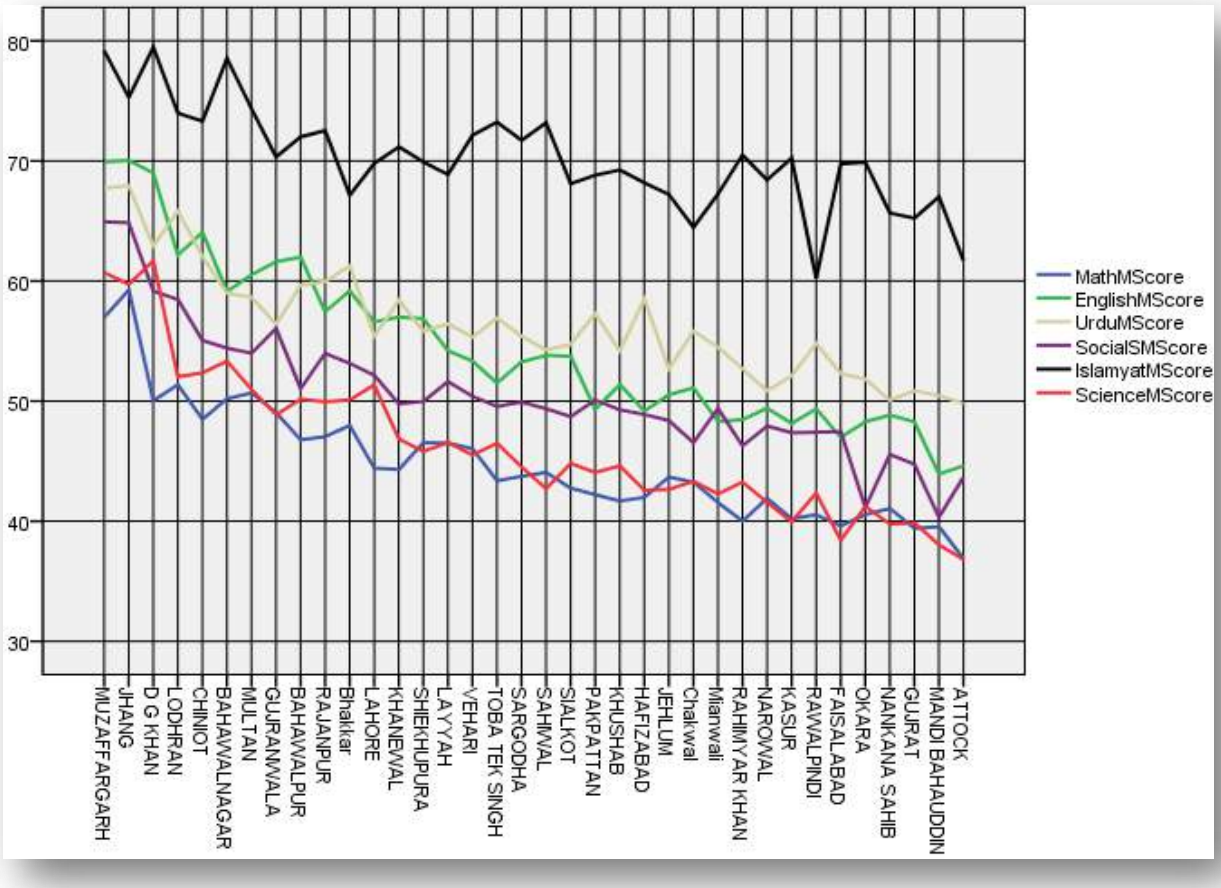

Figure 4: Districts Mean Scores by All Subjects for Grade 8

Figure 4 presents the same analysis by district for grade 8 students. As was the case for the grade 5 examinations, there is a high degree of parallelism between subjects across districts for grade 8 students. However, it is noteworthy that contrary to grade 5, students from one third districts in grade 8 performed poorly in Science rather than mathematics and at the highest level in the Islamiyat It is also important to note that almost in all the districts students performed better in English than social studies. Moreover, if the subject profiles shown in Figures 3 and 4 are compared it is evident that there has been a substantial improvement in English language achievement between grades 5 and 8, assuming, of course, that the English papers at each grade level adequately sampled across curriculum difficulty distributions in each grade level. It is concerning that in about 10 districts students performed poorly in Urdu. Given that the language of instruction is Urdu this has implications for all other subjects.

There is also a remarkable consistency between the grade 5 and 8 results across districts. For example, three of the best performing districts for grade 5 were Muzaffargarh, Jhang and D G Khan, and two of the worst performing districts were Attock and Gujrat. That was also the case for grade 8. Rahim Yar Khan was the worst performing district in 5 grade but improved in grade 8 and shifted to 10^{th} position from lowest performing district

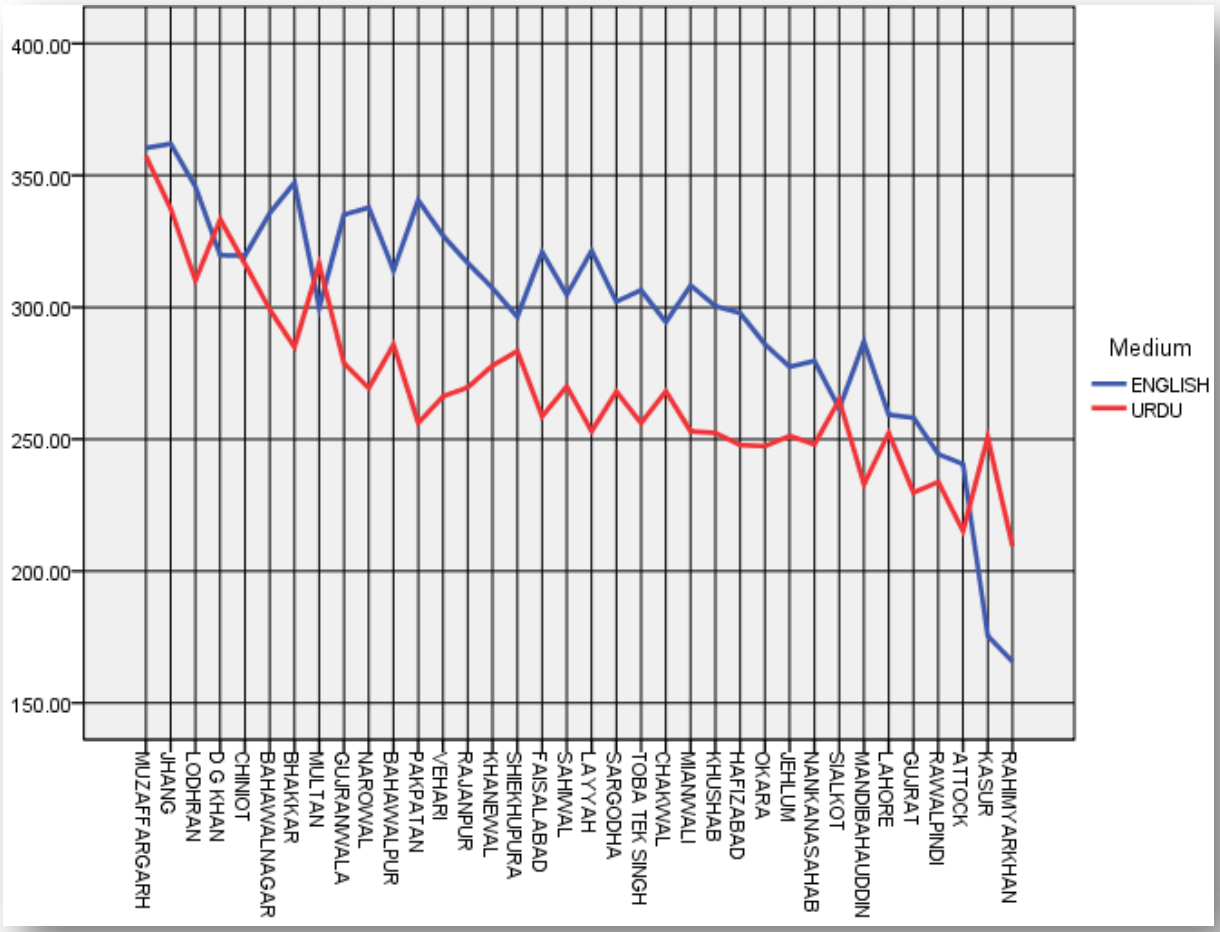

Figure 5: Districts Overall Mean Scores by Medium of Instruction for Grade 5

The figure shows that all the English medium schools performed better in grade 5 than Urdu medium schools except districts Rahim Yar Khan, Kasur, Multan, and D.G. Khan. The general view supported by research is that foreign language hinders better learning especially at elementary level but here the results reveal that English medium schools performed better than Urdu medium schools in 5th grade examination. To understand the real situation we need to get the answers of the questions:

- Are the English Medium Schools really English Medium?
- Do the English Medium Schools have better learning environment?
- Do the factors affecting students learning in English Medium Schools are better than Urdu medium schools.
- What makes English medium schools better than Urdu medium schools?

It seems that various factors are contributing in getting better mean scores in English medium schools. Further research is recommended to confirm the results.

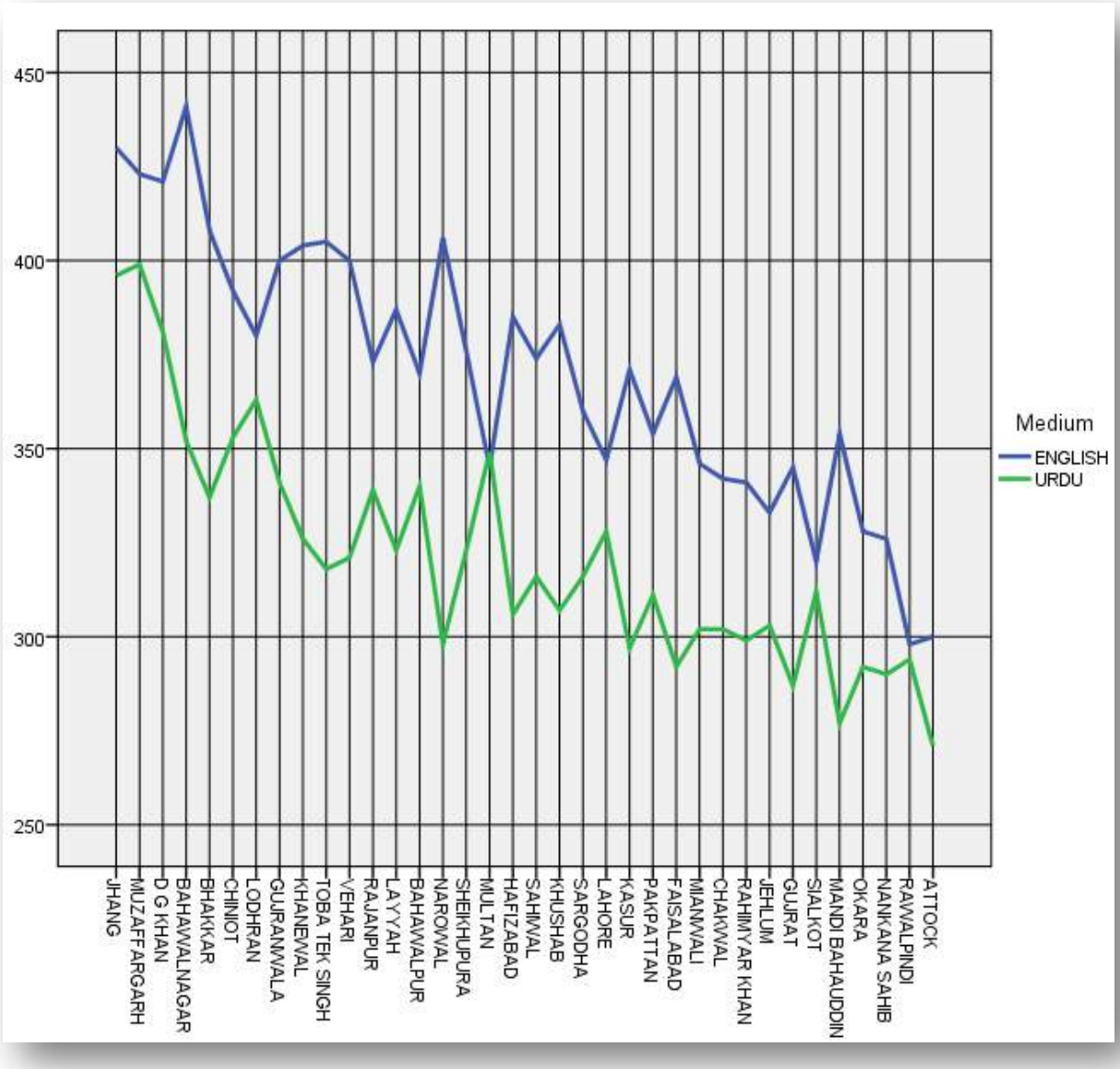

Figure 6: Districts Overall Mean Scores by Medium of Instruction for Grade 8

The above figure shows that all the English medium schools performed better in grade 8 than Urdu medium schools except district Multan (English 345, Urdu 349). The question arises that whether the use of foreign language as a medium of instruction causes learning improvements? Are English medium schools really English medium? Are there other factors which make so called English medium schools better? All these questions need to be answered to know the actual difference of performance between English medium and Urdu medium schools.

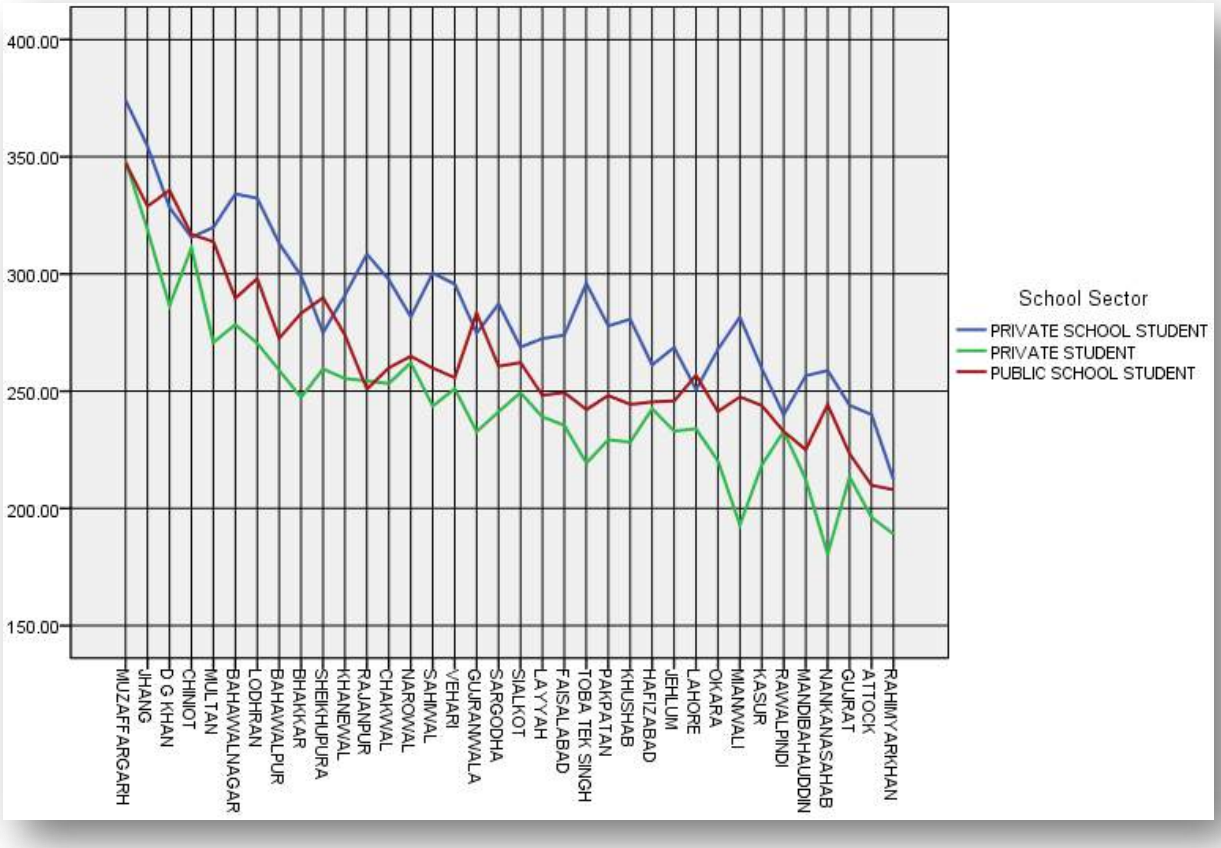

Figure 7: Districts Overall Mean Scores by School Sector for Grade 5

Figure 7 reveals that all the private schools performed better than Public (Government) schools in all the districts except in districts D. G. Khan, Sheikhupura, Gujranwala, and Lahore. In all the districts performance of all the private individual students is less than public schools students except Rajanpur district where private individual students overall mean score is 254.36 and public schools students mean score is 250.91. The question arises that prima facie physical and learning condition of public schools is better than most of private schools than what is the reason that their performance is lower than private schools. The investigation of such factor that affect private sector schools positively and public schools negatively will definitely help in improving students learning in public schools.

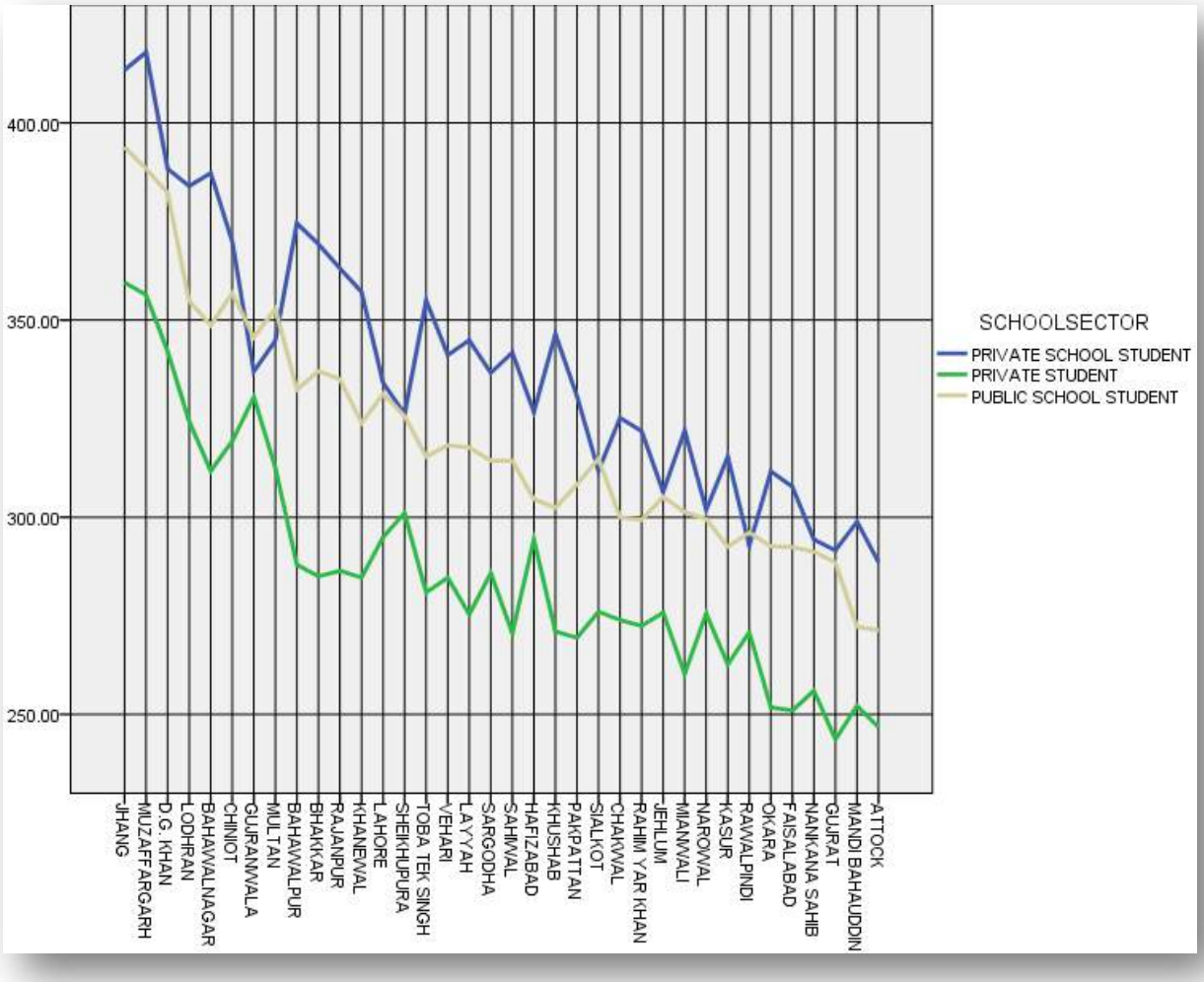

Figure 8: Districts Overall Mean Scores by School Sector for Grade 8

Figure 8 shows that all the private schools performed better than Public (Government) schools except districts Gujranwal, Multan and Rawalpindi. Performance of private individual candidates in Punjab is below the public schools as it was in the case of grade 5. In some districts like Lodhran, Bahawalnagar, Bahawalpur, Bhakkar, and Rawalpindi the difference of mean scores between public and private schools is vast which really needs to be investigated why it is so different. The difference of public and private schools in high achiever and low achiever districts is also very vast. The identification of factors promoting public schools performance will help in understanding how the public schools can be improved.

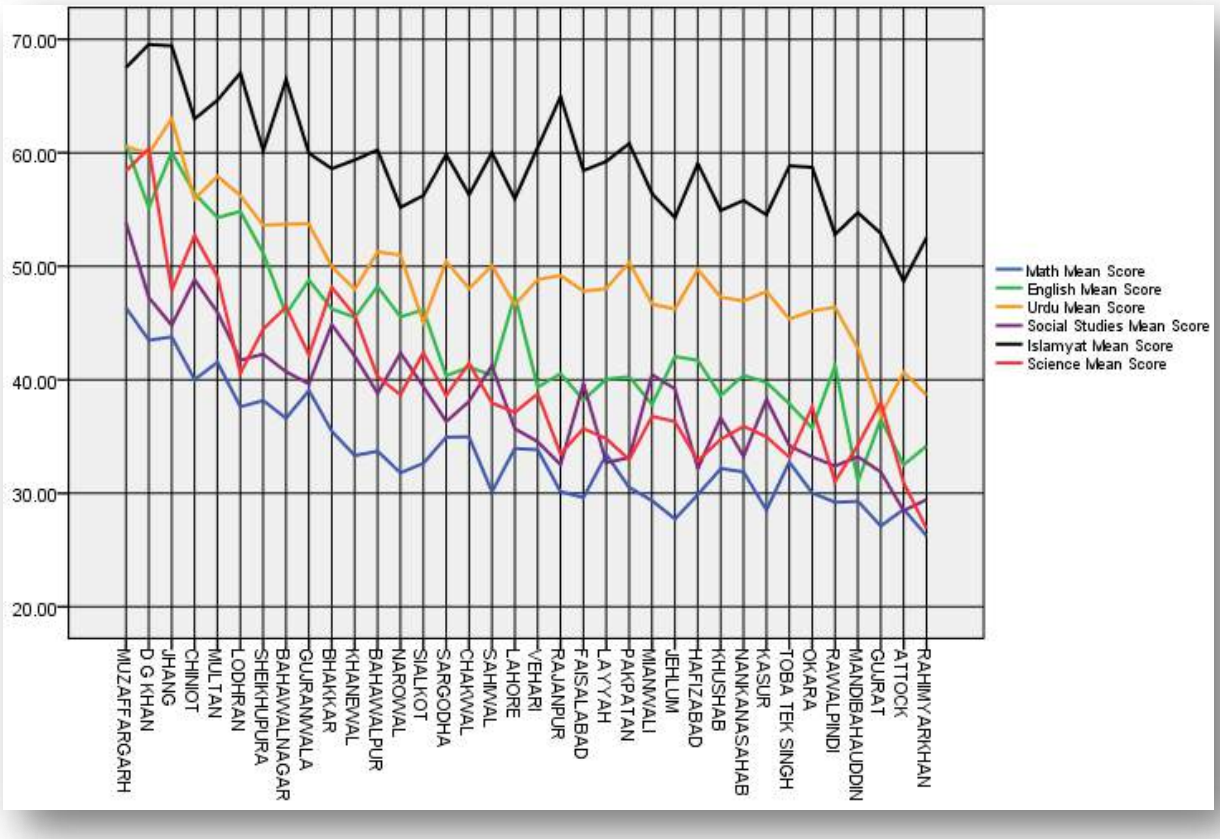

Figure 9: Districts Mean Scores across Public Schools by Subjects for Grade 5

This figure mentions that performance of public (Government) schools in all the district is at the top in Islamyat. Urdu language performance is better than English in public schools. The performance of public schools in subjects of Science and social studies is almost at similar level and lower than English language. The public schools got lowest mean score in mathematics as compared to all other subject. The information is useful for subject wise intervention in public schools of Punjab for policy decisions and improving students learning.

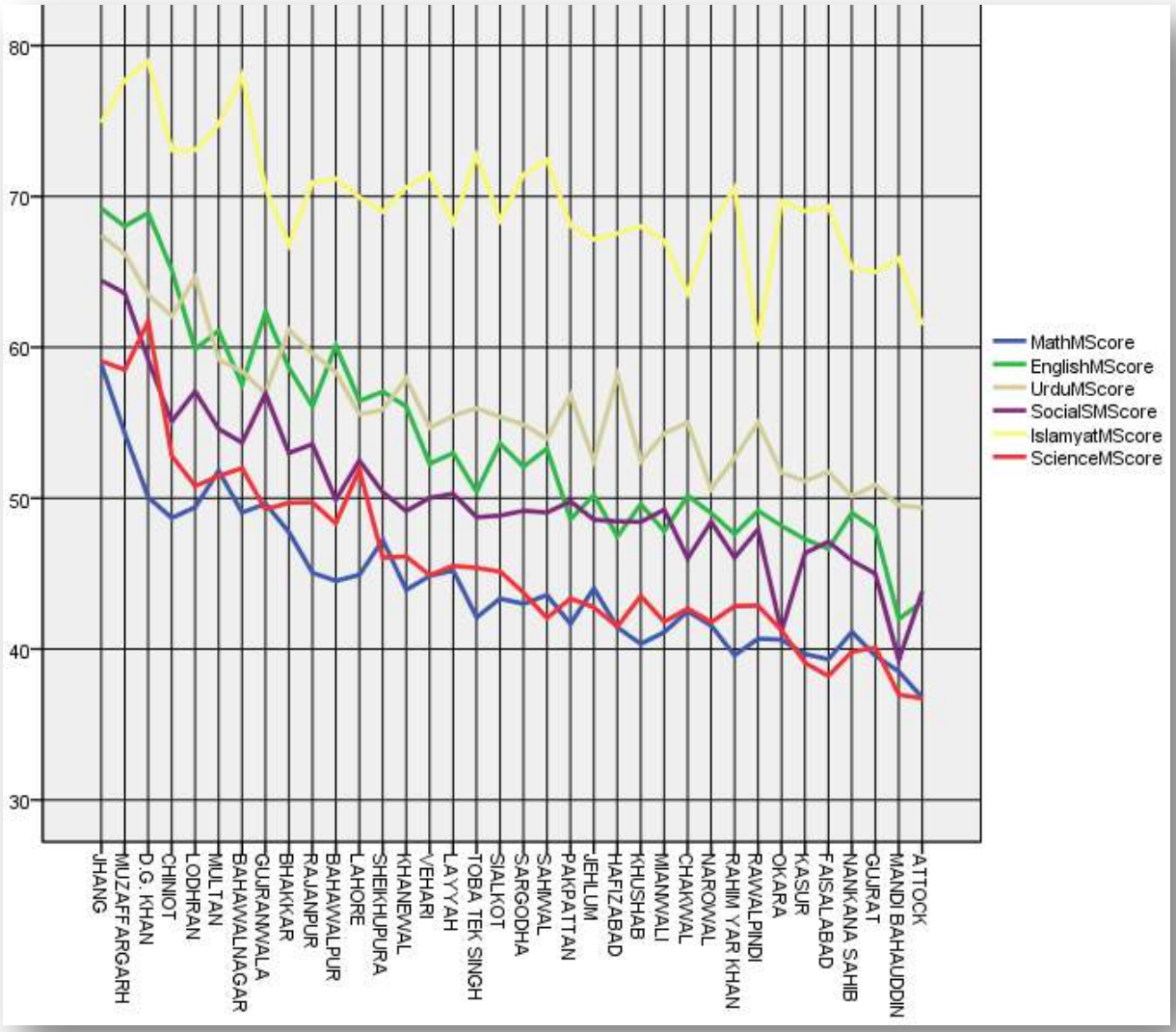

Figure 10: Districts Mean Scores across Public Schools by Subjects for Grade 8

This figure is mentioning that in Islamyat performance of public (Government) schools in all the district is at the top. Urdu language performance is better than English in public schools in general in all the districts except some high performing districts. The performance in subject of social studies is better in all the districts than subjects of Science and mathematics. D.G. Khan performed better in Science than social studies. In most of the districts mean score of mathematics is lowest than all other subjects of grade 8. The information is useful for subject wise intervention in public schools of Punjab for policy decisions, teachers' content training, and for improving students learning.

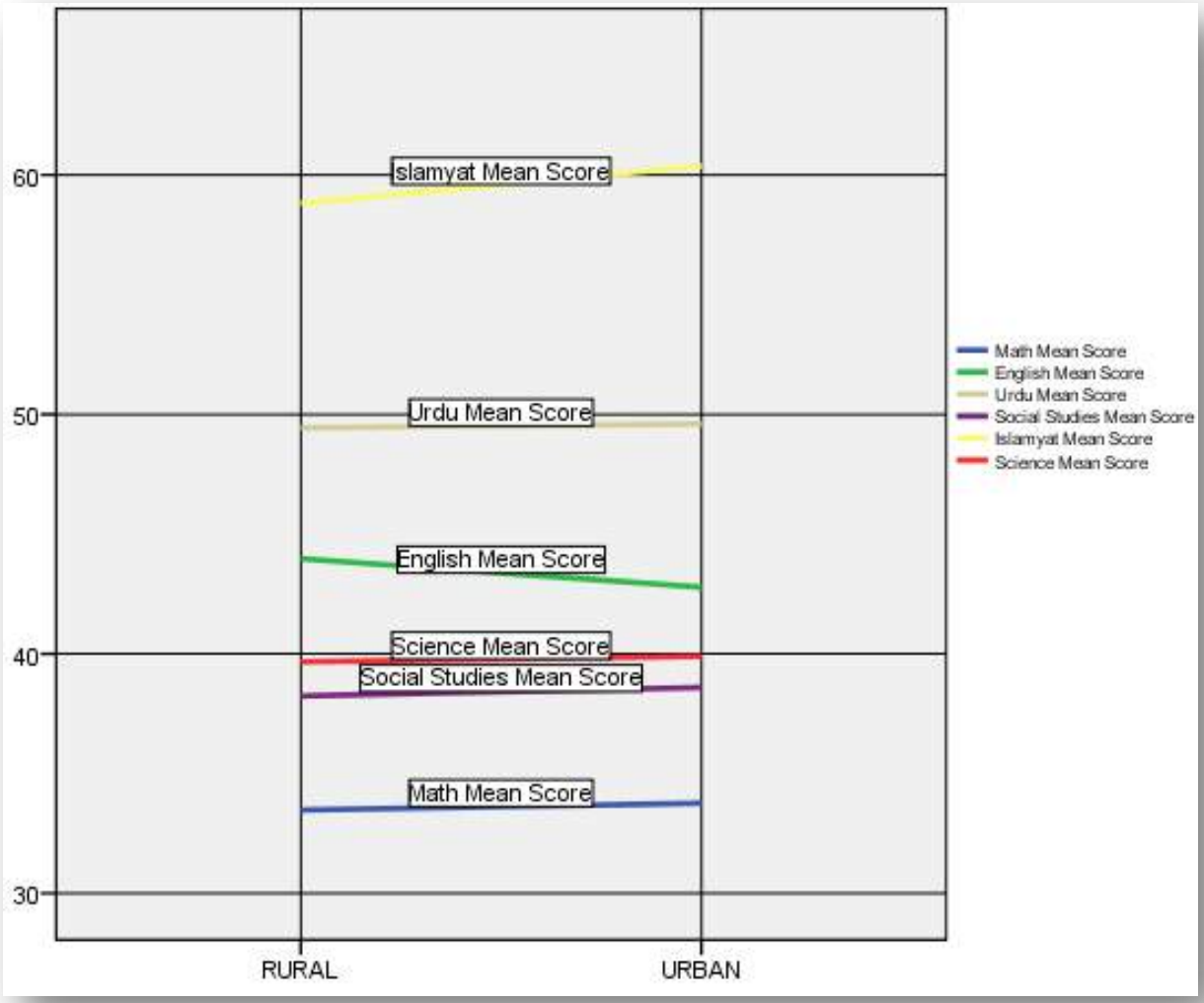

Figure 11: Punjab Mean Score across School Location by All Subjects for Grade 5

Figure 11 shows that subject wise mean scores of both rural and urban schools is in similar hierarchy i.e. they got highest to lowest scores in Islamyat, Urdu, English, Science, Social Studies, and Mathematics respectively. The urban schools performed better in Mathematics, Urdu, Social Studies, Islamyat and Science grade 5. However the difference is very marginal in points except Islamyat. The rural schools performed better in English. Actually the difference of achievement between rural and urban schools is of minor magnitude except English and Islamyat. The performance of both rural and urban schools in science, social studies, and mathematics is less than 40 mean scores. In mathematics the score is further low less than 35 which indicates the very poor performance of Punjab in these subjects.

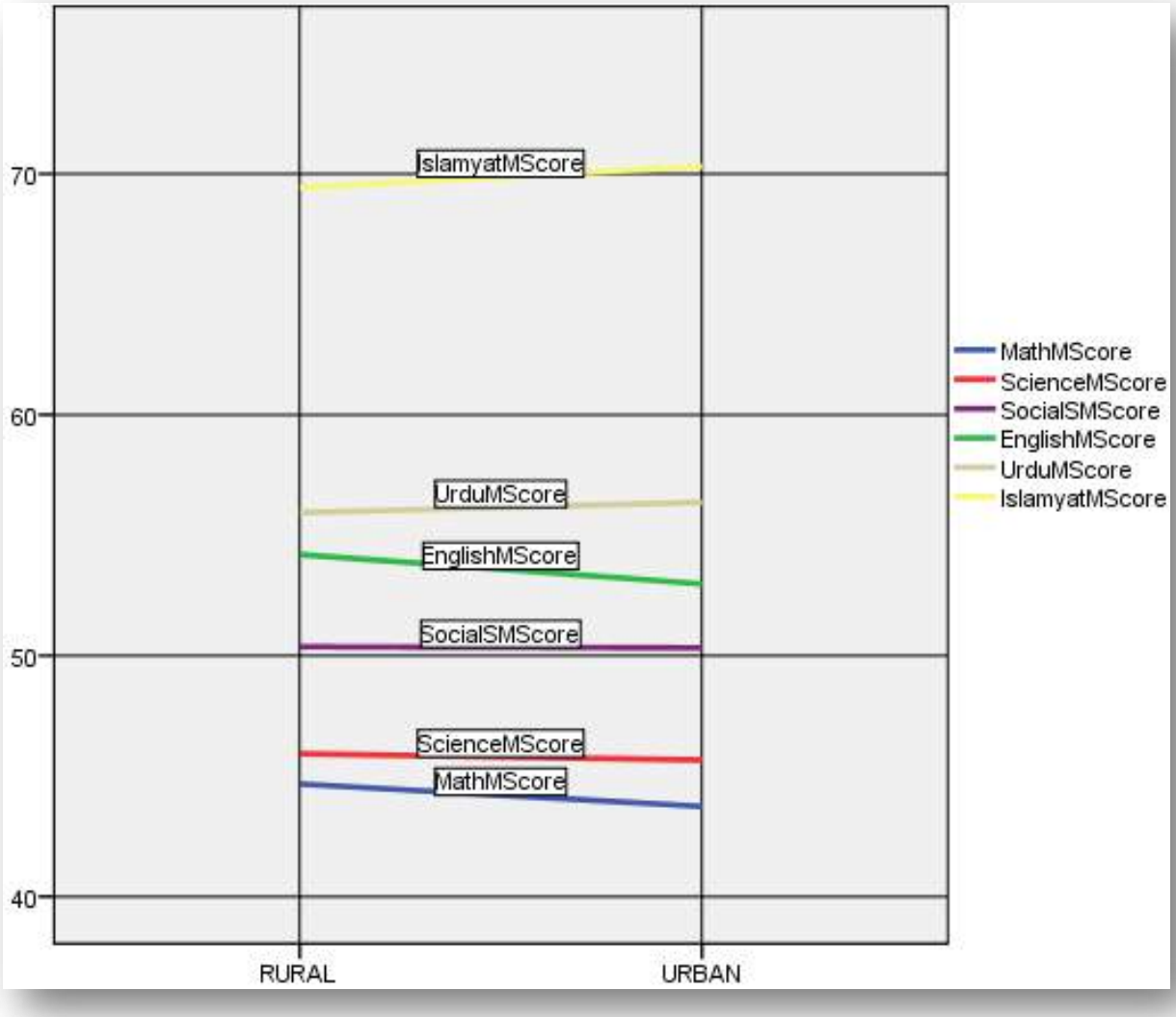

Figure 12: Punjab mean scores across school location by subjects for grade 8

Figure 12 shows that subject wise mean scores of both rural and urban schools is in similar hierarchy i.e. they got highest to lowest scores in Islamyat, Urdu, English, Science, Social Studies, and Mathematics respectively. The urban schools performed better in Urdu and Islamyat for grade 8. The rural schools performed better in Mathematics, English, Social Studies, and Science. However the difference is very marginal in points in subjects of Urdu, Social Studies, and Science. In both the science subjects both the rural and urban schools got very low scores i.e. less than 47.

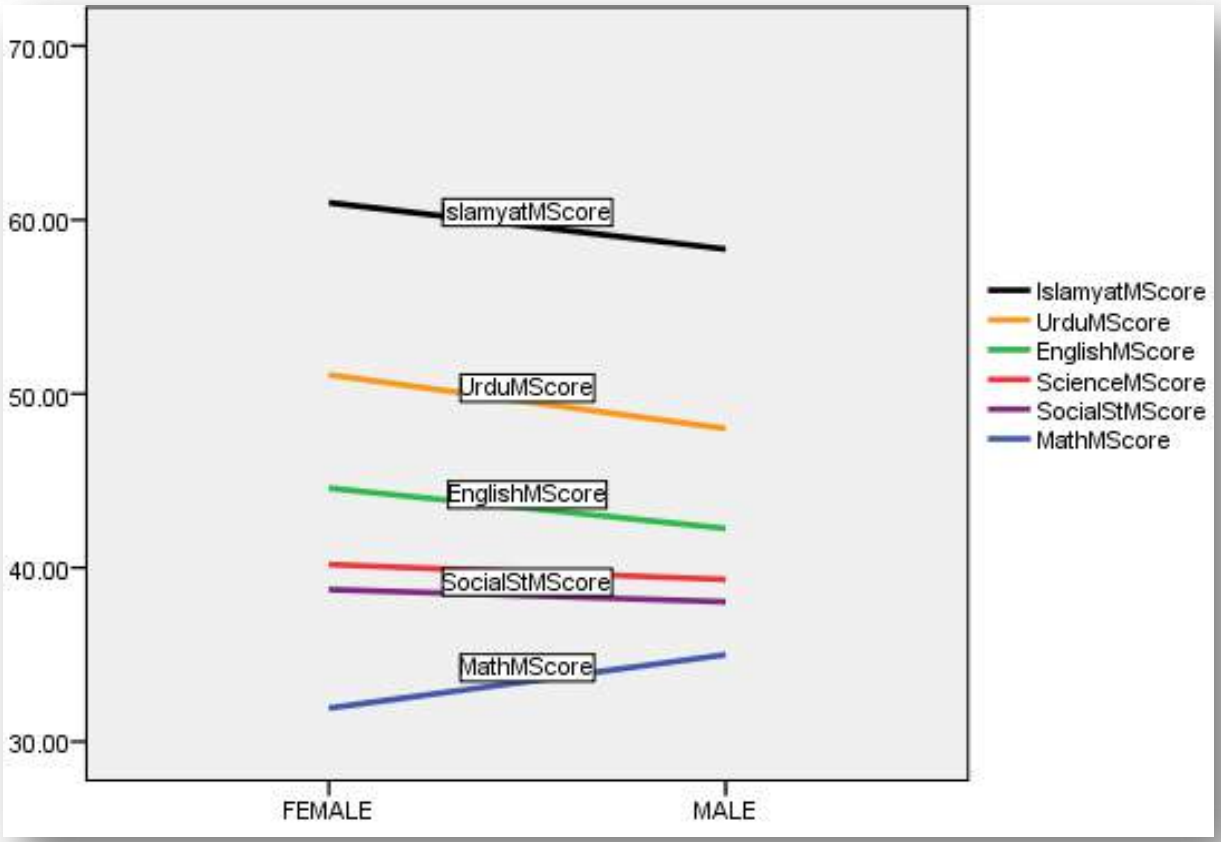

Figure 13: Punjab mean score across school gender by all subjects for grade 5

Figure 13 shows that subject wise hierarchy of mean scores of both female and male schools is similar. The female schools performed better in Islamyat, Urdu, English, Science and Social Studies, grade 5. However the difference is marginal in subjects of Science and Social Studies. It is notable that female and male both schools got better mean score in science than social studies but the mean score even in science is less than 42 which is discouraging one. The male schools in Punjab performed better in Mathematics but the mean score less than 36 is too much low as the mathematics is considered the basic discipline like language and it requires mastery learning level (about 80%) for better construction of knowledge at higher classes.

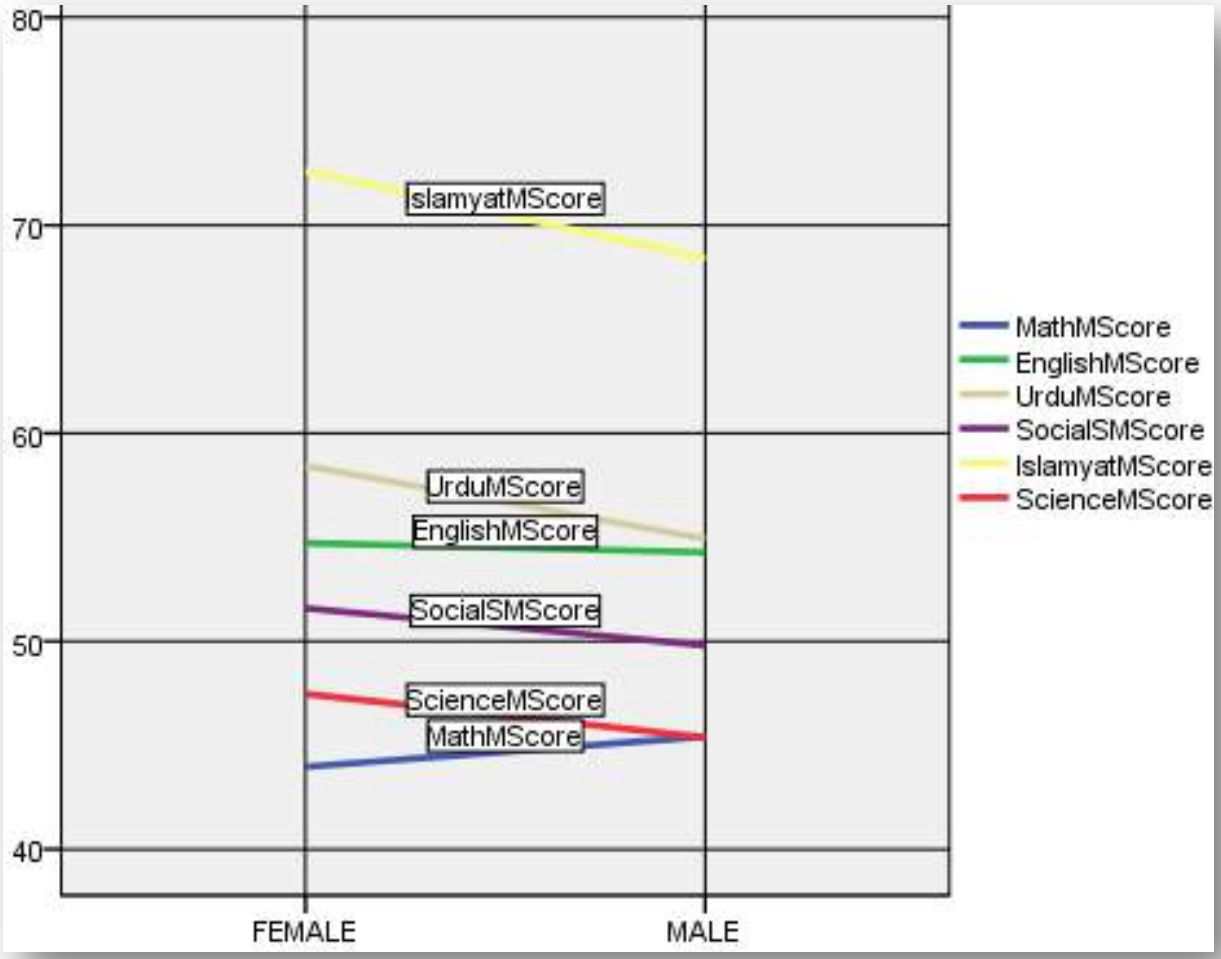

Figure 14: Punjab Mean Scores of School Gender by Subjects for Grade 8

Figure 14 indicates that subject wise hierarchy of mean scores of both female and male schools is similar. The female schools performed better in Islamyat, Urdu, English, Science and Social Studies, grade 8. However the difference is marginal in subject of English. The male schools in Punjab performed better in Mathematics. It is interesting that the mean scores of male schools in Punjab in both the science subjects Mathematics and Science is almost similar i.e. 45.18 and 45.32 respectively. In both the science subjects both the female and male schools got mean scores less than 48.

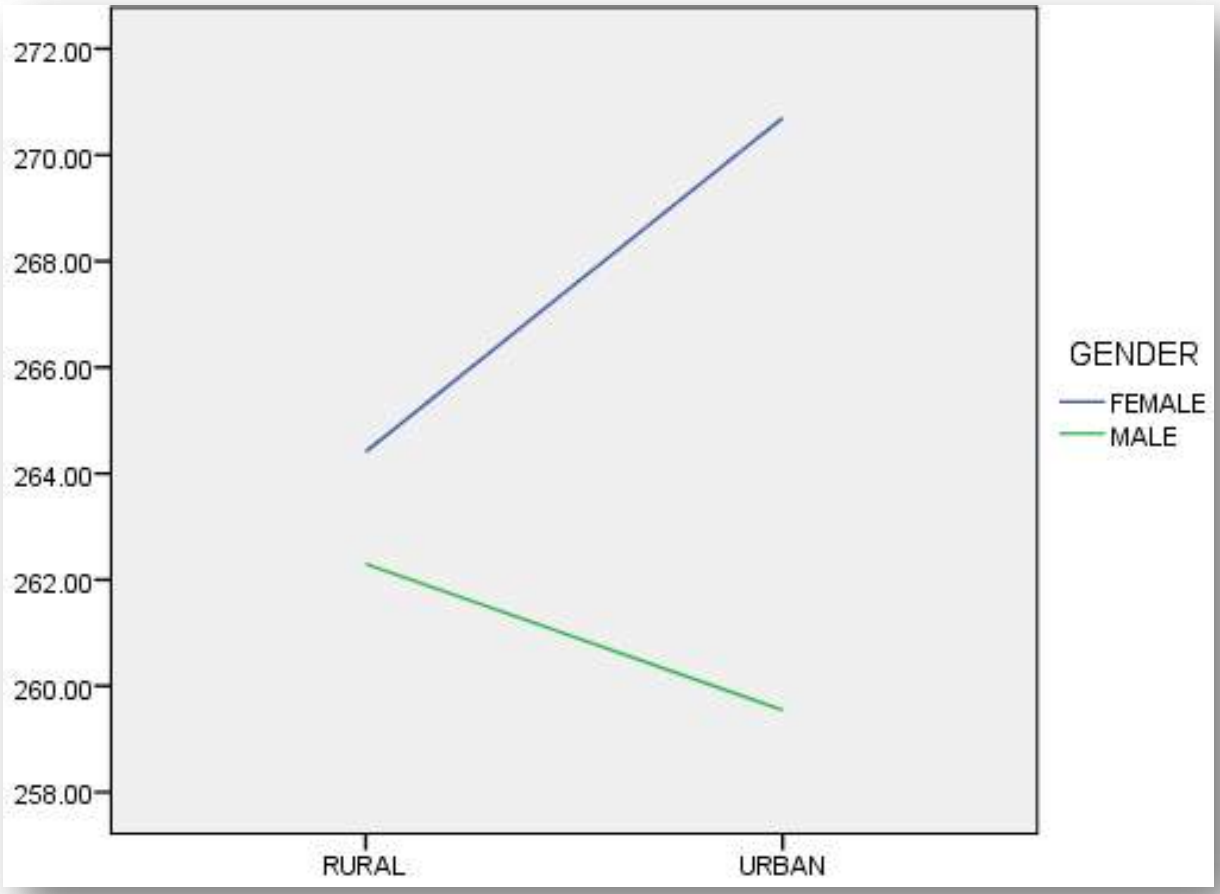

Figure 15: Punjab Mean Scores across School Location by School Gender for Grade 5

Figure 15 shows that overall performance of rural male schools is better than urban male schools in Punjab. Contrary to this, urban female schools performed better than rural female school of Punjab. This information is useful for policy decisions across school by gender.

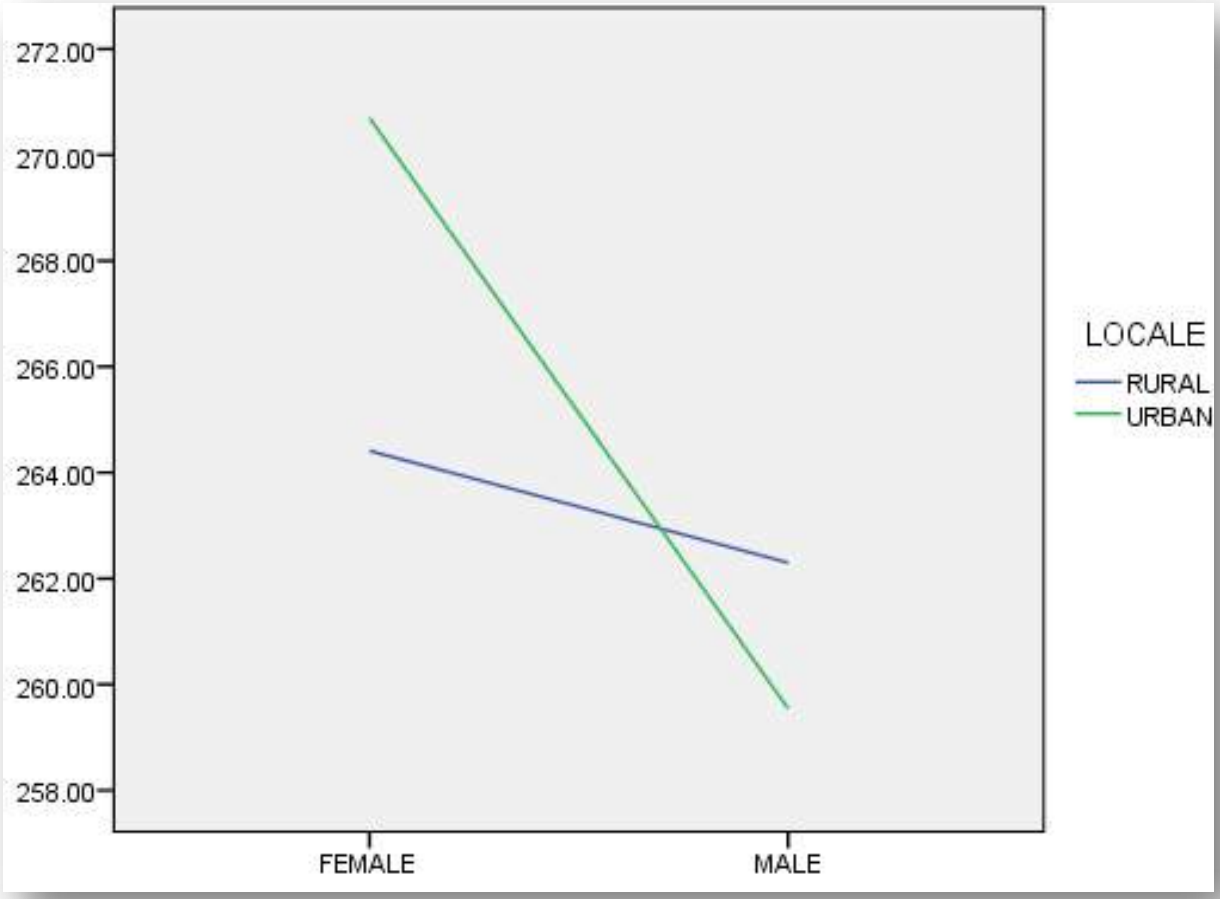

Figure 16: Punjab Mean Score across School Gender by School Location for Grade 5

Figure 16 gives information about rural and urban male and female schools performance. In both the areas rural as well as urban female schools performed better than male schools. However the difference of mean scores between rural gender groups is smaller than urban gender groups.

2.2 Comparison of Districts Mean Scores by Subjects

The mean scores for each subject have been computed taking into account all schools in each district. It is evident from Figure 17 that, in general, no district could reach mean score of 50 in mathematics in grade 5, which indicates deficient performance of students in the subject. About 9 districts in Punjab achieved mean score among 25 to 30. However, the magnitude of the difference varies from district to district. The high performing districts Muzaffargarh, Jhang and D G Khan, also performed better in mathematics. Some low performing districts like Mandi Bahauddin showed better performance in mathematics.

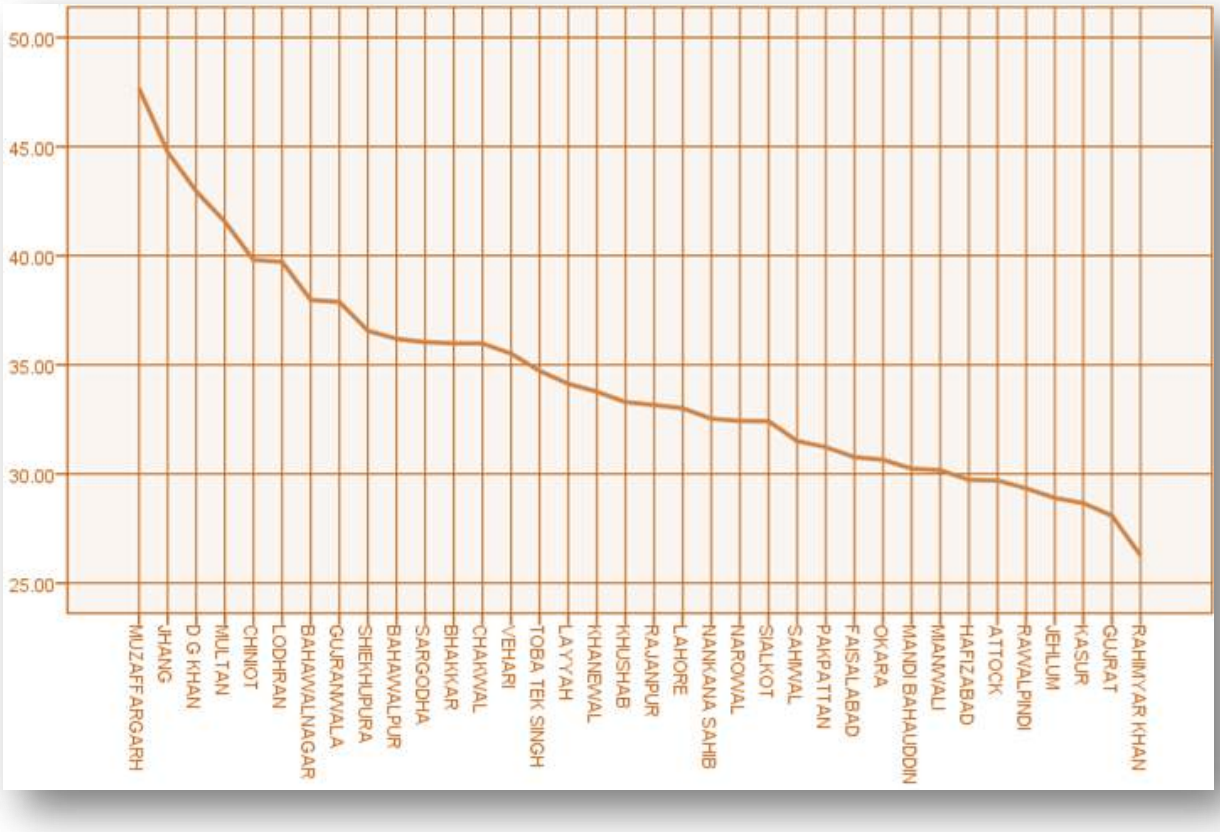

Figure 17: Districts Mean Scores in Subject of Mathematics for Grade 5

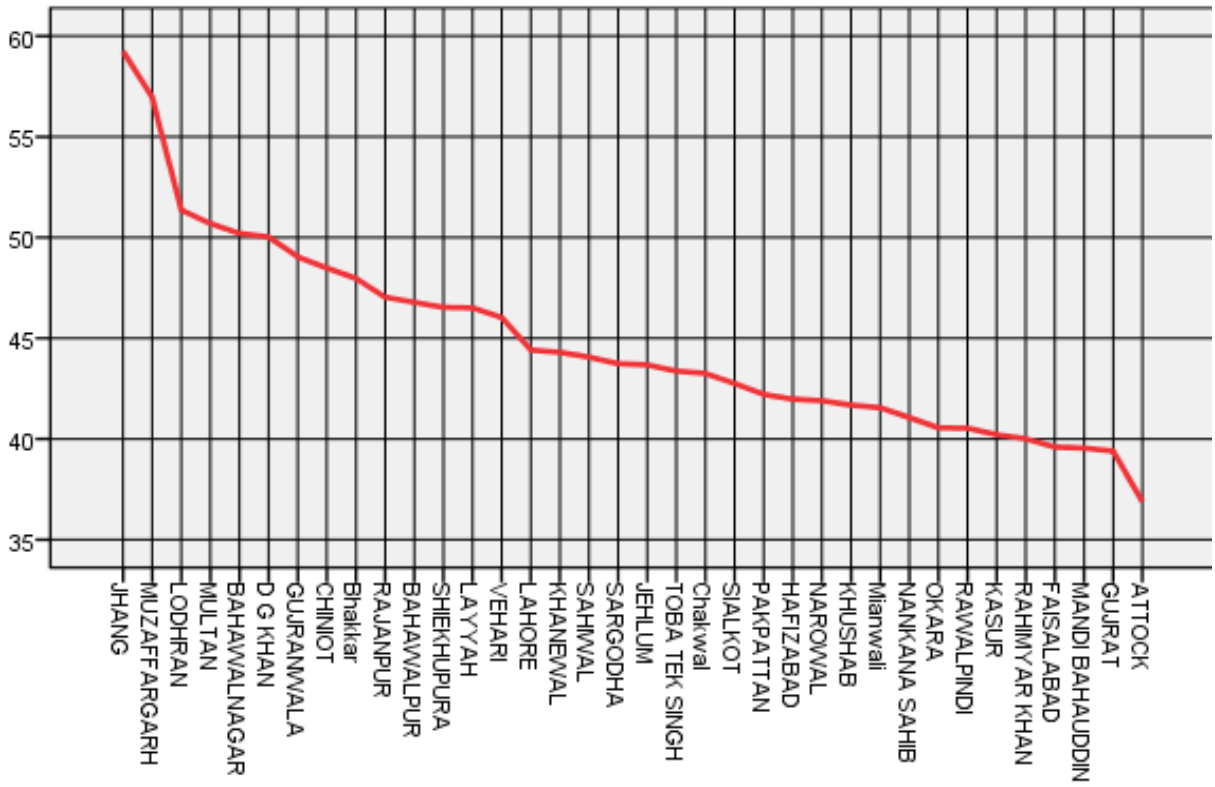

Figure 18: Districts Mean Scores in Subject of Mathematics for Grade 8

Figure 18 shows that, only six districts could reach mean score among 50 to about sixty in mathematics for grade 5, which again reflects nobody could achieve mastery or even mean of sixty. Although there is improvement in mathematics score as compared to garde 5. The high performing districts in mathematics are Jhang, Muzaffargarh, and Lodhran and the low performing districts are Attock, Gujrat and Mandi Bahauddin. The magnitude of the difference varies from district to district.

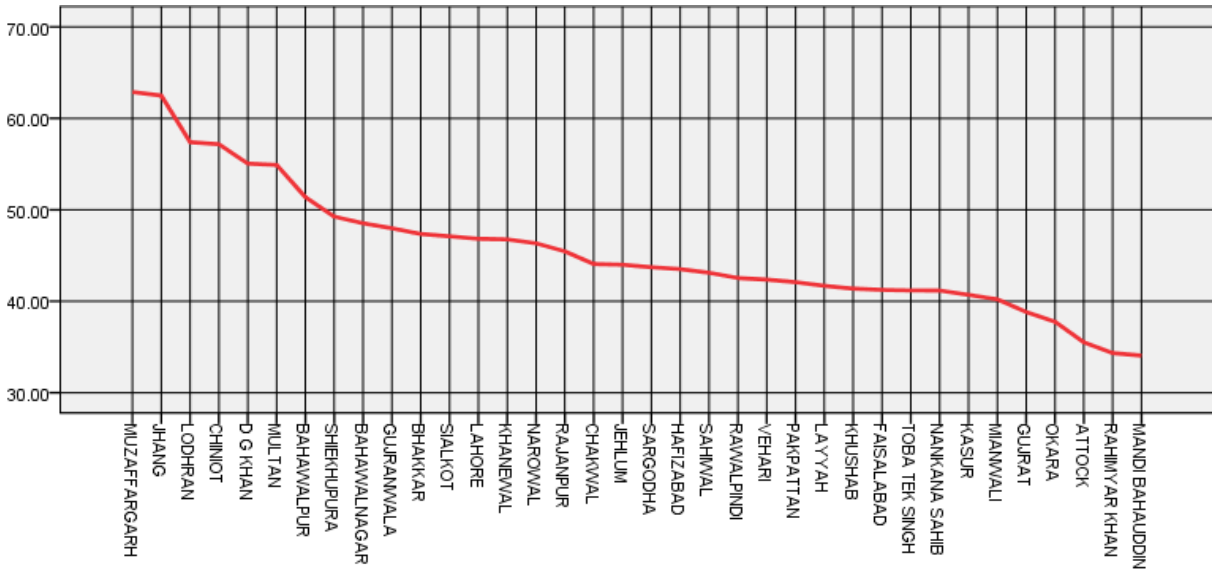

Figure 19: Districts Mean Scores in Subject of English for Grade 5

Figure 19 shows that, only two districts Muzaffargarh and Jhang could reach mean score above sixty in English in grade 5. The low achiever districts also achieved mean score more than 30. It indicates better performance of students in English as compared to mathematics. However, the magnitude of the difference varies from district to district. The overall high performing districts also performed better whereas low performing districts performed lower in English.

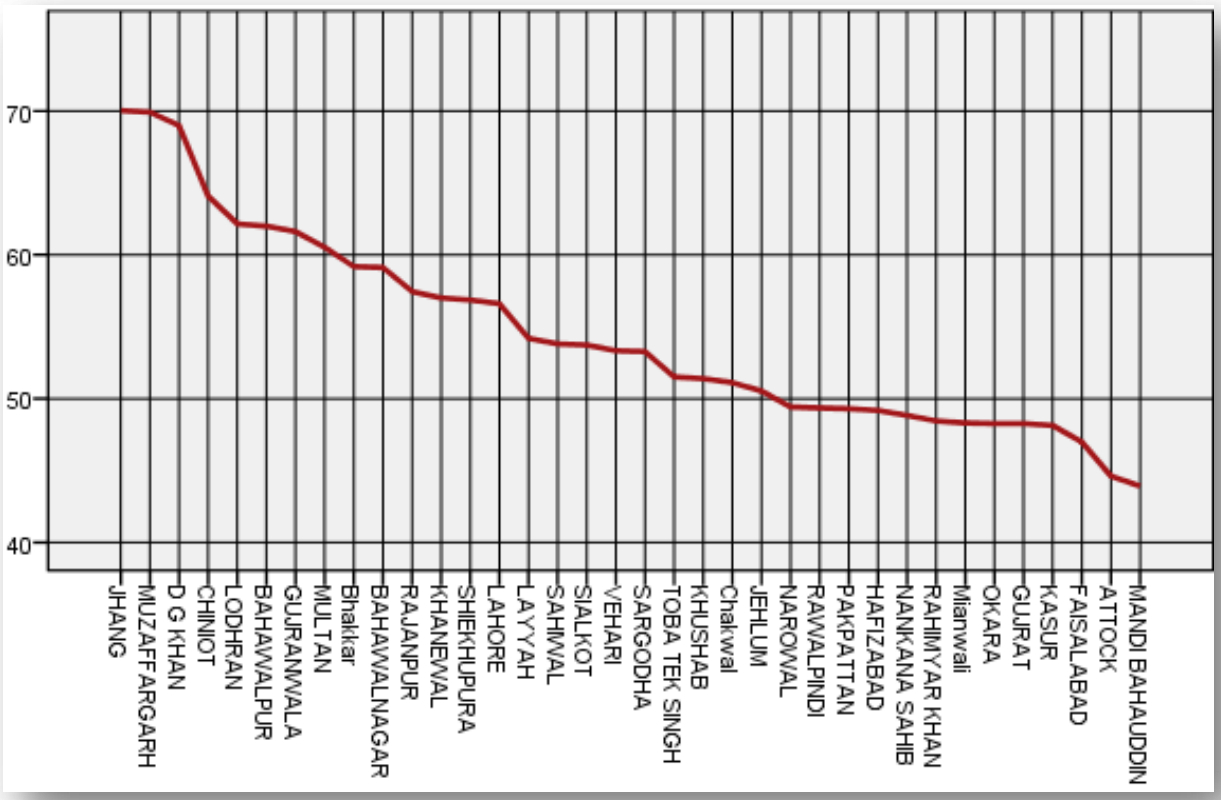

Figure 20: Districts Mean Scores in Subject of English for Grade 8

Figure 20 shows that, eight districts got mean score among 60 to 70 and lowest performing district in Punjab i.e.; Mandi Bahauddin got mean score about 45. This shows encouraging increase in districts mean score at grade 8 level in subject of English as compared to grade 5. Overall high performing districts Jhang, Muzaffargarh, and D.G.Khan maintained their leading role in grade 8 English. Mandi Bahauddin was the lowest performing district in English. Faisalabad district fell from 7th overall lowest position to 3rd lowest in English.

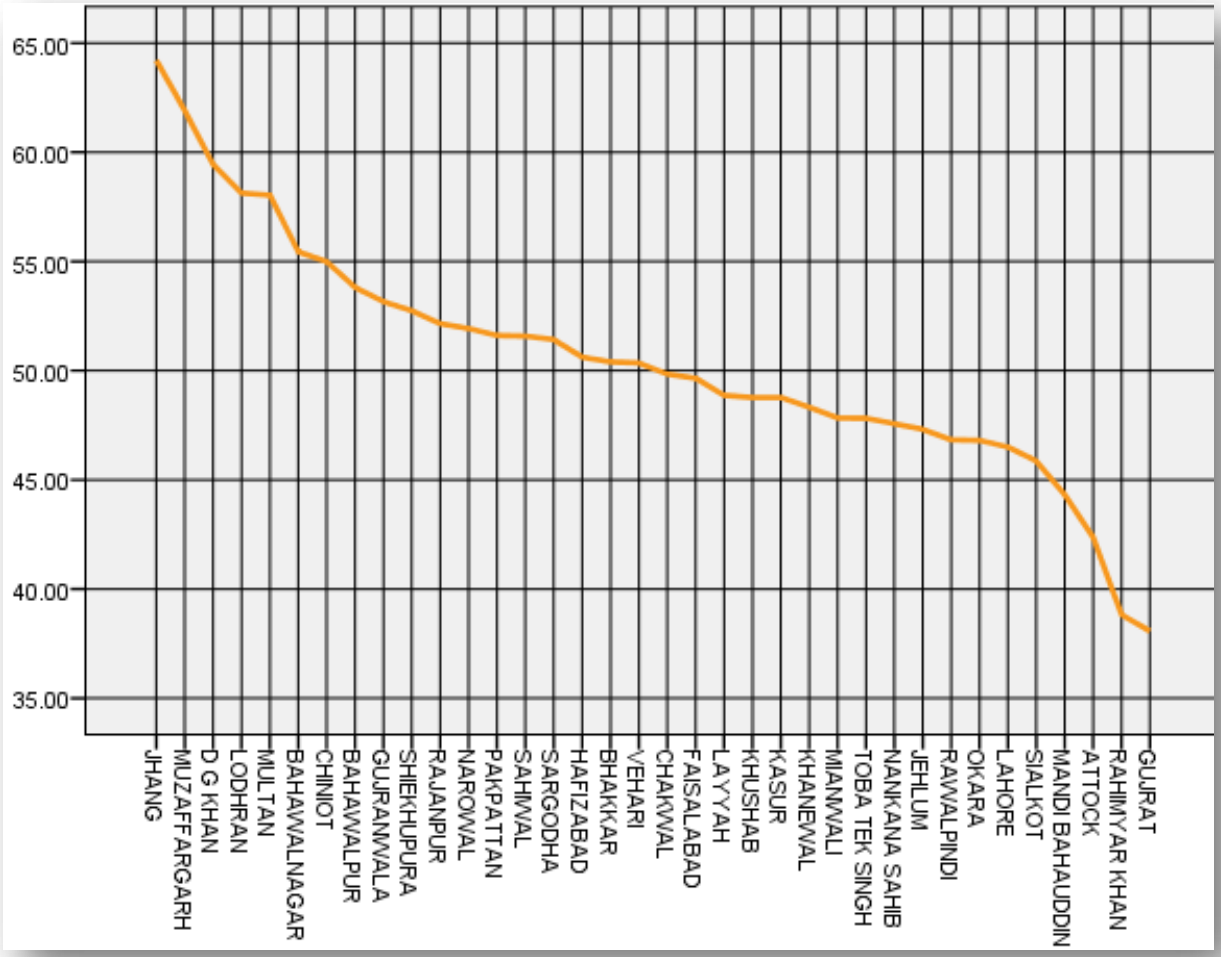

Figure 21: Districts Mean Scores in Subject of Urdu for Grade 5

Figure 21 shows that, two high performing districts i.e.; Jhang, and Muzaffargarh, got mean score among 60 to 65 and two districts Gujrat and Rahim Yar Khan got lowest mean score near about 40 in subject of Urdu for grade 5. NO district achieved mastery learning in the language which is practically used as a medium of instruction in vast majority of elementary schools. This would have positive impact on the learning of other subjects alsol performing district in Punjab i.e.; Mandi Bahauddin got mean score about 45. This shows encouraging increase in districts mean score at grade 8 level in subject of English as compared to grade 5. Overall high performing districts Jhang, Muzaffargarh, and D.G.Khan maintained their leading role in grade 8 English. Mandi Bahauddin was the lowest performing district in English. Faisalabad district fell from 7th overall lowest position to 3rd lowest in English.

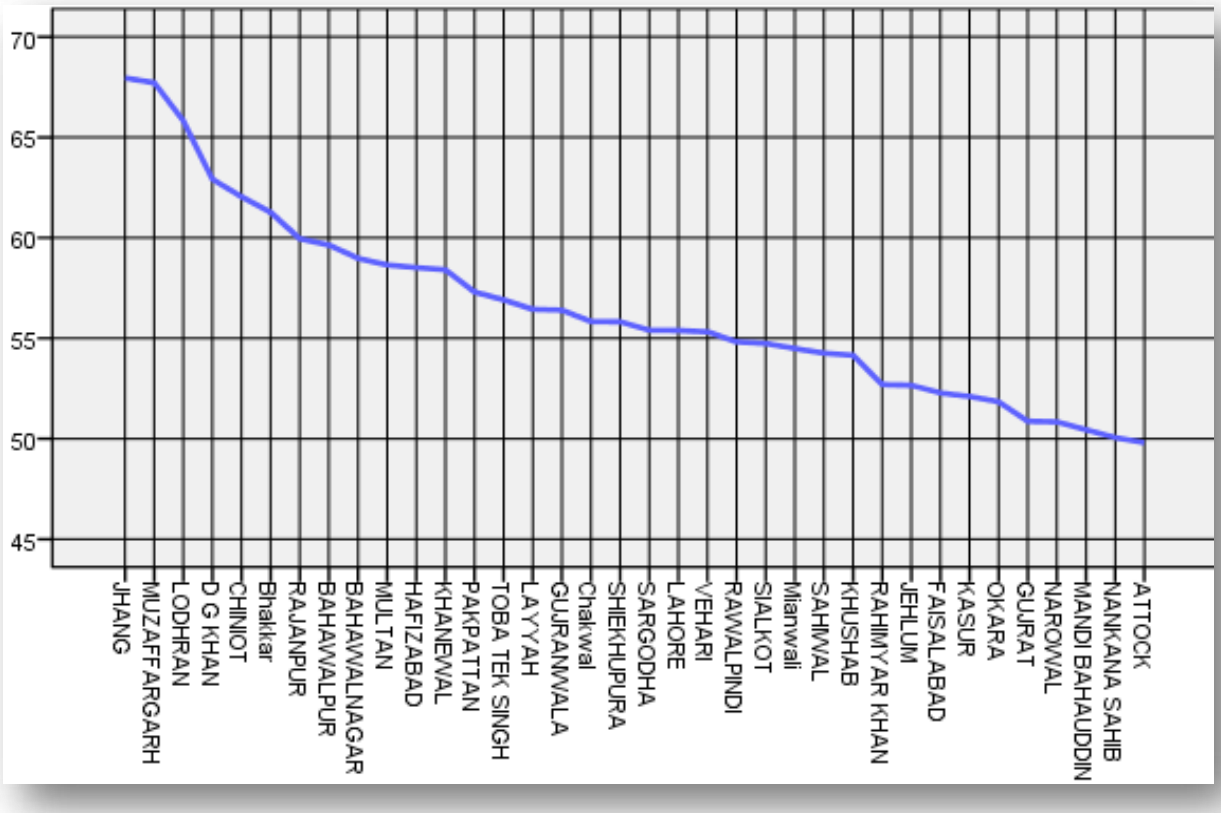

Figure 22: Districts Mean Scores in Subject of Urdu for Grade 8

Figure 22 shows that, seven districts mean score in 8th grade Urdu subject was among 60 to 68. Low performing three districts in Urdu got mean score above 50. This is evident that districts performed better in 8 grade Urdu language test as compared to grade 5. Better performance in Urdu would have positive impact on learning in other subjects also.

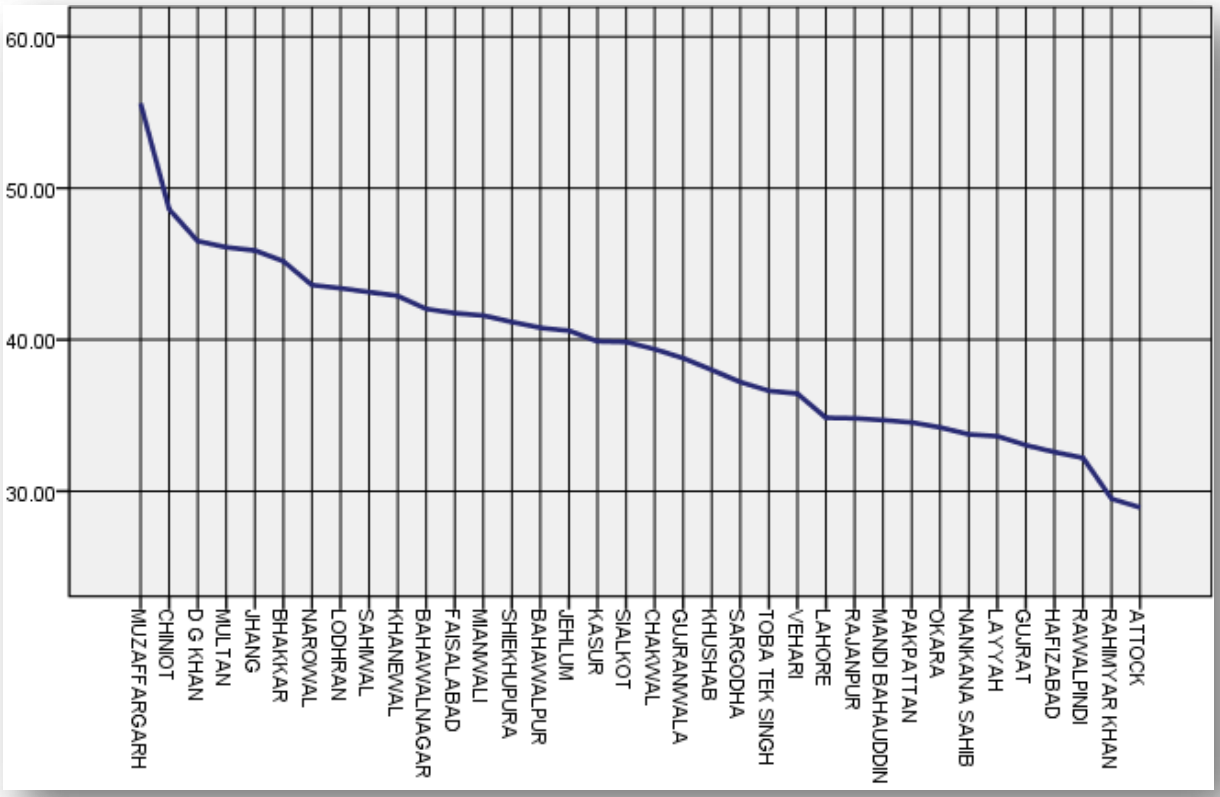

Figure 23: Districts Mean Scores in Subject of Social Studies for Grade 5

Figure 23 shows that no district got mean score above 5o in subject of Social Studies for grade 5 except Muzaffargarh which got mean score about 55. Chiniot is the 2nd high achiever which got mean score 49 in Social Studies. Eighteen districts got mean score less than 40. Two districts Attock and Rahim Yar Khan got mean score even less than 30. Mandi Bahauddin is one of the lowest performing districts but it is at number 10 from lowest end of the list. Overall situation of students learning level in this subject is weak.

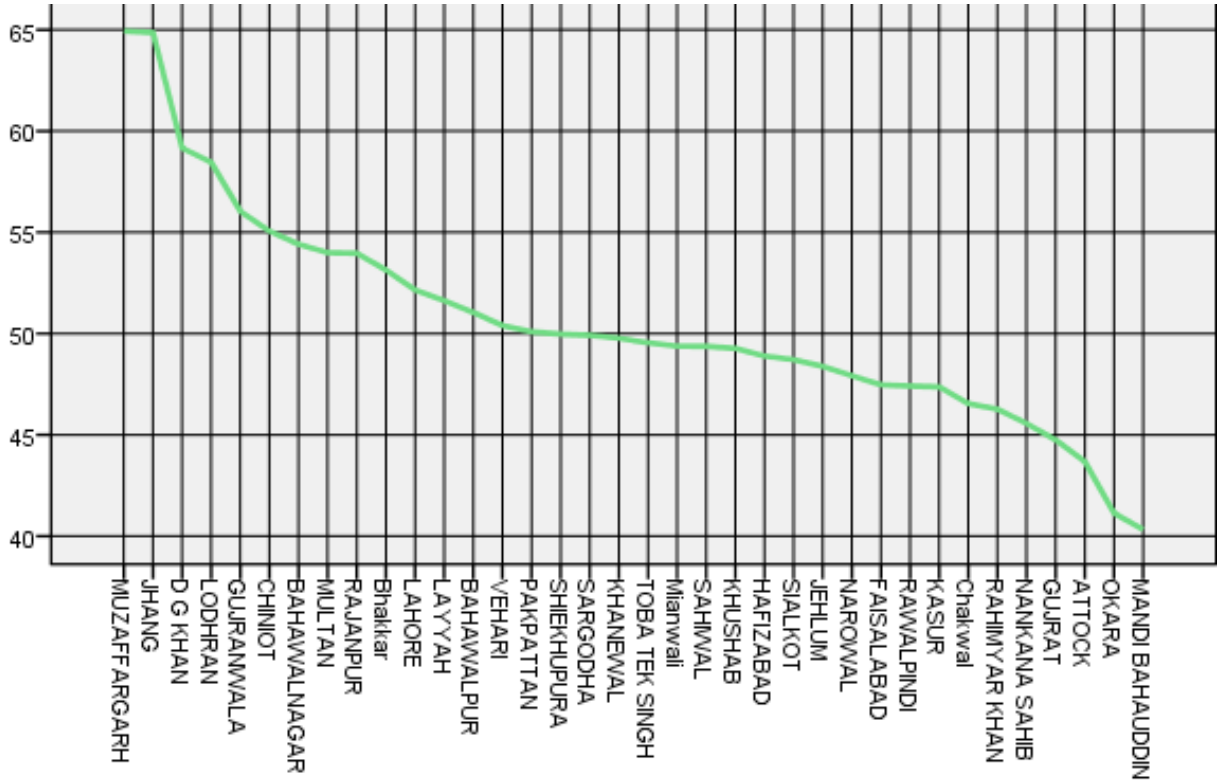

Figure 24: Districts Mean Scores in Subject of Social Studies for Grade 8

Figure 24 reflects that districts Muzaffargarh and Jhang achieved good mean score of 65 and no district got mean score less than 4o in subject of Social Studies for grade 8. District Mandi Bahauddin performed lowest in this subject whereas it was at number 10 from lowest end of districts performance in this subject for grade 5. The performance of district Okara has also declined in this grade in subject of social studies. The overall performance of districts has improved very well from grade 5 to grade 8.

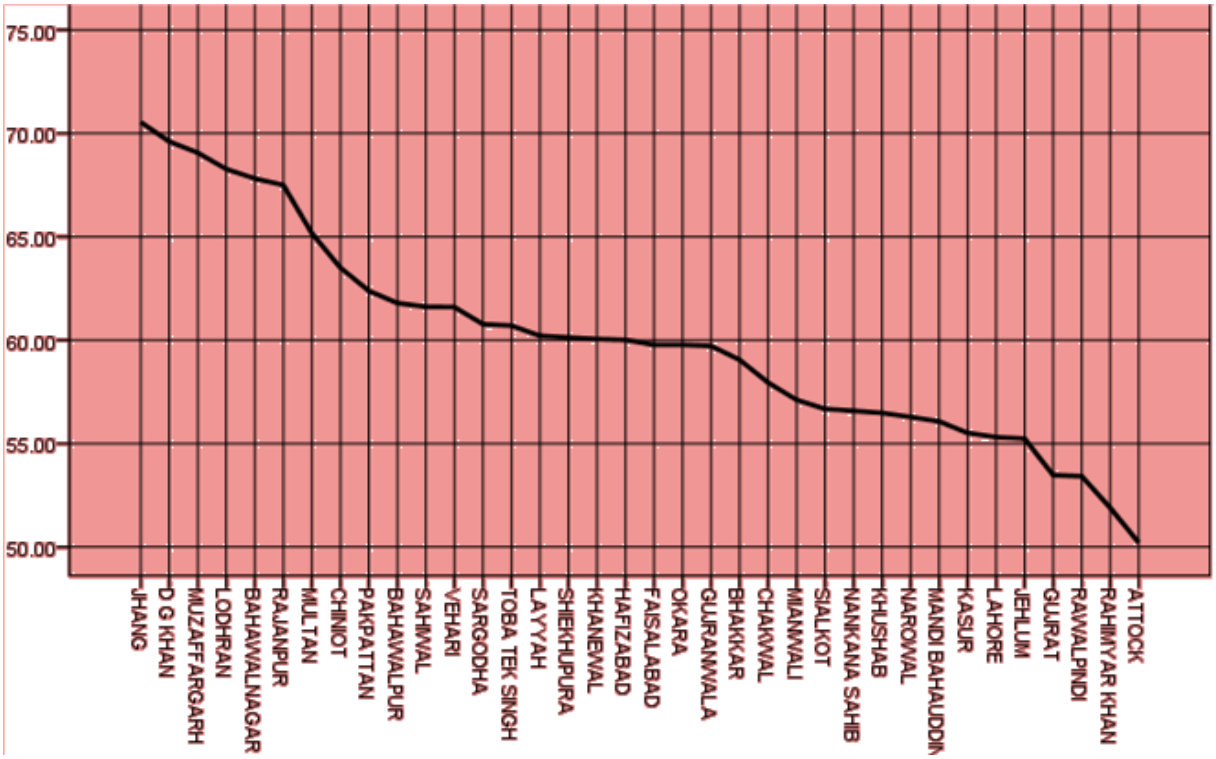

Figure 25: Districts Mean Scores in Subject of Islamyat for Grade 5

The figure 25 shows that district Jhang mean score above 70 was the best in Punjab and no district scored less than 50 mean score in subject of Islamyat for grade 5. Districts Jhang, D.G.Khan and Muzaffargarh performed high and Attock, Rahim Yar Khan, and Rawalpindi Performed lowest in grade 5 islamyat subject. Do highest mean scores of districts in subject of islamyat mean that students in Punjab have best conceptual understanding of this subject or in the name of NAZRA EXAM (verbal exam) part high scores are awarded to students under favoritism. Only in this subject verbal exam part is applicable and the same shows the best performance of districts raises a question for further investigation.

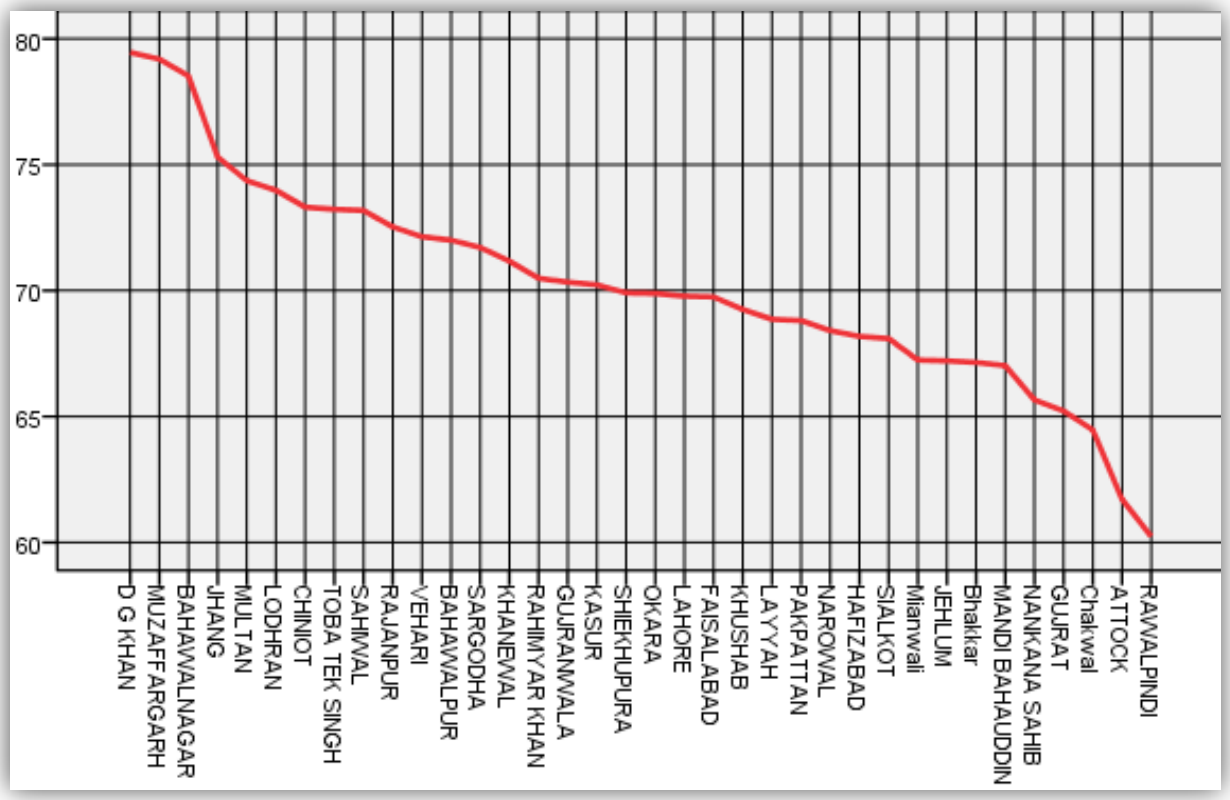

Figure 26: Districts Mean Scores in Subject of Islamyat for Grade 8

The figure 26 shows that district D.G.Khan mean score about79 was the best in Punjab and district Rawalpindi mean score 60 was the lowest one in subject of Islamyat for grade 5. District Chakwal position was 2nd lowest whereas it was 14th lowest in grade 5 examination. In Islamyat three high achiever districts D.G.Khan, Muzaffargarh and Bahawalnagar got mean score near to mastery level which is the only example in all the subjects of 5th and 8th grades. Here again the question arises why so much high mean scores only Islamyat where verbal exam scores are included.

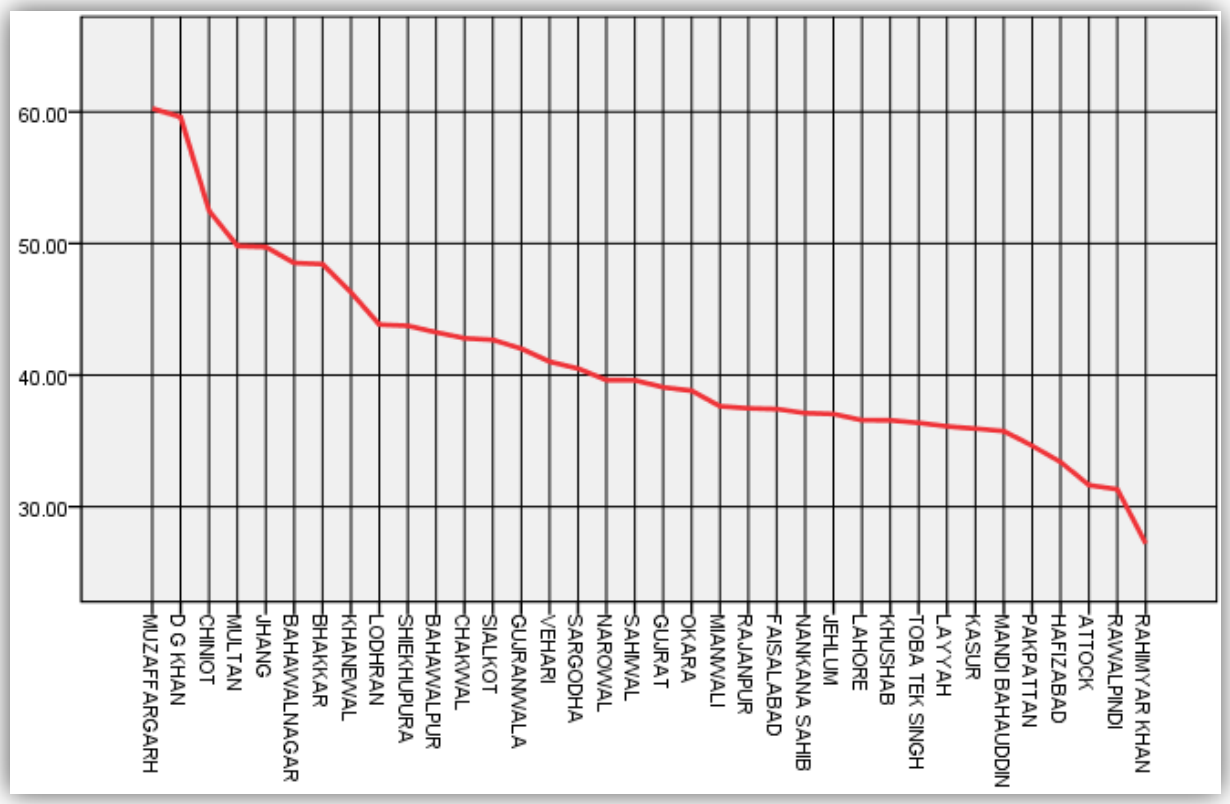

Figure 27: Districts Mean Scores in Subject of Science for Grade 5

The figure 27 shows that district Muzaffargarh and D.G.Khan mean scores are near about 60 and the highest ones in the Punjab in subject of science for grade 5. Distict Rahim Yar Khan position is very alarming which is the only district in Punjab which got mean score 27 which is below 30. District Rawalpindi and Attock performed very low and their mean scores are 31.32 and 31.64 respectively. Overall performance of districts in science subject for grade 5 is not good. More than 50% districts got mean score less than 40.

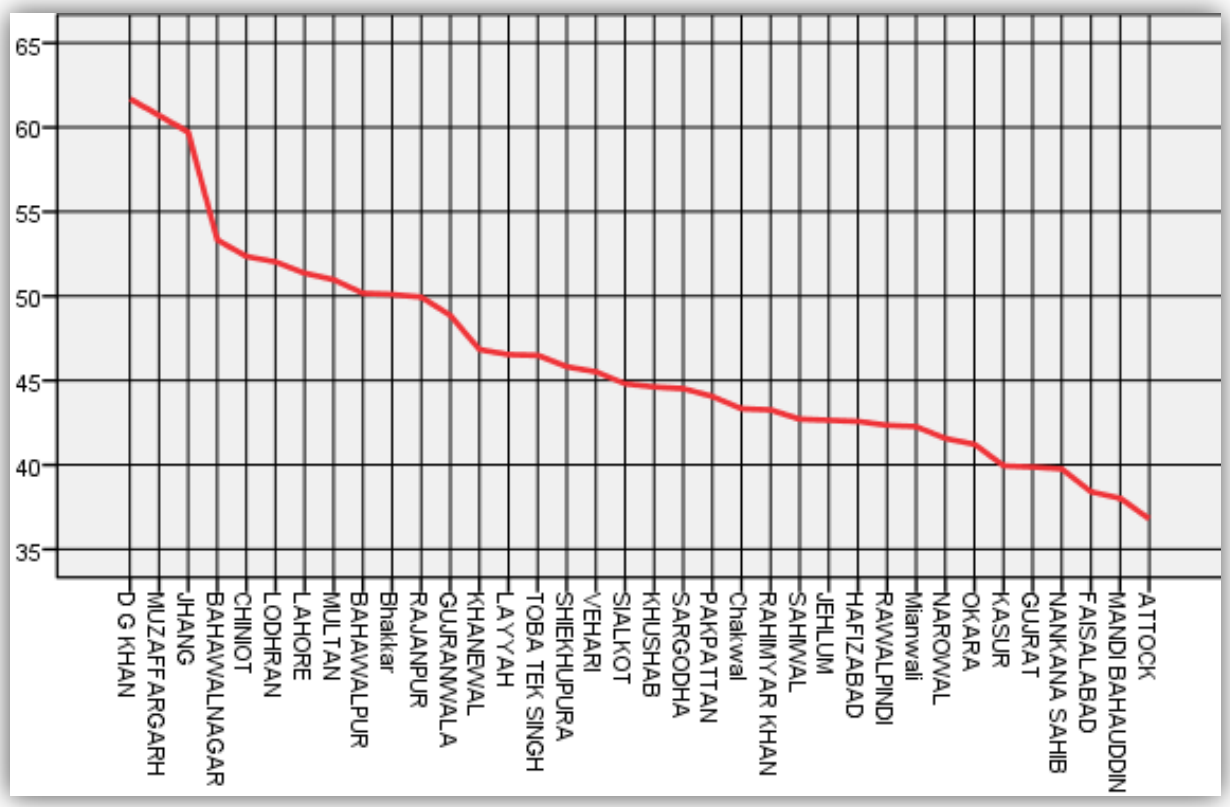

Figure 28: Districts Mean Scores in Subject of Science for Grade 8

The figure 28 shows that districts D.G.Khan and Muzaffargarh got the highest mean scores (more than 60) in the Punjab in subject of science for grade 5. About 50% districts got mean score more than 45. Distict Attock, Mandi Bahauddin and Faisalabad performed lowest in science for grade 8. Almost all the districts got mean score better than grade 5 in science subject. However the performance of Faisalabad district is adverse as it fell to lowest number 3 in grade 8 from number 14 in grade 5. On the other hand District Lahore was at number 11 at lower end in grade 5 whereas in grade 8 it is at number 7 in high performing districts of Punjab.

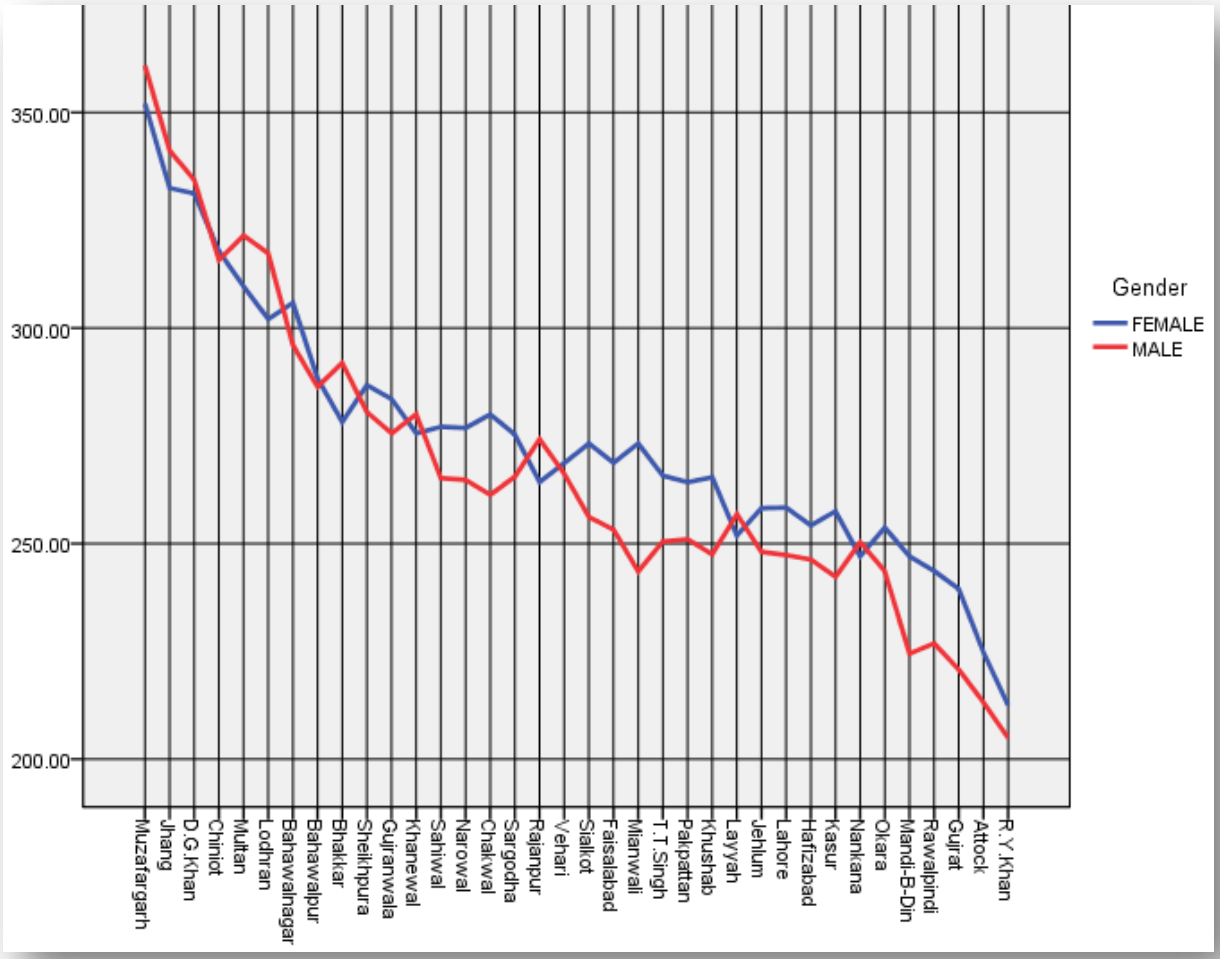

Figure 29: Districts Overall Mean Scores by School Gender for Grade 5

Figures 29 and 30 show districts mean scores taken across all subjects by school gender for grade 5 and 8 respectively. It is clear from Figure 17 that in majority districts female students of grade 5 have done better than male. The exceptions are 10 districts including high performing three districts, Muzaffargarh Jhang and D G Khan where male students performed better. It is notable that these districts are among the better performing in the Province. However, male students of two districts, Nankana Sahib and Layyah from low performing districts showed better results than female students.

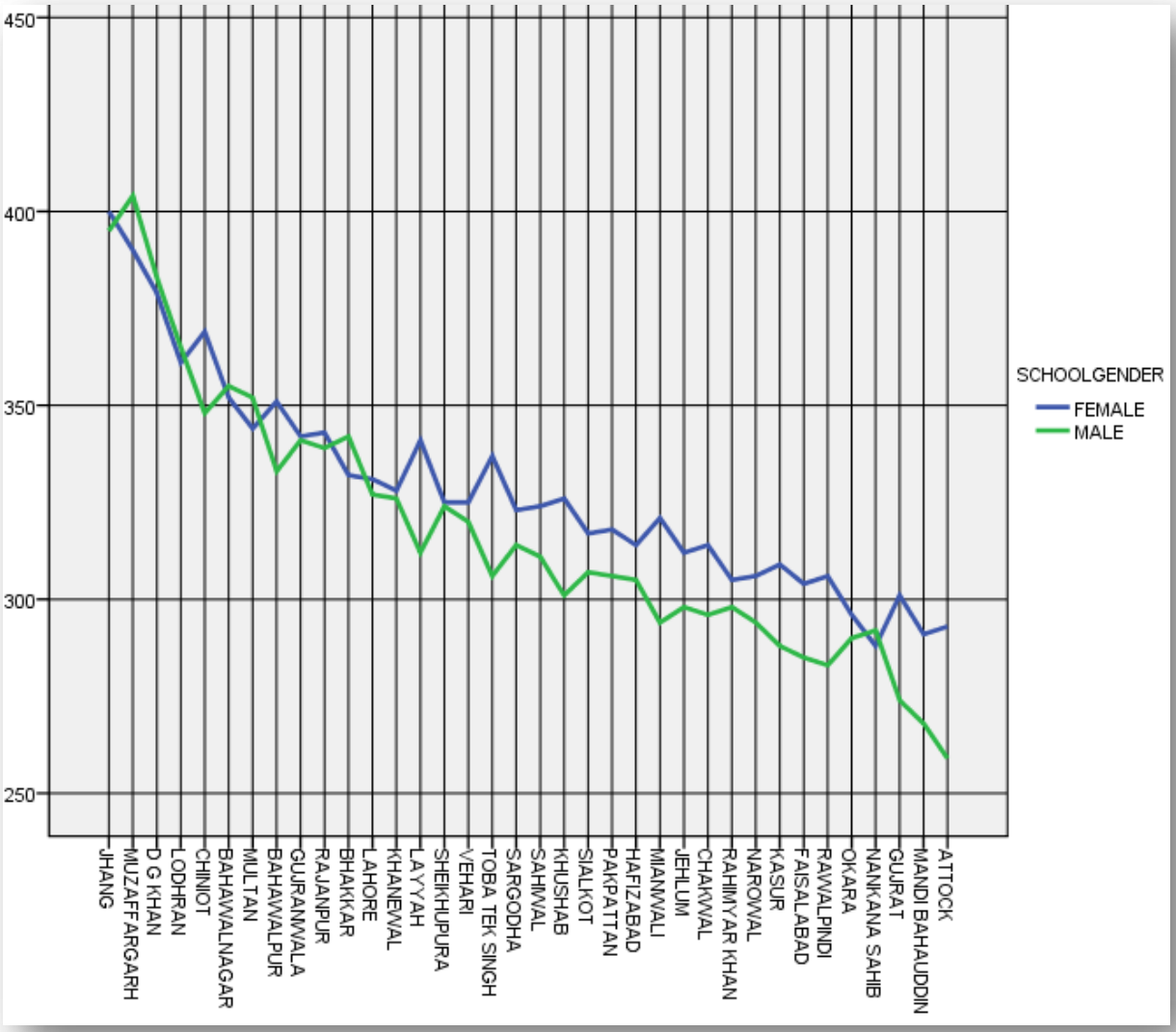

Figure 30: Districts Overall Mean Scores by School Gender for Grade 8

It is clear from Figure 30 that in all districts except 7 female students of grade 5 have done better than male. The exceptions are 7 districts including high performing 6 districts, Muzaffargarh, D G Khan, Lodhran, Bahawalnagar, Multan, Bhakkar and low performing district Nankana Sahib. In grade 8 female students performance is better in most of the districts as compared to male students.

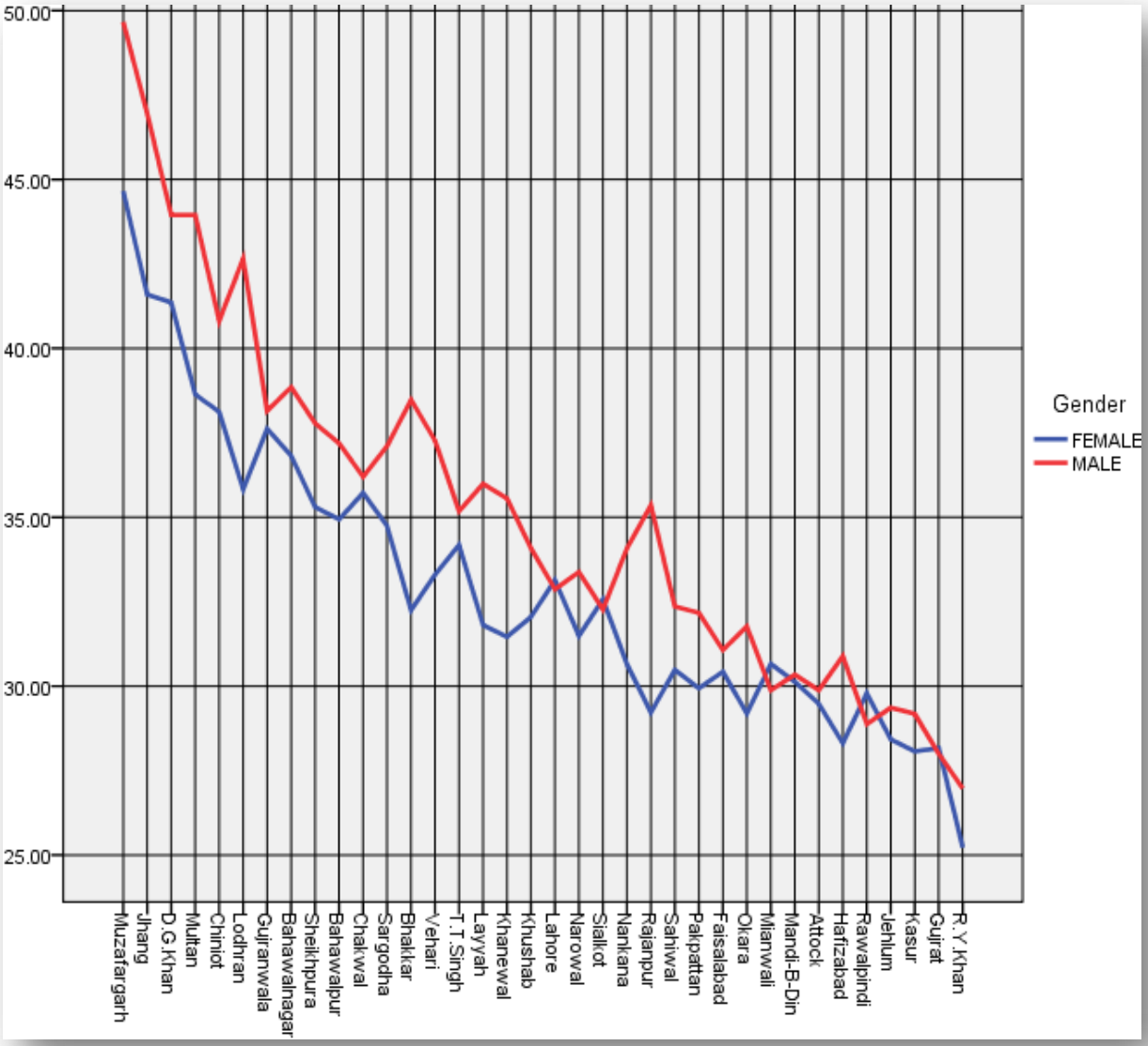

Figure 31: Districts Mean Scores in Subject of Mathematics by School Gender for Grade 5

It is clear from Figure 31 that in all districts except 5 male students of grade 5 have done better than female. The exception districts are Lahore, Sialkot, Mianwali, Rawalpindi, and Gujrat. It is notable that female students who performed better in mathematics belong to lower performing districts of Punjab.

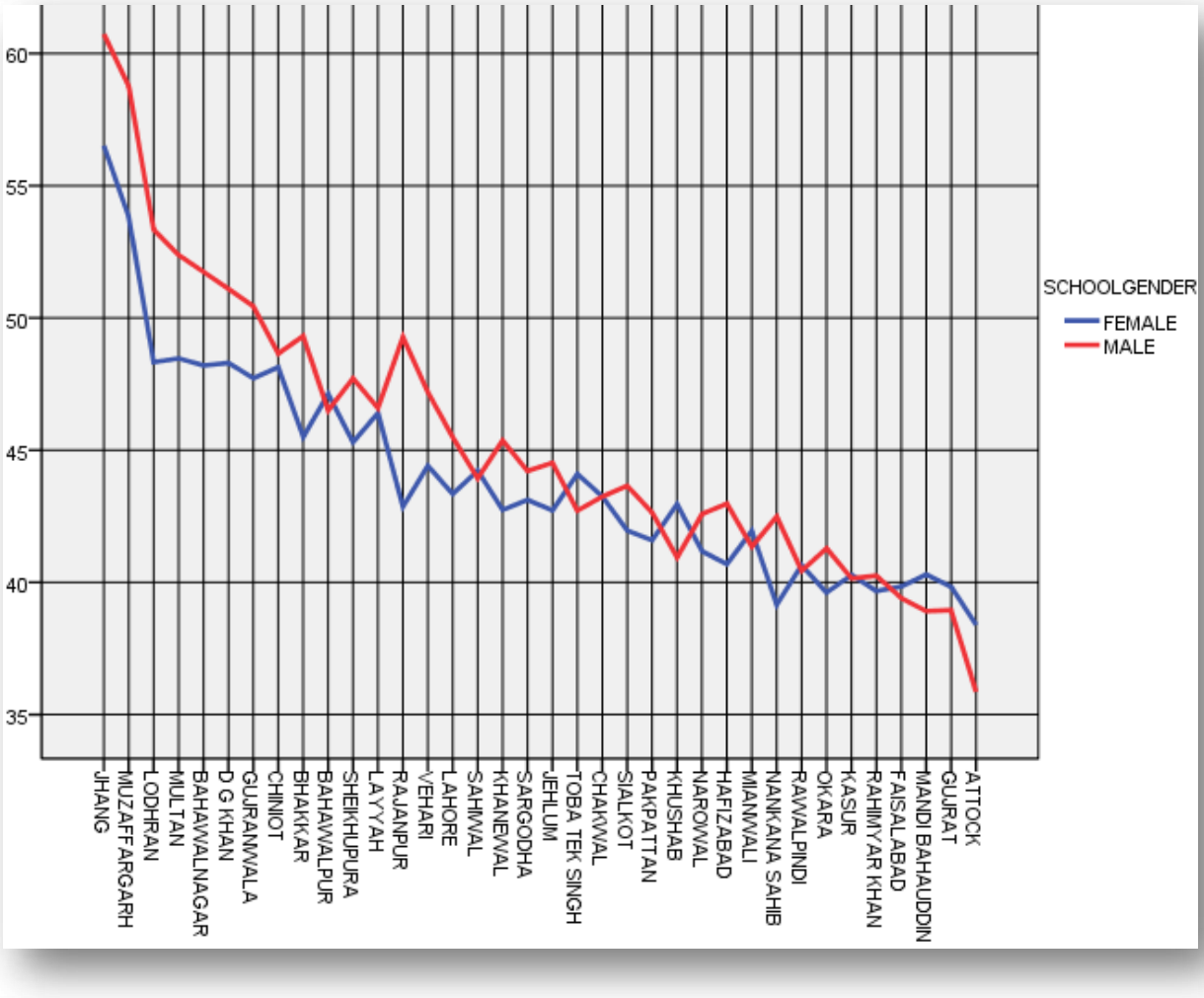

Figure 32: Districts Mean Scores in Subject of Mathematics by School Gender for Grade 8

Figure 32 reveals that in all districts except 8 male students of grade 8 have done better than female in subject of Mathematics. The exception districts are, Attock, Gujrat, Mandi Bahauddin, Faisalabad, Mianwali, Khushab, Toba Tek Singh and Bahawalpur. It is inspiring that female students who performed better in mathematics belong to lower performing districts of Punjab.

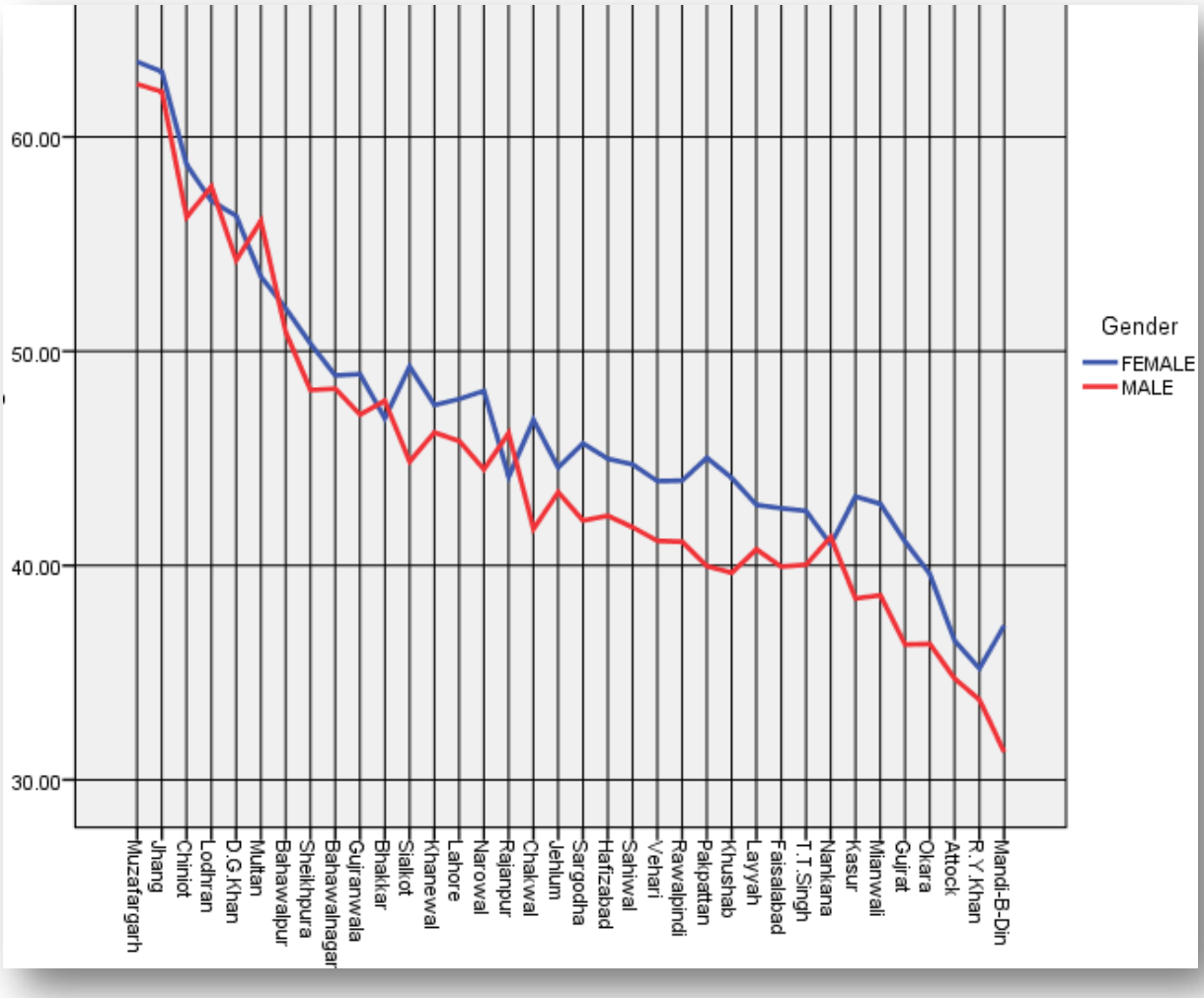

Figure 33: Districts Mean Scores in English by School Gender for Grade 5

Figure 33 reveals that in all districts except 8 male students of grade 5 have done better than female in subject of English. The exception districts are, Attock, Gujrat, Mandi Bahauddin, Faisalabad, Mianwali, Khushab, Toba Tek Singh and Bahawalpur. It is inspiring that female students who performed better in mathematics belong to lower performing districts of Punjab.

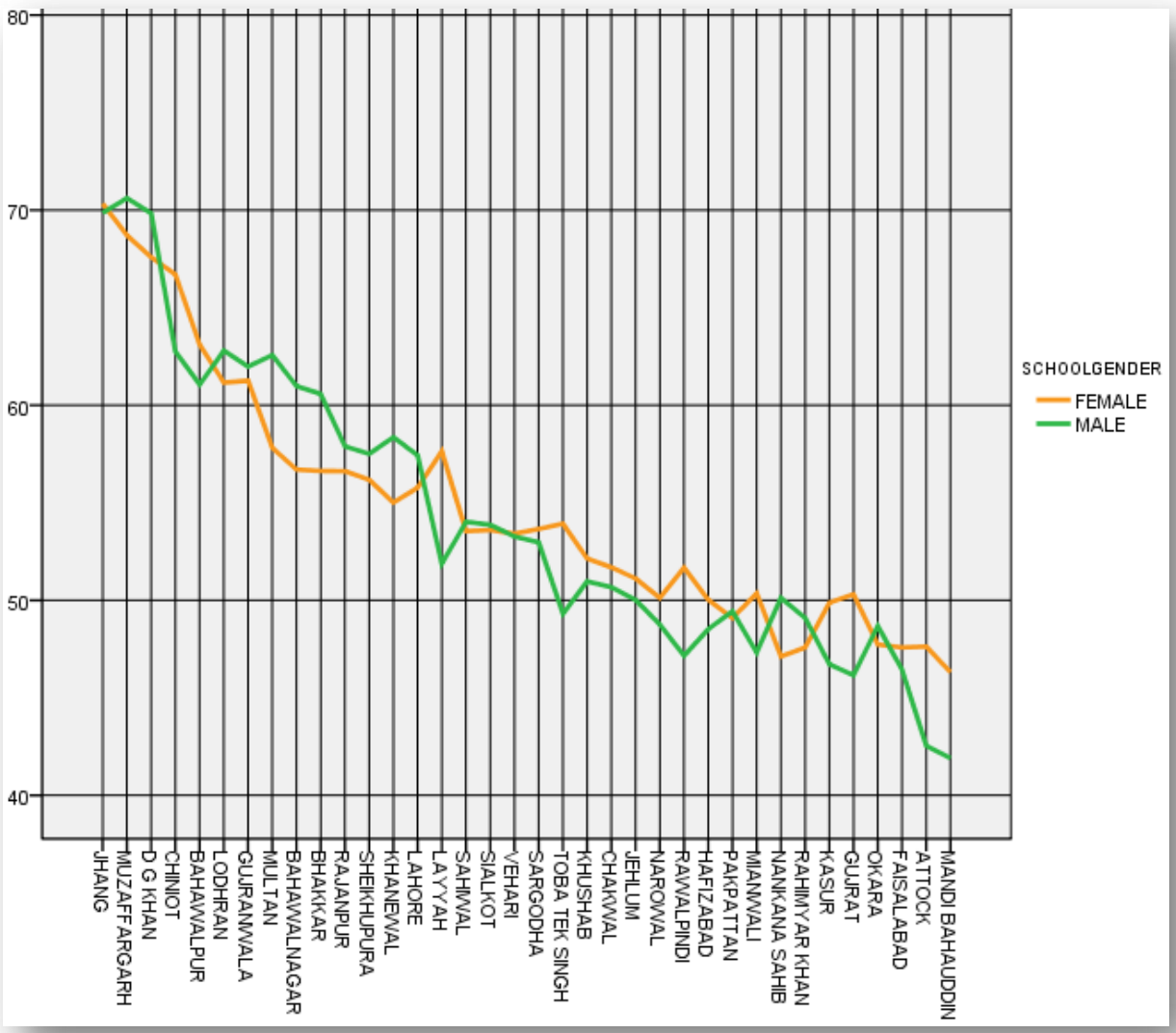

Figure 34: Districts Mean Scores in English by School Gender for Grade 8

Figure 34 reveals that in more than 50% districts female students of grade 8 have done better than male in subject of English. In high performing districts there is trend of male students' better performance whereas in low performing districts there is trend of female students better performance. However in some high performing districts like Jhang, Chiniot and Bahawalpur female students did better and in some low performing districts like Nankana Sahab, Rahim Yar Khan, and Okara male students performed better.

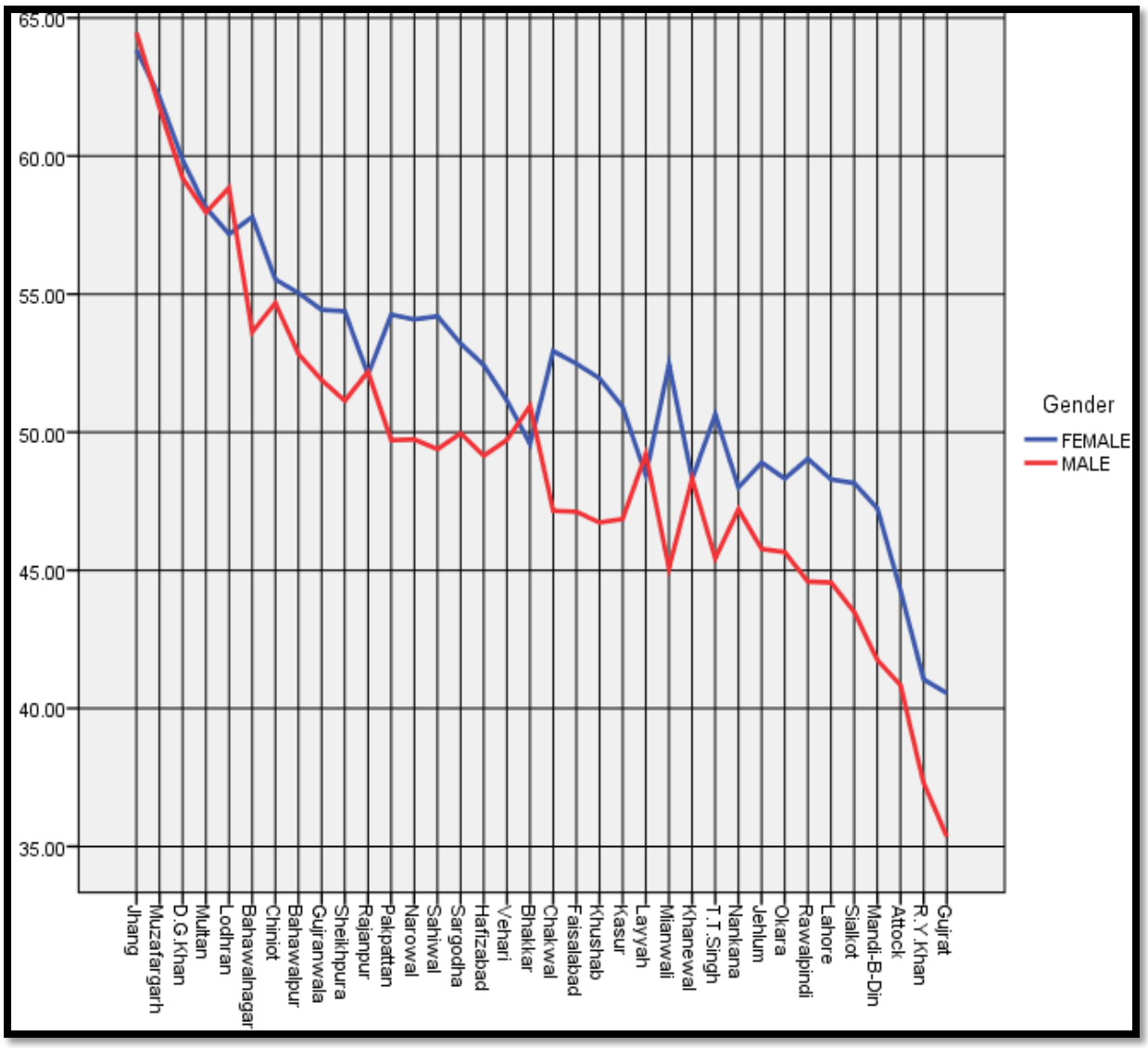

Figure 35: Districts Mean Scores in Urdu by School Gender for Grade 5

Figure 35 shows that in all the districts except Jhang, Lodhran, Rajanpur, Bhakkar, districts female students of grade 5 have done better than male students in subject of Urdu. In three high performing districts Muzaffargarh, D.G.Khan and Multan male and female students' performance is similar. The range of mean scores from lowest to highest performing district is male 35.36, to 64.47 and female 40.55, to 63.84. Overall female students' performance in Urdu language is better in Punjab Province.

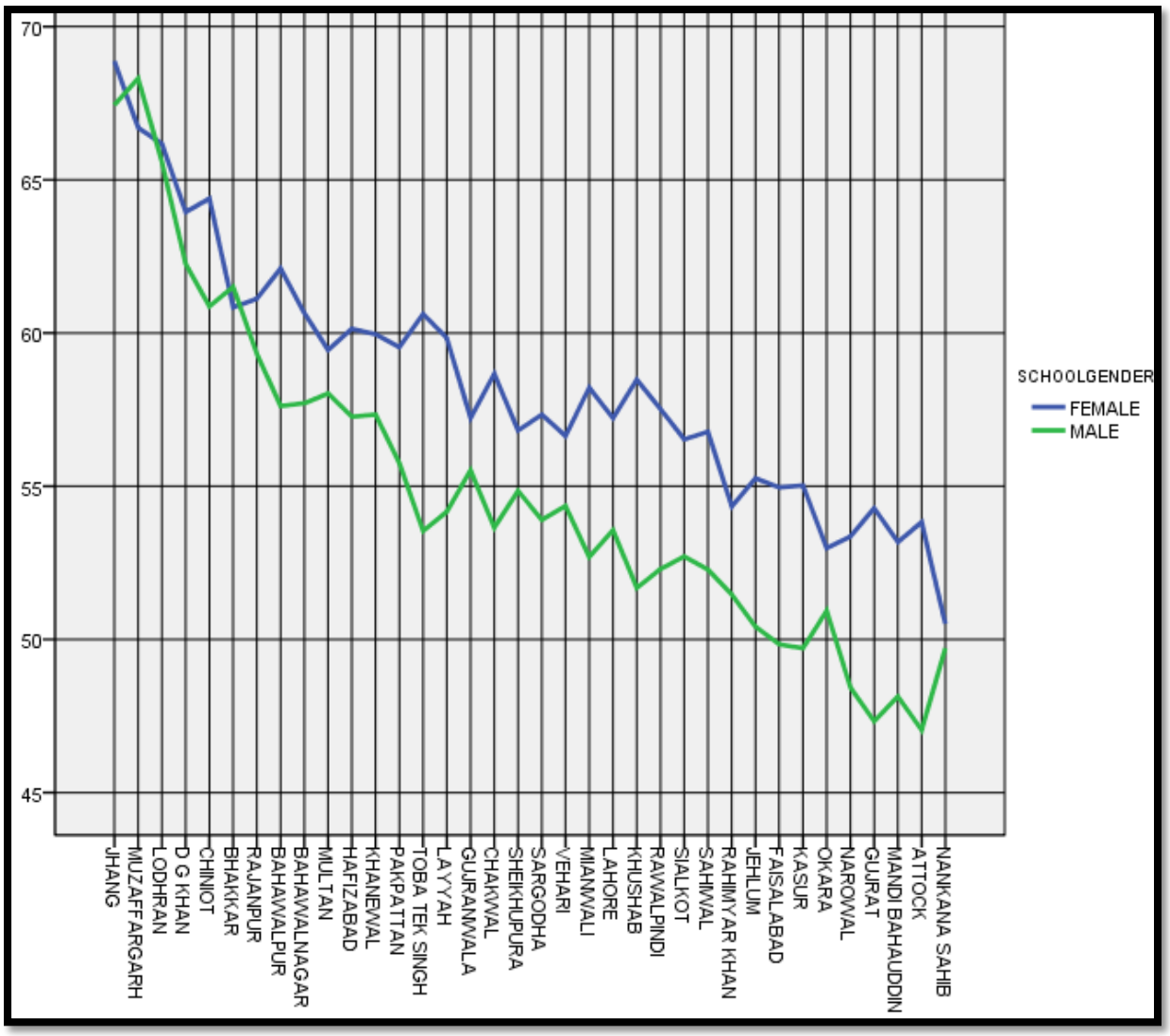

Figure 36: Districts Mean Scores in Urdu by School Gender for Grade 8

Figure 36 shows that in all the districts except Muzaffaragrh and Bhakkar female students performance in urdu subject for grade is better than male students. The range of mean scores from lowest to highest performing districts is 47.04 to 68.88. In most of the districts the difference of mean scores between female and male students is very clear.

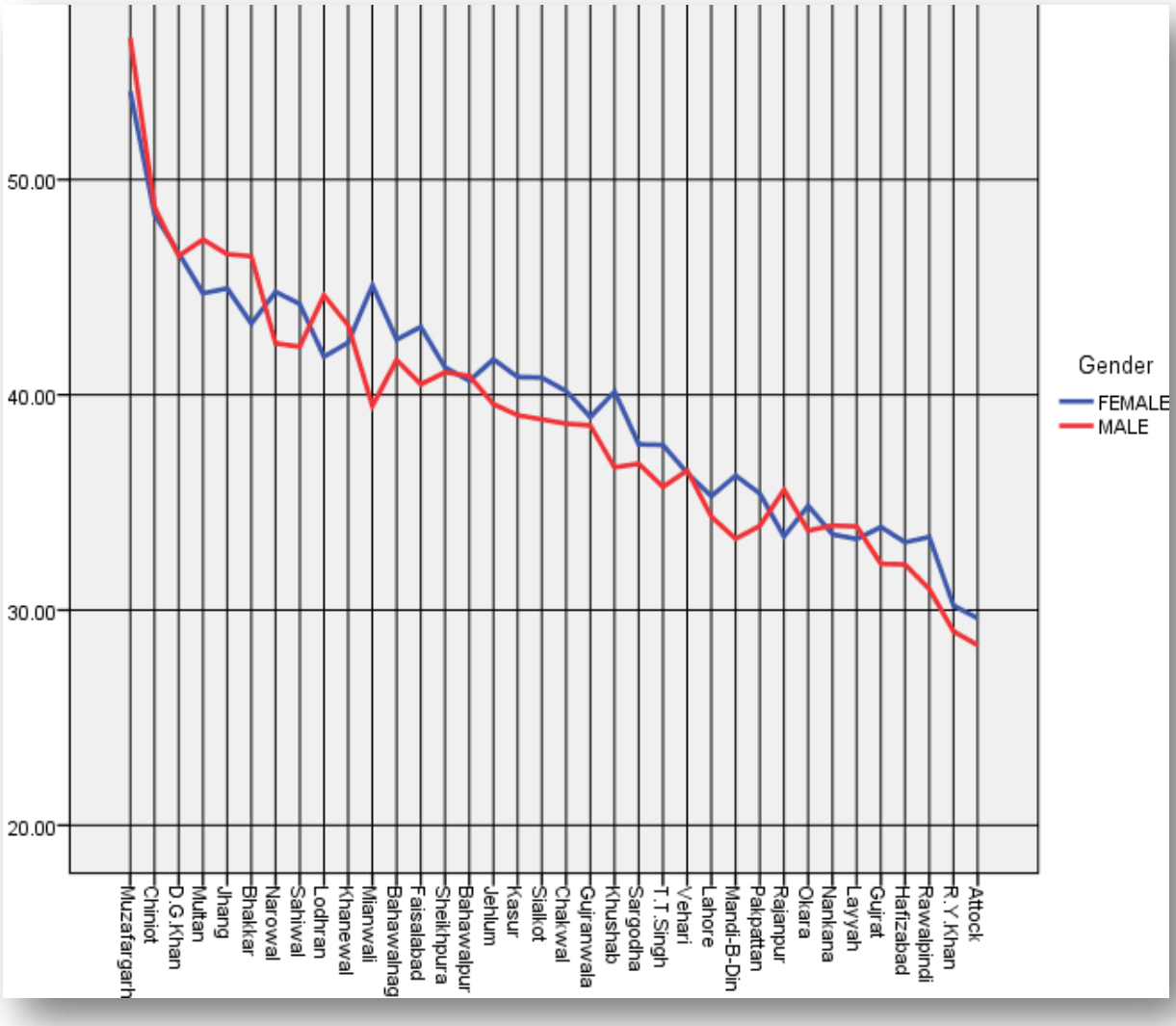

Figure 37: Districts Mean Scores in Social Studies by School Gender for Grade 5

Figure 37 shows that in 27 districts out of 36 female students of grade 5 have done better than male students in subject of social studies. In nine districts male students' performance was better. In high performing districts generally male students' performance was better. In low performing districts Layyah and Rajanpur male students also performed better. The range of scores from lowest to highest performing district is male 28.37, to 56.59 and female 29.62, to 54.11. Overall female students' performance in social studies is better in Punjab Province.

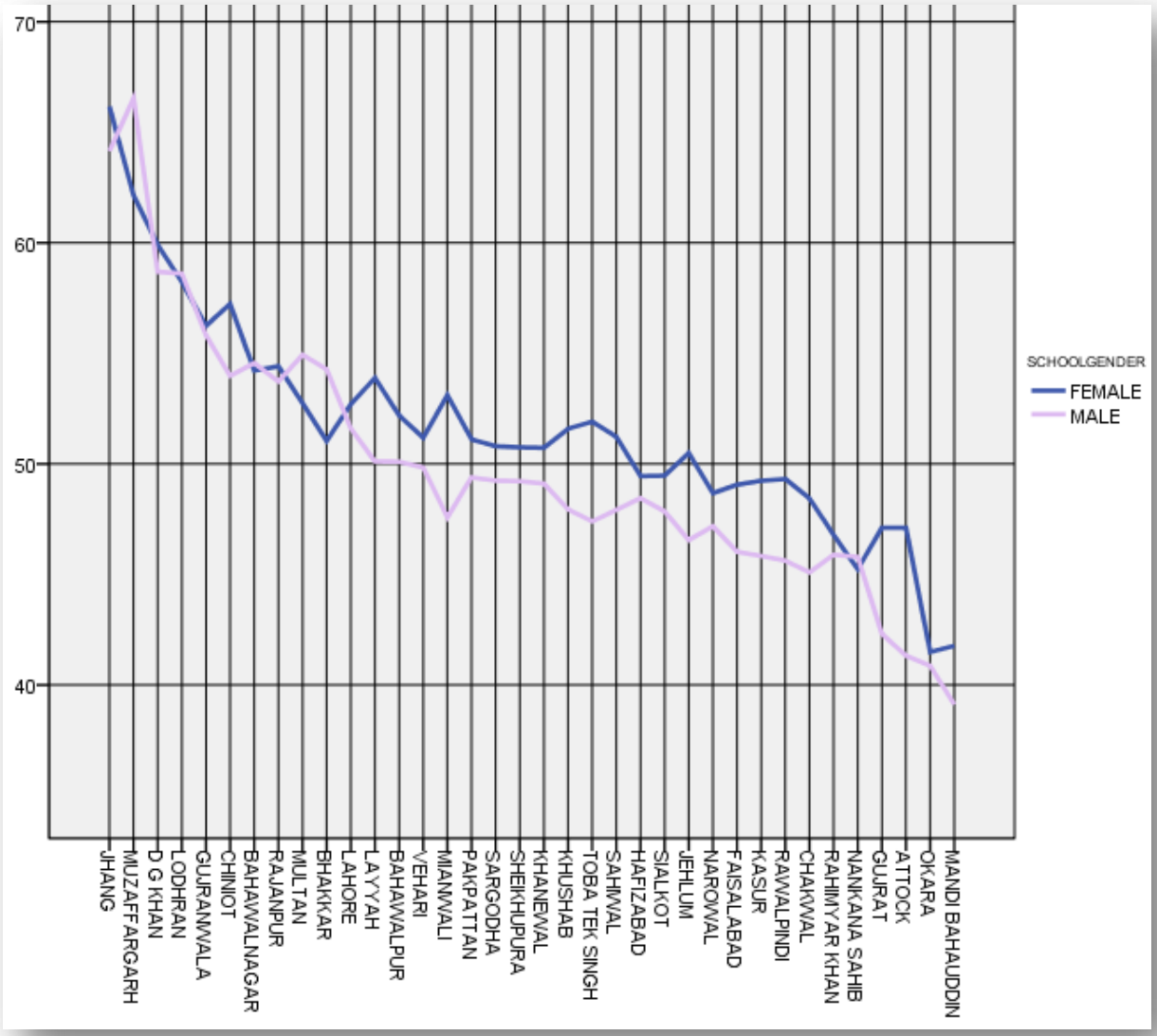

Figure 38: Districts Mean Scores in Social Studies by School Gender for Grade 8

Figure 38 shows that in all districts except Bhakkar, Multan, and Muzaffargarh female students of grade 8 have done better than male students in subject of social studies. The range of mean scores from lowest to highest performing district is male 39.12, to 66.54 and female 41.49, to 66.18. Overall female students' performance in social studies is better in Punjab Province and the difference is very clear.

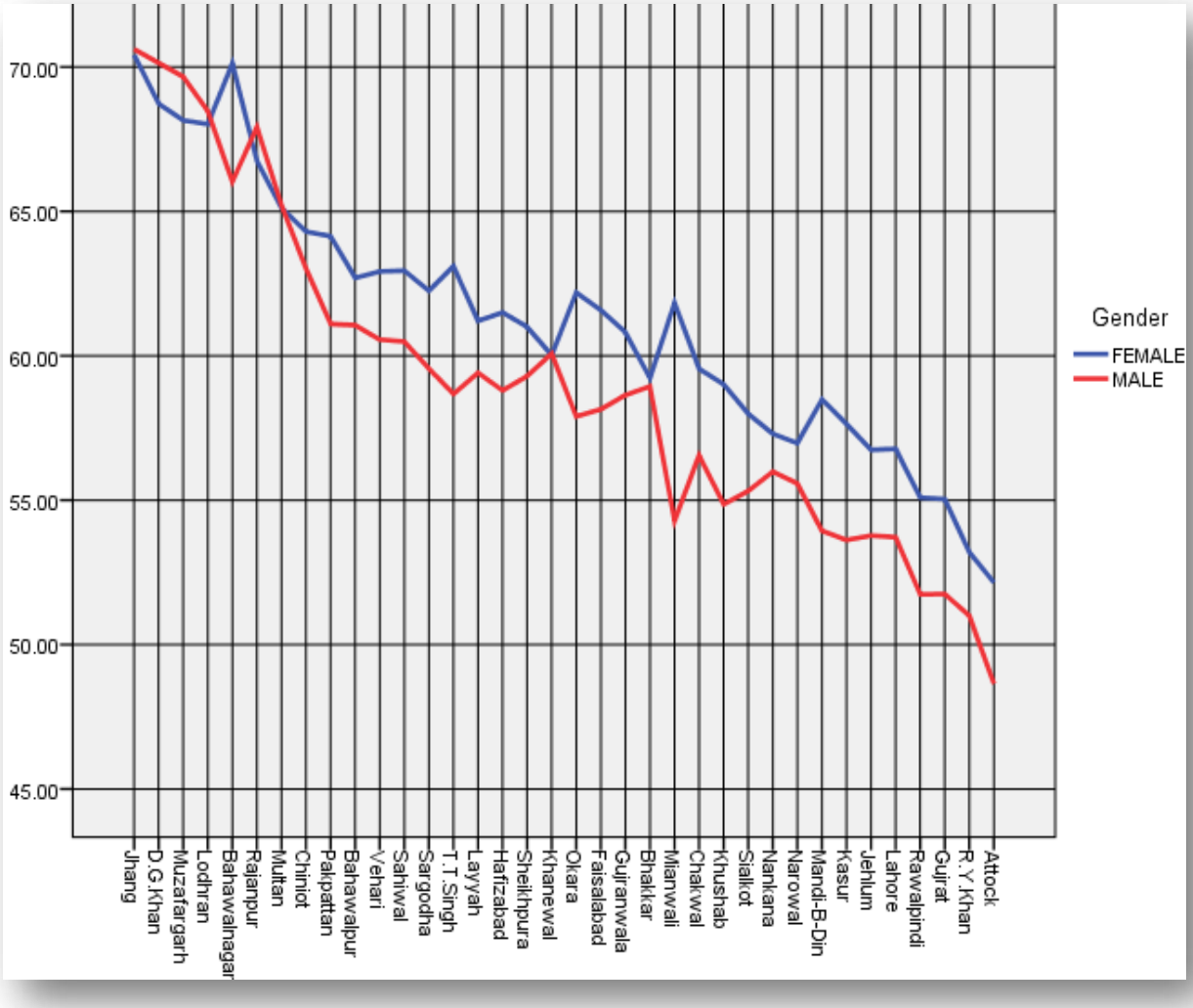

Figure 39: Districts Mean Scores in Islamyat by School Gender for Grade 5

Figure 39 shows that in all districts except Rajanpur, Muzaffargarh, D.G. Khan, and Jhang female students of grade 5 have done better than male students in subject of Islamyat. The male students performing better belong to high performing districts. The range of mean scores from lowest to highest performing district is between 50 to 70 which is better than other subject of grade 5.

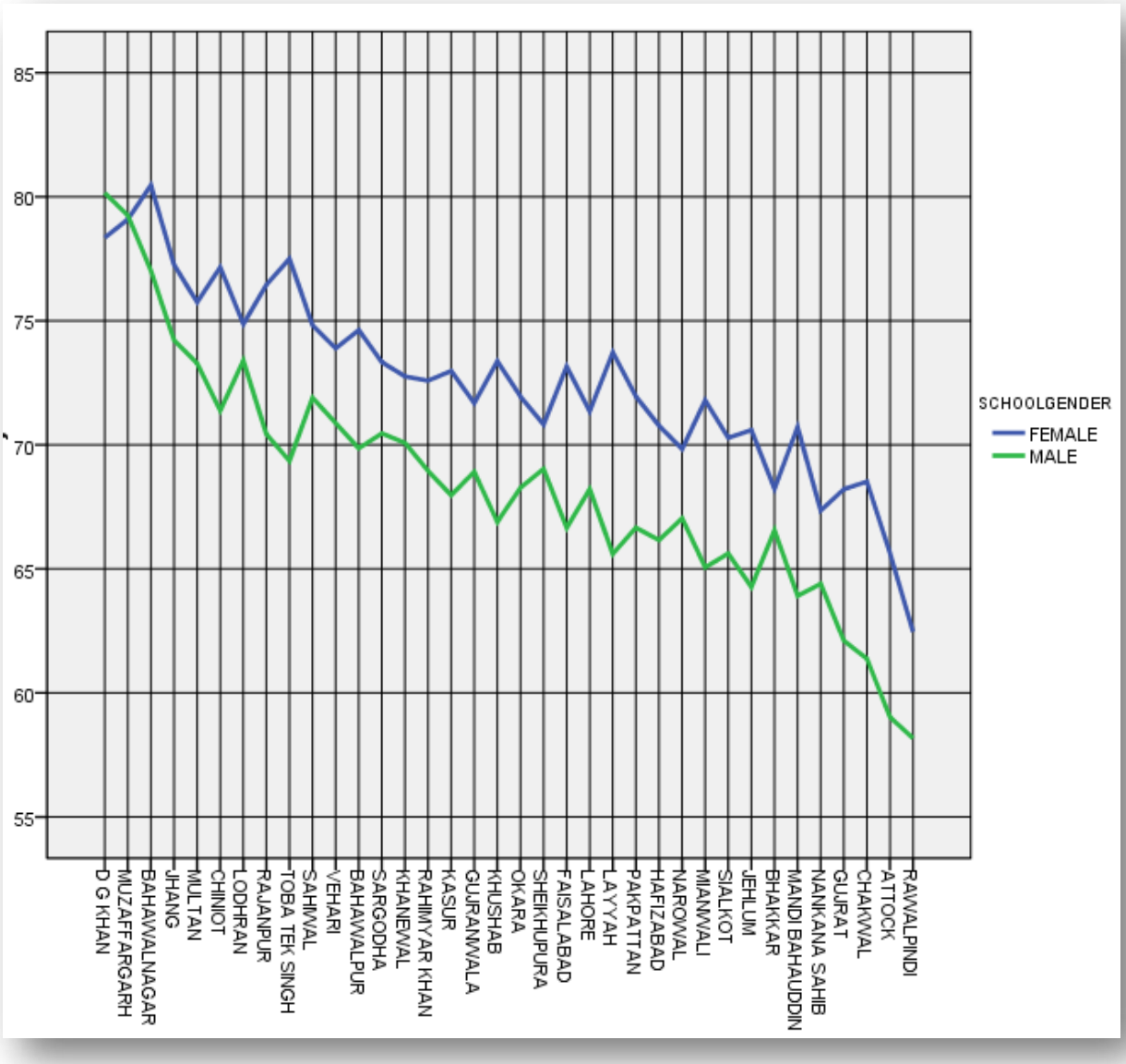

Figure 40: Districts Mean Scores in Islamyat by School Gender for Grade 8

Figure 40 reveals that in all districts of Punjab Province except female students of grade 8 performed better than male students in subject of Islamyat. The range of mean scores from lowest to highest performing district is between about 60 to 80 which is better than other subject of grade 8. This is the only subject in which a few districts reached near mastery learning.

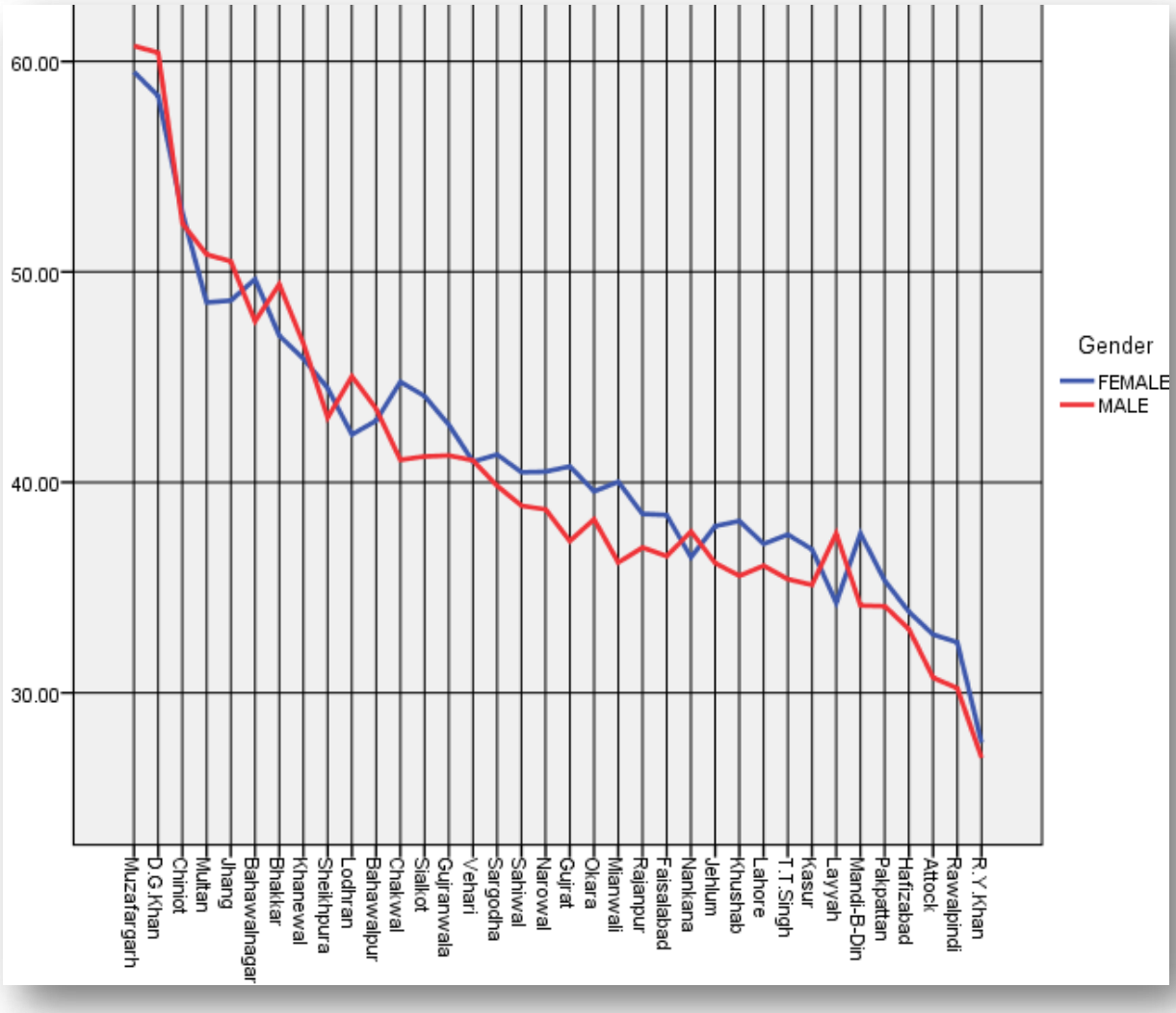

Figure 41: Districts Mean Scores in Science by School Gender for Grade 5

Figure 41 is evident that in majority of districts female students of grade 5 have performed better than male students in subject of science. In nine districts of Punjab male students' performance is better than females. Most of these districts are high performing except Layyah and Nankana Sahib. The range of mean scores from lowest to highest performing district is male 26.91, to 60.74 and female 27.64, to 59.50. Overall female students' performance in Science subject is better in Punjab Province. Rahim Yar Khan District performed very poor with mean score below 28.

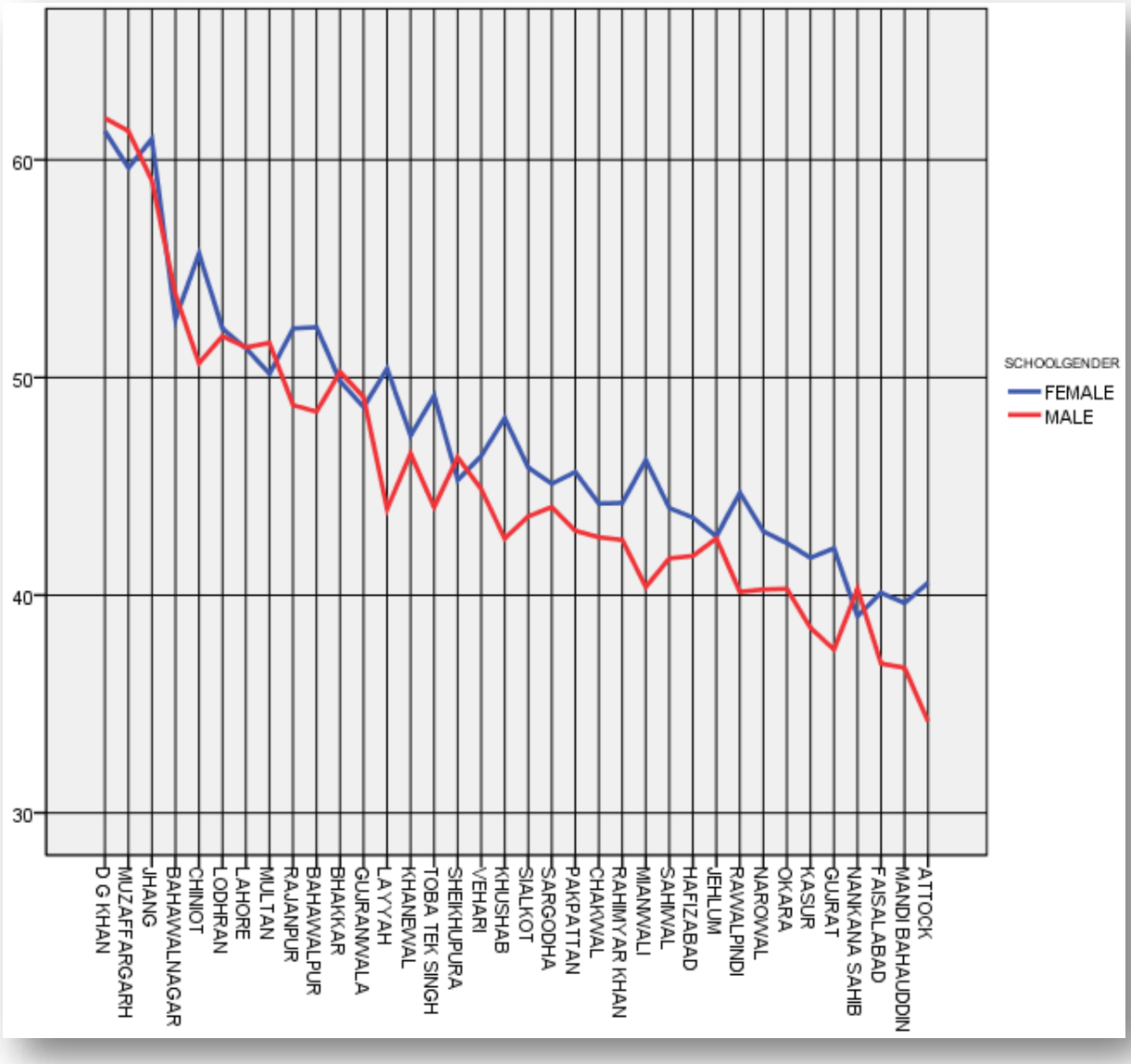

Figure 42: Districts Mean Scores in Science by School Gender for Grade 8

Figure 42 is evident that in majority of districts female students of grade 8 have performed better than male students in subject of science. In 7 districts of Punjab male students' performance is better than females. Most of these districts are high performing except Nankana Sahib. The range of mean scores from lowest to highest performing district is male 34.21, to 61.91 and female 39.03, to 61.32. Overall female students' performance in Science subject is better in Punjab Province. A few low performing districts got mean score less than 40 in grade 8 whereas about 50% districts got mean score less than 40 in science subject for grade 5.

2.3 Comparison of mean scores of Urban and Rural Schools

It is often the case in developing countries that schools located in urban areas perform at a higher level than those located in rural areas. PEC recorded the location of the schools but only for public schools. Figure 43 shows that Overall more than 50% districts' students from urban area schools performed better than rural school students of grade 5. It is also interesting that rural schools from high performing districts did better as compared to urban schools. Figure 33 explains performance of rural and urban schools in Punjab by subject for grade 5.

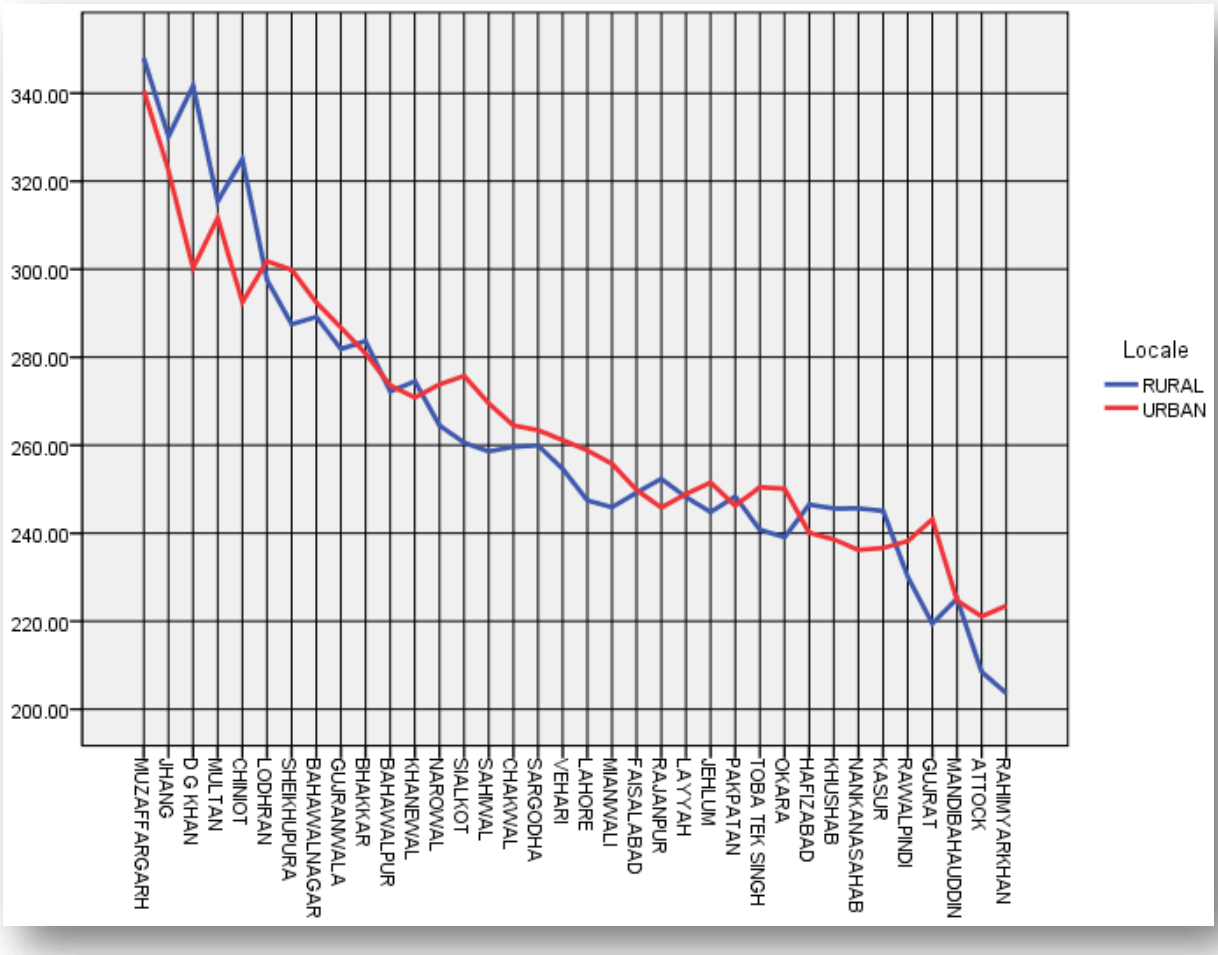

Figure 43: Districts Overall Mean Scores by School Location for Grade 5

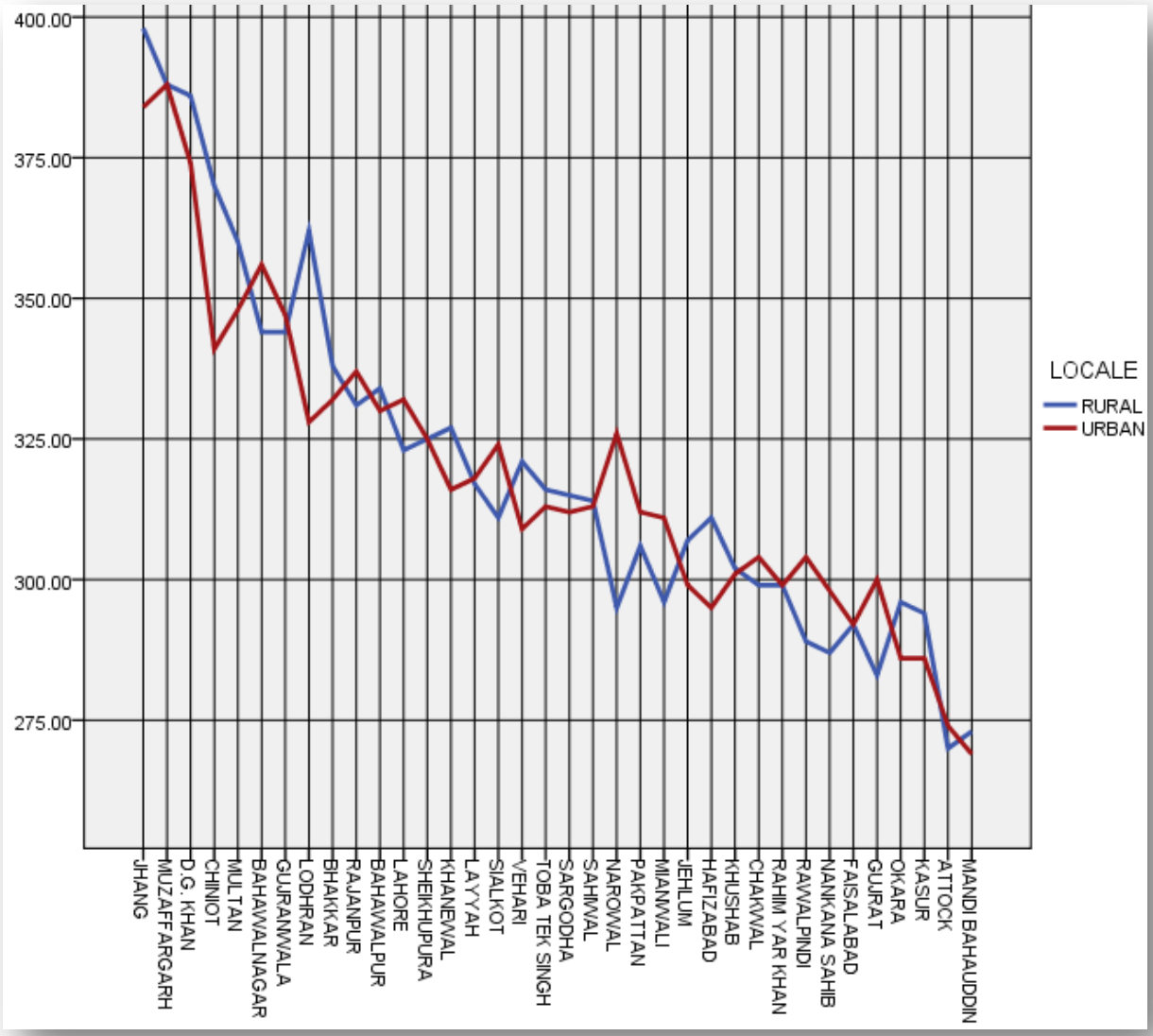

Figure 44: Districts Overall Mean Scores by School Location for Grade 8

Figure 44 shows that Overall more than 50% districts' students from urban area schools performed better than rural school students of grade 5. It is also interesting that rural schools from high performing districts, Jhang, Muzaffargarh, D. G. Khan, Chiniot and Multan did better than urban schools. The lowest performing districts are Mandi Bahauddin, Attock, Kasur, and Okara.

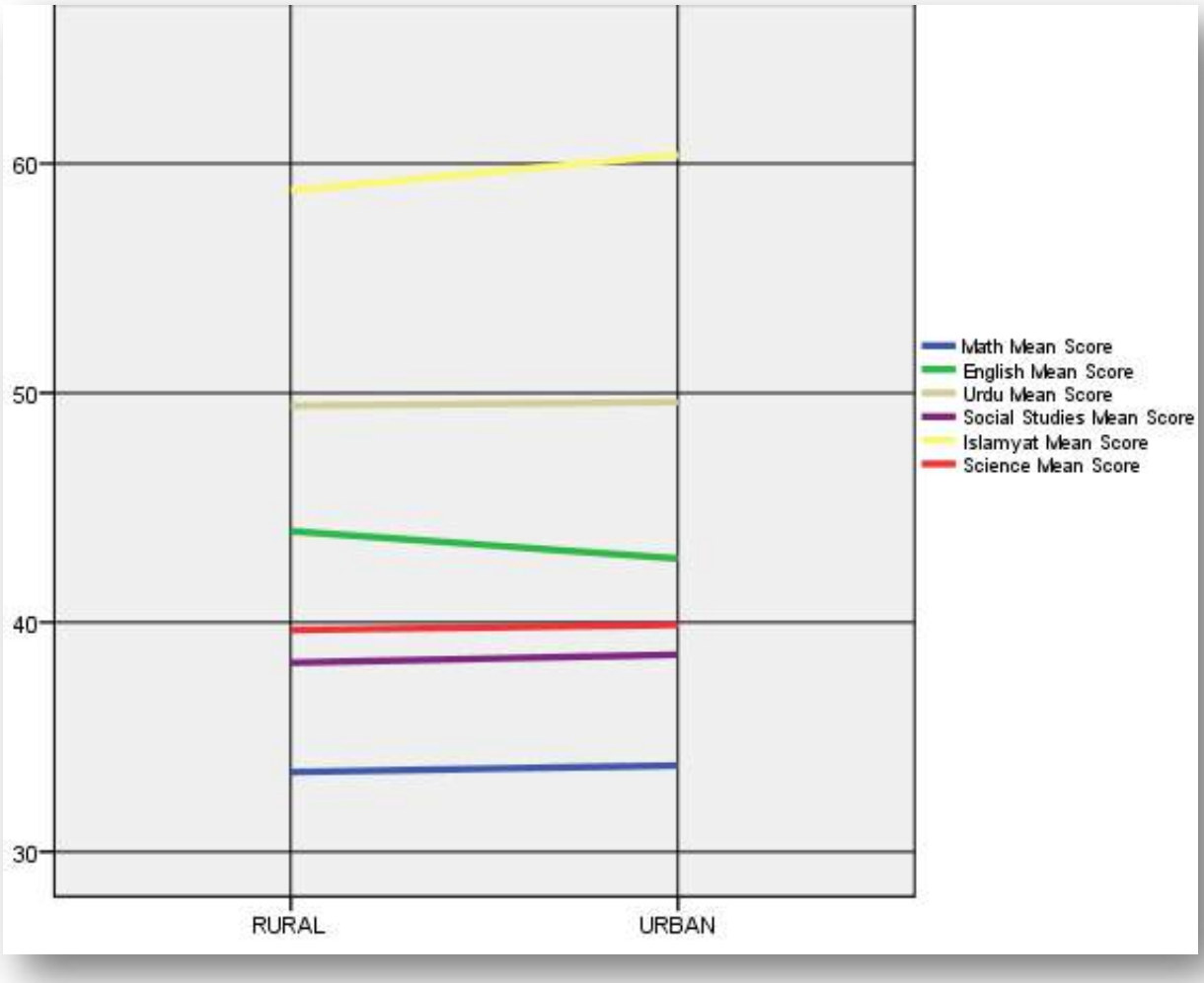

Figure 45: Punjab mean score across school location by all subjects for grade 5

Figure 45 reveals that students from public urban schools grade 5 did better than those located in rural areas in all subjects except English. However, the differences are of minor magnitude especially in Urdu, Social Studies, and Science. It is strange that students from rural area schools performed better in English than urban area schools. To understand the magnitude difference among districts in each subject further subject wise analysis is given below.

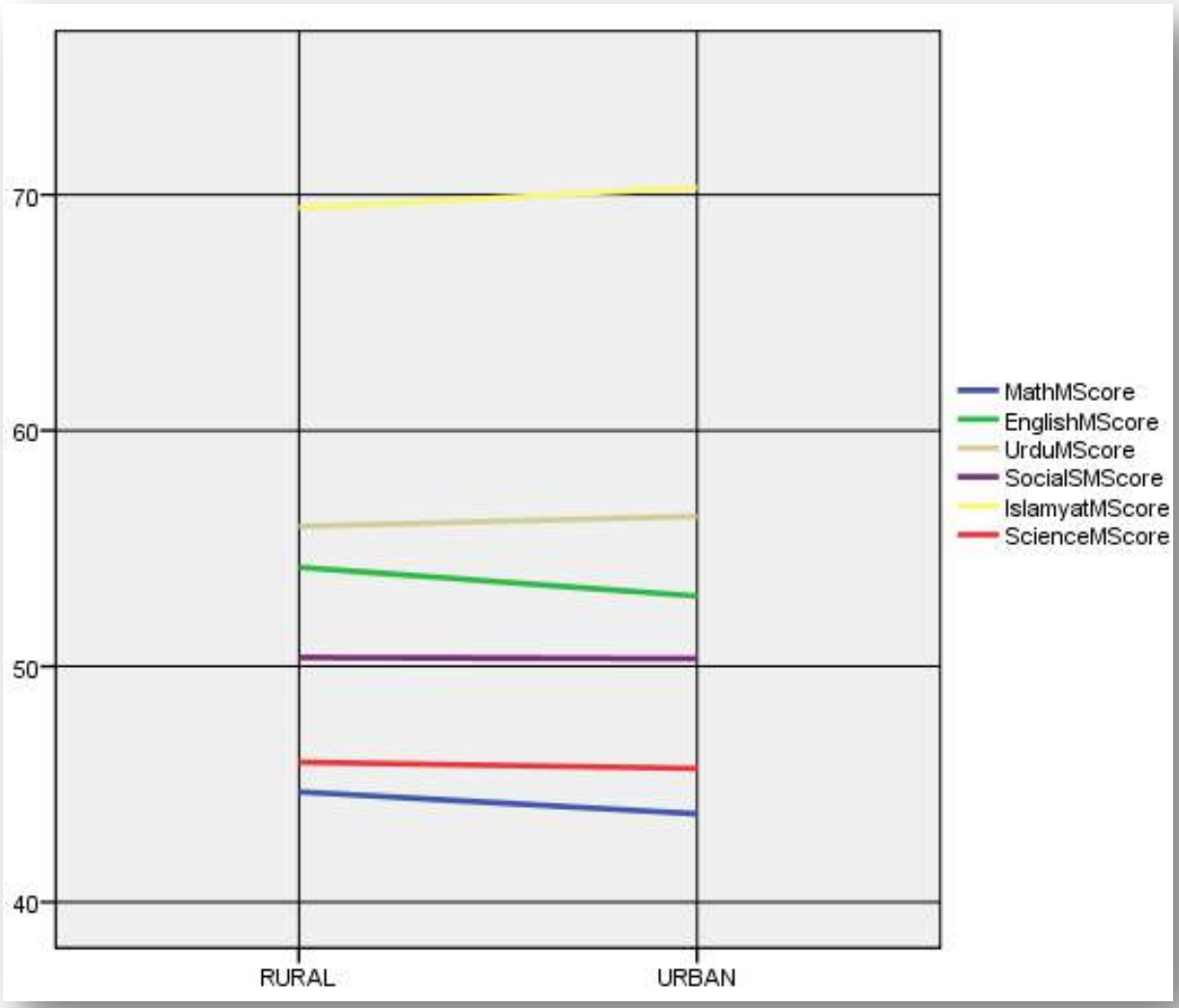

Figure 46: Punjab Mean Score across School Location by All Subjects for Grade 8

Figure 46 shows that students from public urban schools grade 8 did better only in Urdu and Islamyat subjects whereas rural students performed better in Mathematics, English, Social Studies, and Science. The difference in subject of Urdu, Social Studies, and Science are very marginal. To understand difference of districts by subject further subject analysis is given below.

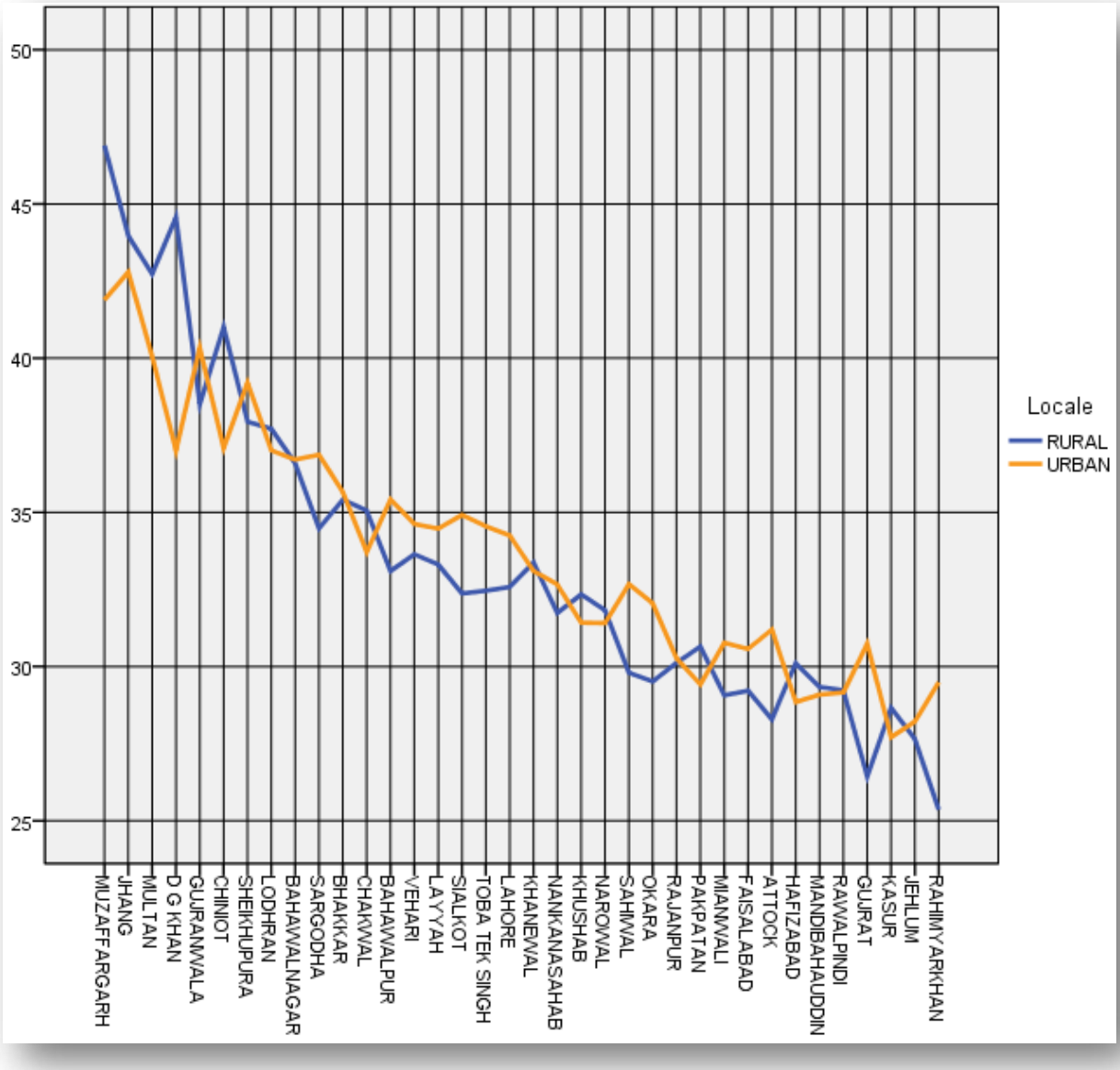

Figure 47: Districts Mean Scores in Mathematics by School Location for Grade 5

Figure 47 shows that in more than 50% districts urban schools performed better in mathematics. In 12 districts both or any one of the school locations achieved less than 30 mean score. The rural students from high achiever districts Muzaffargarh, Jhang, Multan, and D.G. Khan performed better than urban school. The overall performance of districts is also poor as only rural school students of Muzaffargarh District got 47 highest mean score. On the other hand rural school students from Rahim Yar Khan District got only 26 mean score.

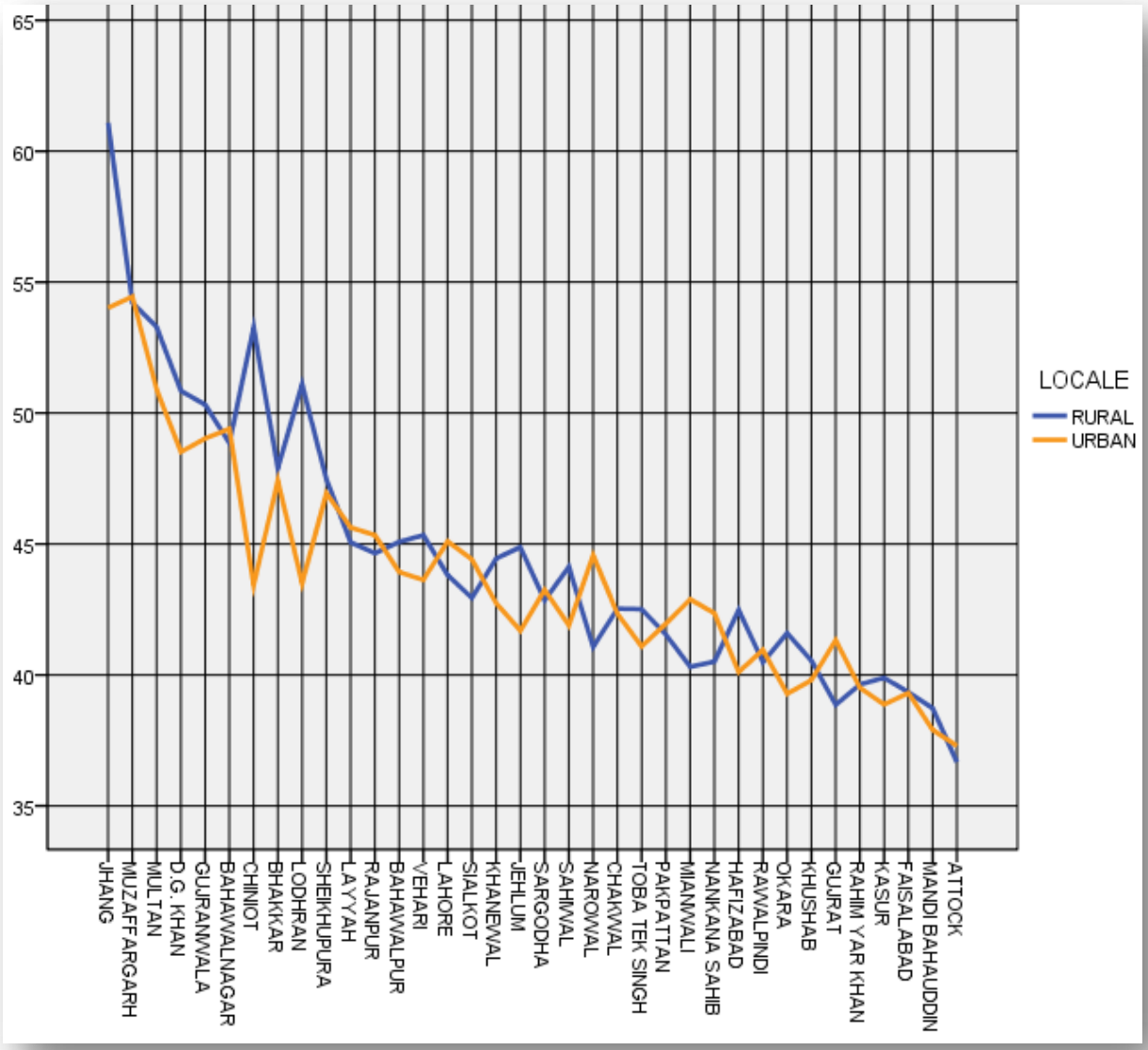

Figure 48: Districts Mean Scores in Mathematics by School Location for Grade 8

Figure 48 shows that in more than 50% districts urban schools performed better in mathematics. In 12 districts both or any one of the school locations achieved less than 30 mean score. The rural students from high achiever districts Muzaffargarh, Jhang, Multan, and D.G. Khan performed better than urban school. The overall performance of districts is also poor as only rural school students of Muzaffargarh District got 47 highest mean score. On the other hand rural school students from Rahim Yar Khan District got only 26 mean score.

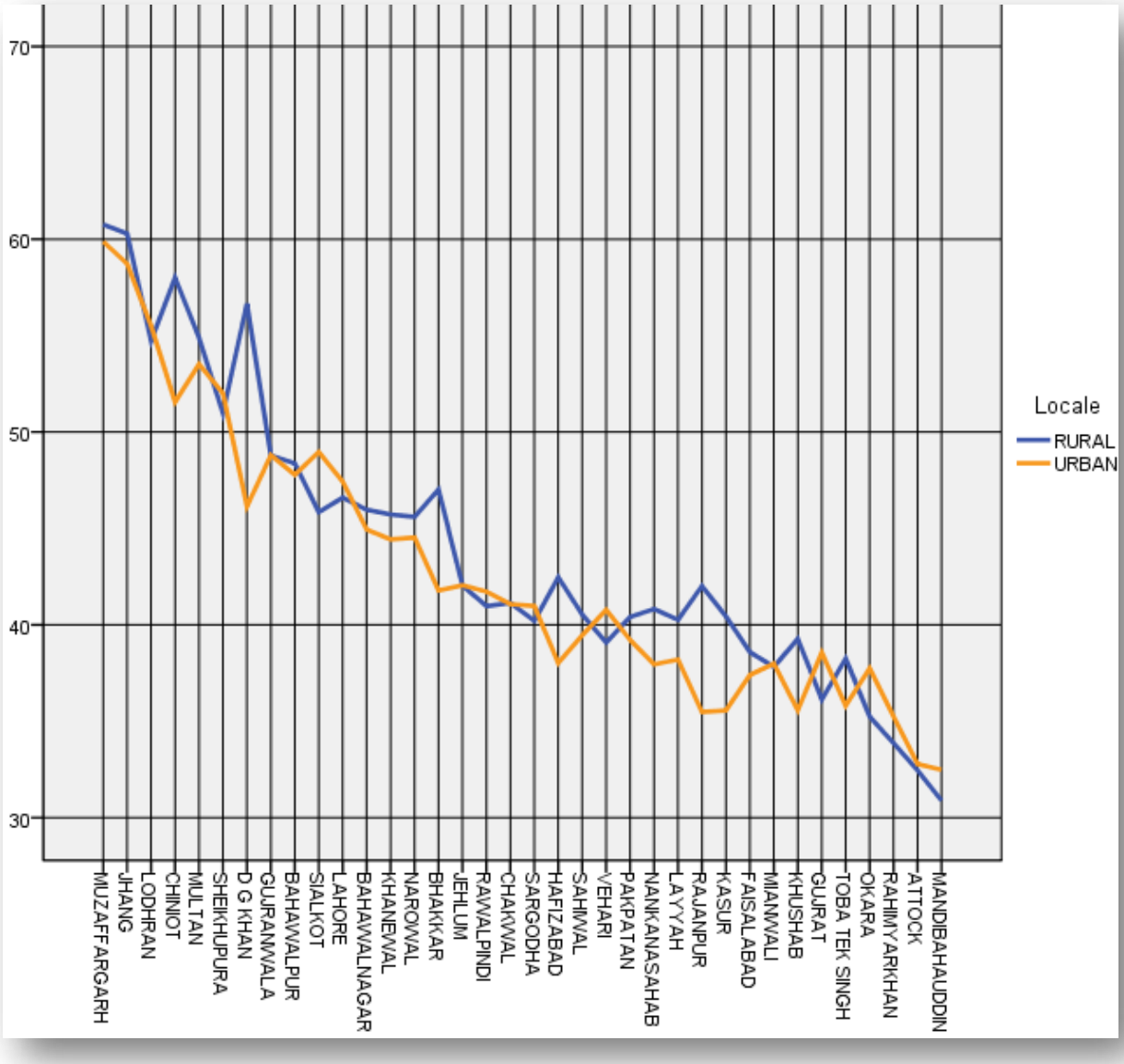

Figure 49: Districts Mean Scores in English by School Location for Grade 5

Figure 49 shows that rural school of 24 districts did better in English than urban schools. Rural schools of eight high performing districts got better mean score. Muzaffargarh the highest performing district in English got mean score 60.76. Mandi Bahauddin got 30.88 mean score the lowest one in the Punjab. Attock, Rahim Yar Khan, and Okara were low performing districts in Englih grade 5.

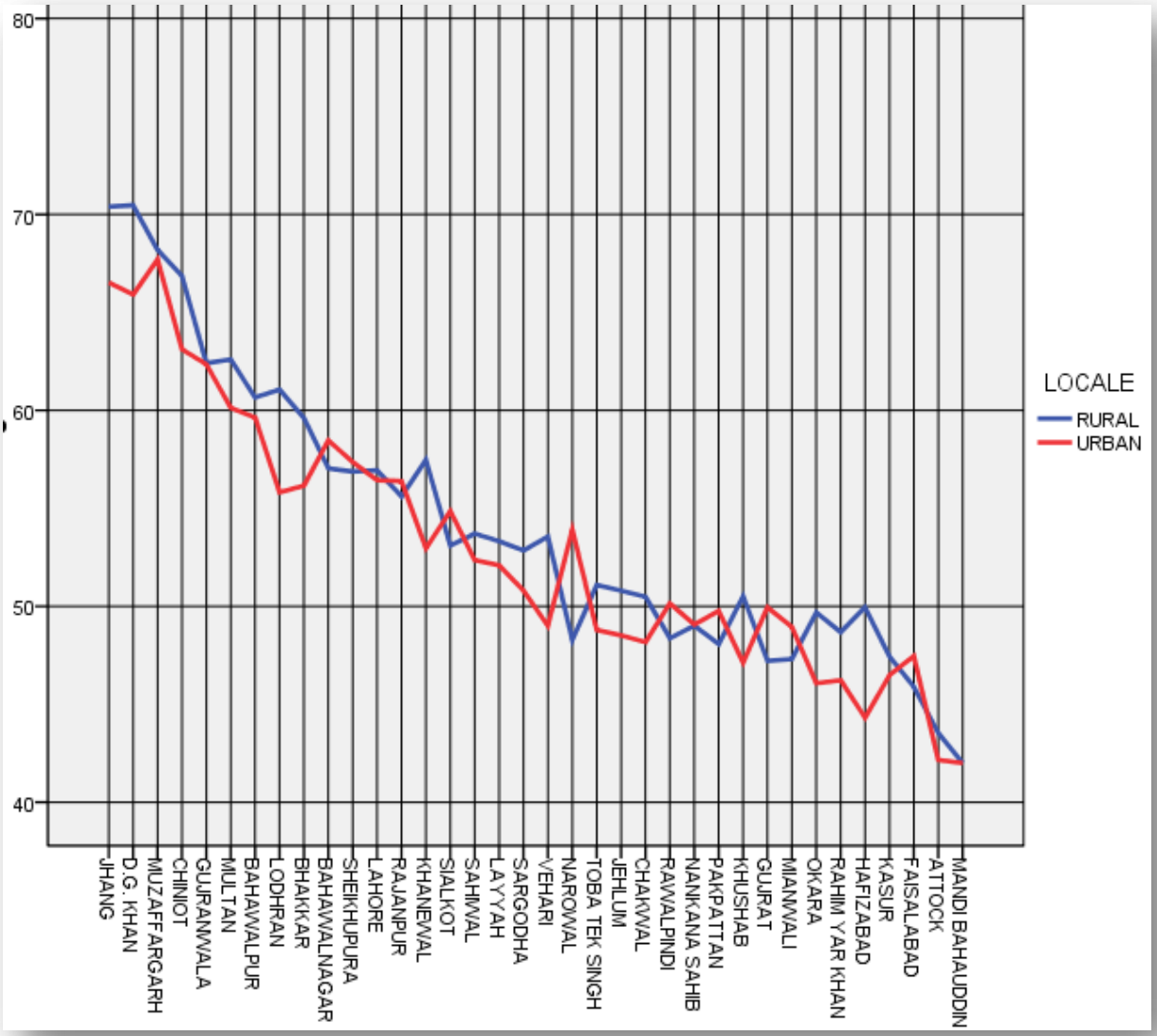

Figure 50: Districts Mean Scores in English by School Location for Grade 8

Figure 50 shows that rural school of majority districts (25 out of 36) did better in English than urban schools. Rural schools of nine high performing districts got better mean score than urban schools. Mandi Bahauddin and Attock are the lowest performing districts. The range from lowest to highest mean score of districts is 42.00 to 70.47. The overall performance of districts is better in this subject and better than grade 5.

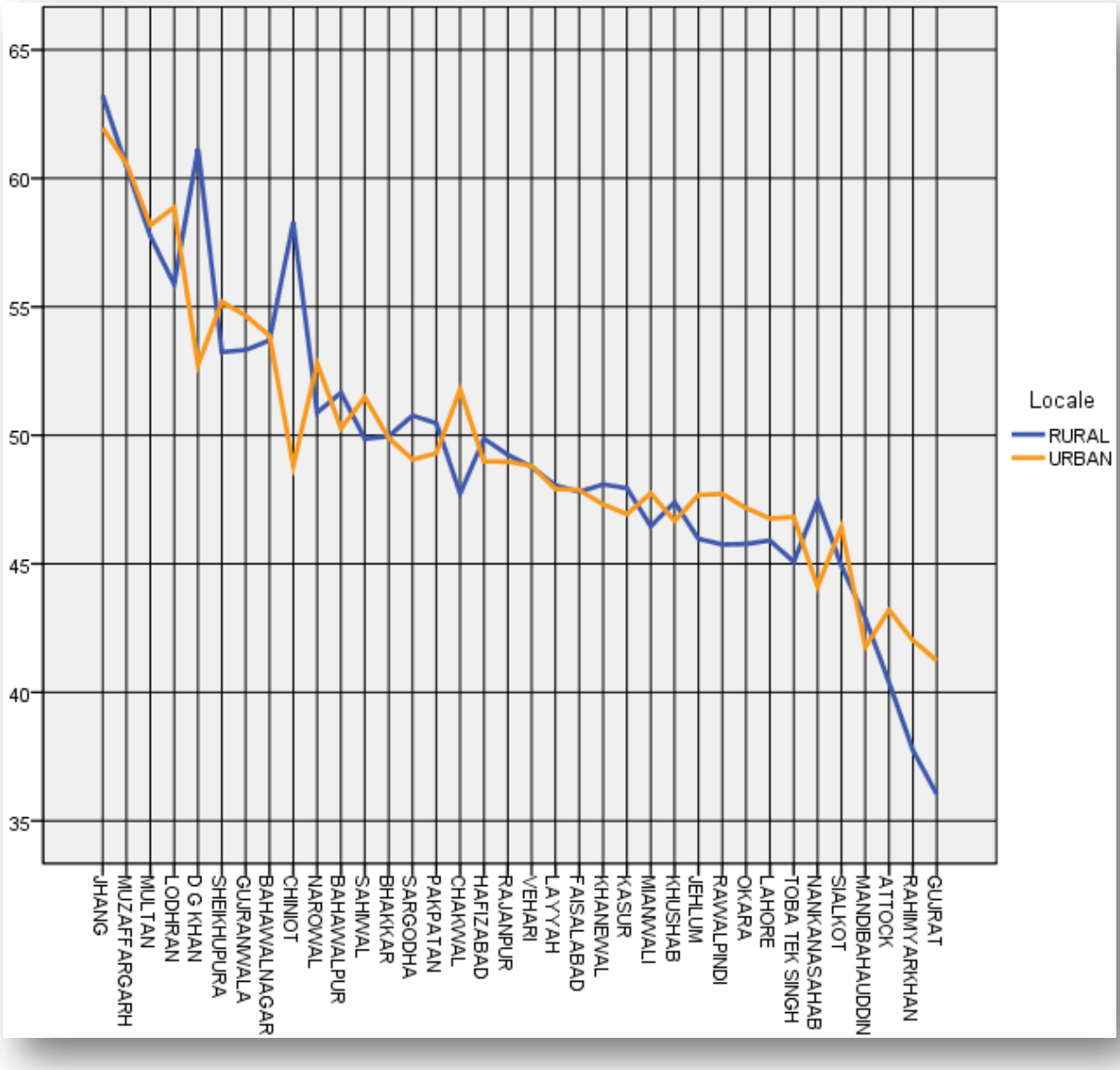

Figure 51: Districts Mean Scores in Subject Urdu by School Location for Grade 5

Figure 51 shows that urban school of 50% districts did better in Urdu language than rural schools. In low performing districts rural schools performed poor whereas in high achiever districts Rural and urban schools performance varies. Jhang achieved highest and Gujrat achieved lowest in Urdu subject. The range from lowest to highest mean score in Urdu for grade 5 is from 36.03 to 63.22.

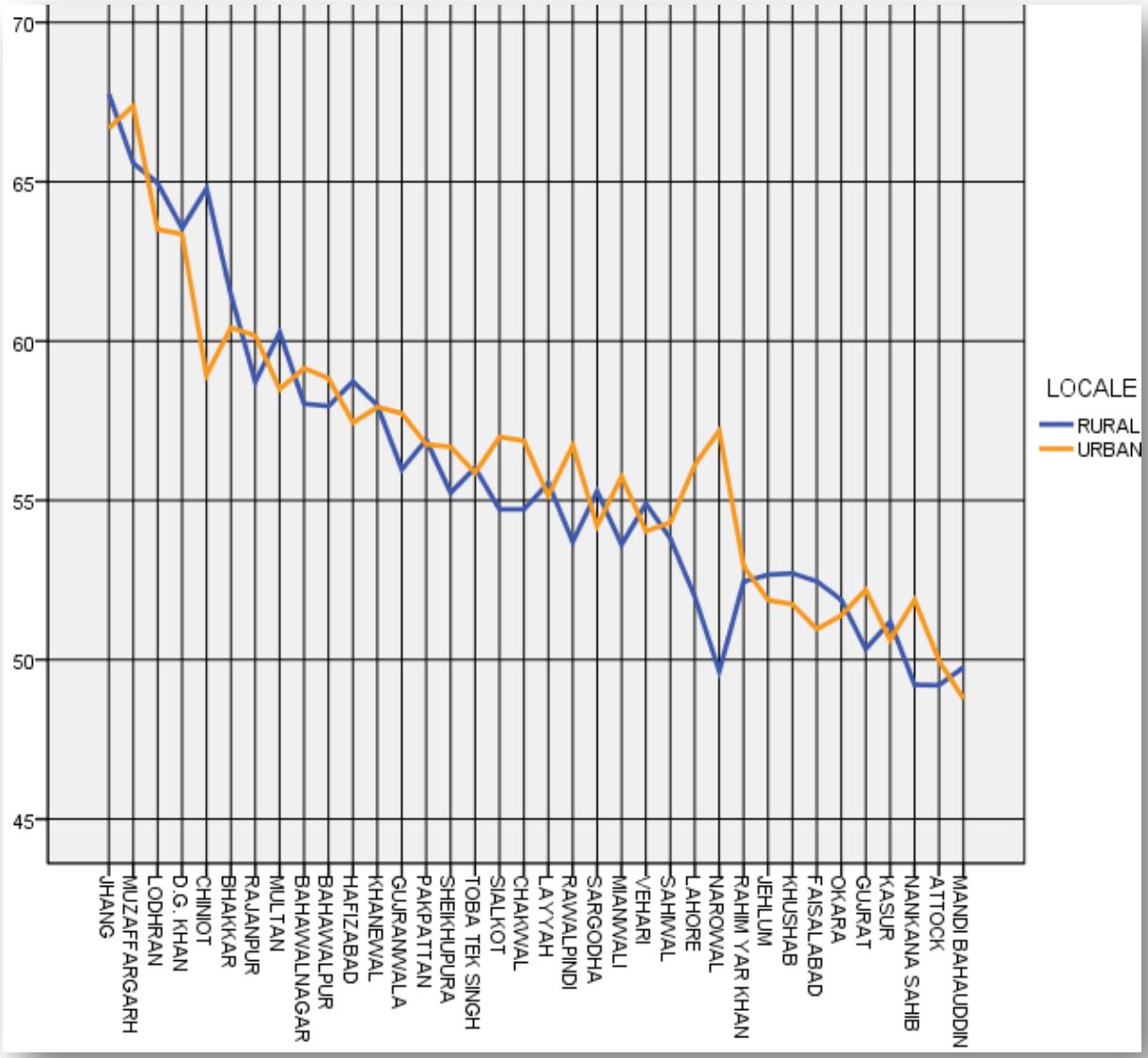

Figure 52: Districts Mean Scores in Urdu by School Location for Grade 8

Figure 52 shows that urban school of 50% districts did better in Urdu language than rural schools. The difference of rural and urban schools in districts Cniniot and Narowal is vast as compared to other districts of Punjab. The lowest performing district in Urdu is Mandi Bahauddin with mean score 48.78 and the highest mean score 67.76 is of Jnang district. Districts performed better in Urdu language in grade 8 than grade 5 but they performed less than English grade 8. Do the students of 8th grade in Punjab understand and write better English than Urdu language. There is question to think for examining body PEC and the teachers of the schools.

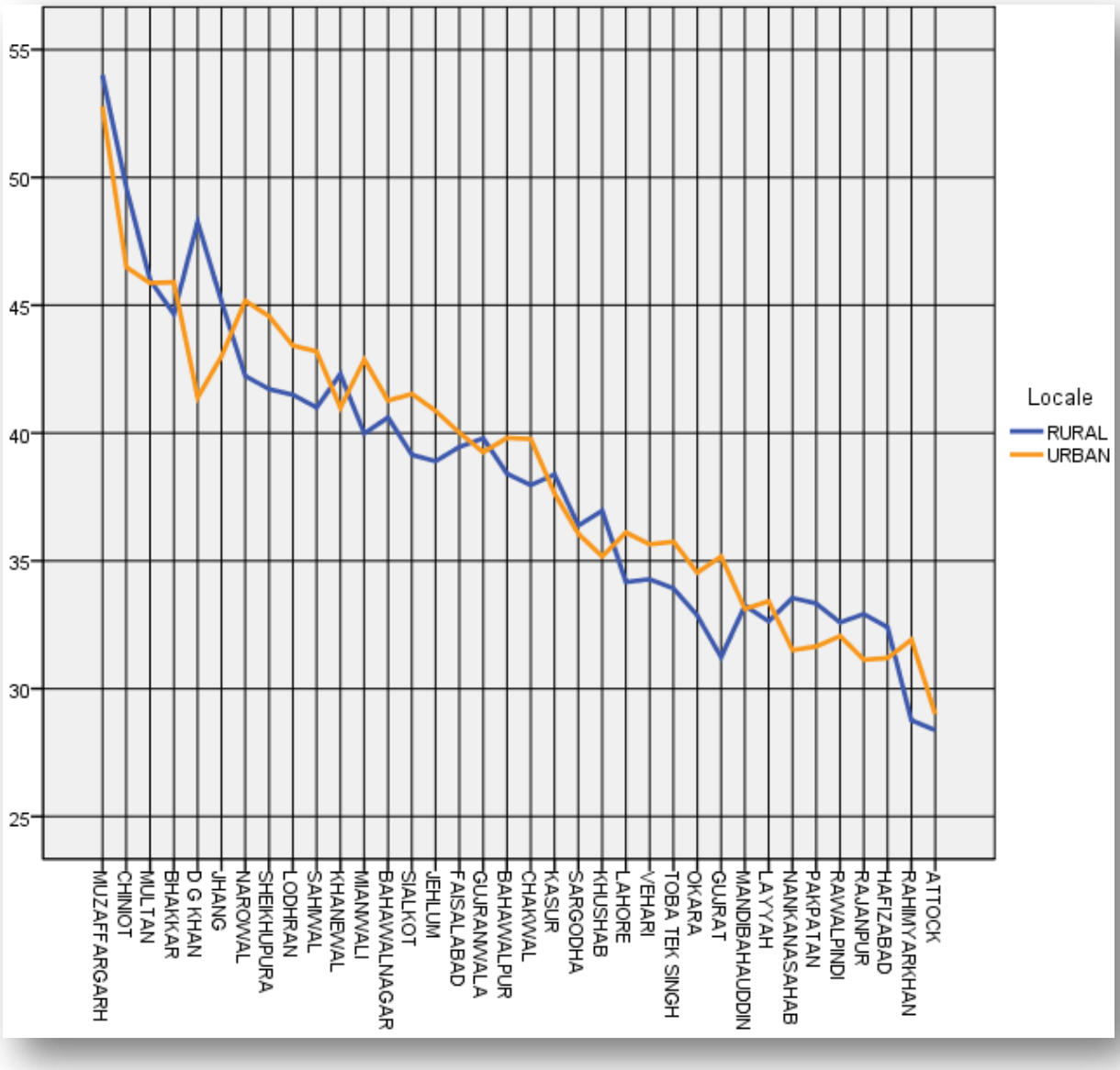

Figure 53: Districts Mean Scores in Social Studies by School Location for Grade 5

Figure 53 reveals that urban schools of 20% districts did better in social studies than rural schools. In high performing districts Muzaffargarh, Chiniot, and Multan rural schools performed better as compared to urban schools. Attock, Rahim Yar Khan, and Hafizabad are the low performing districts. The range from lowest to highest mean score in Social Studies for grade 5 is from 28.38 to 54.01. Overall performance

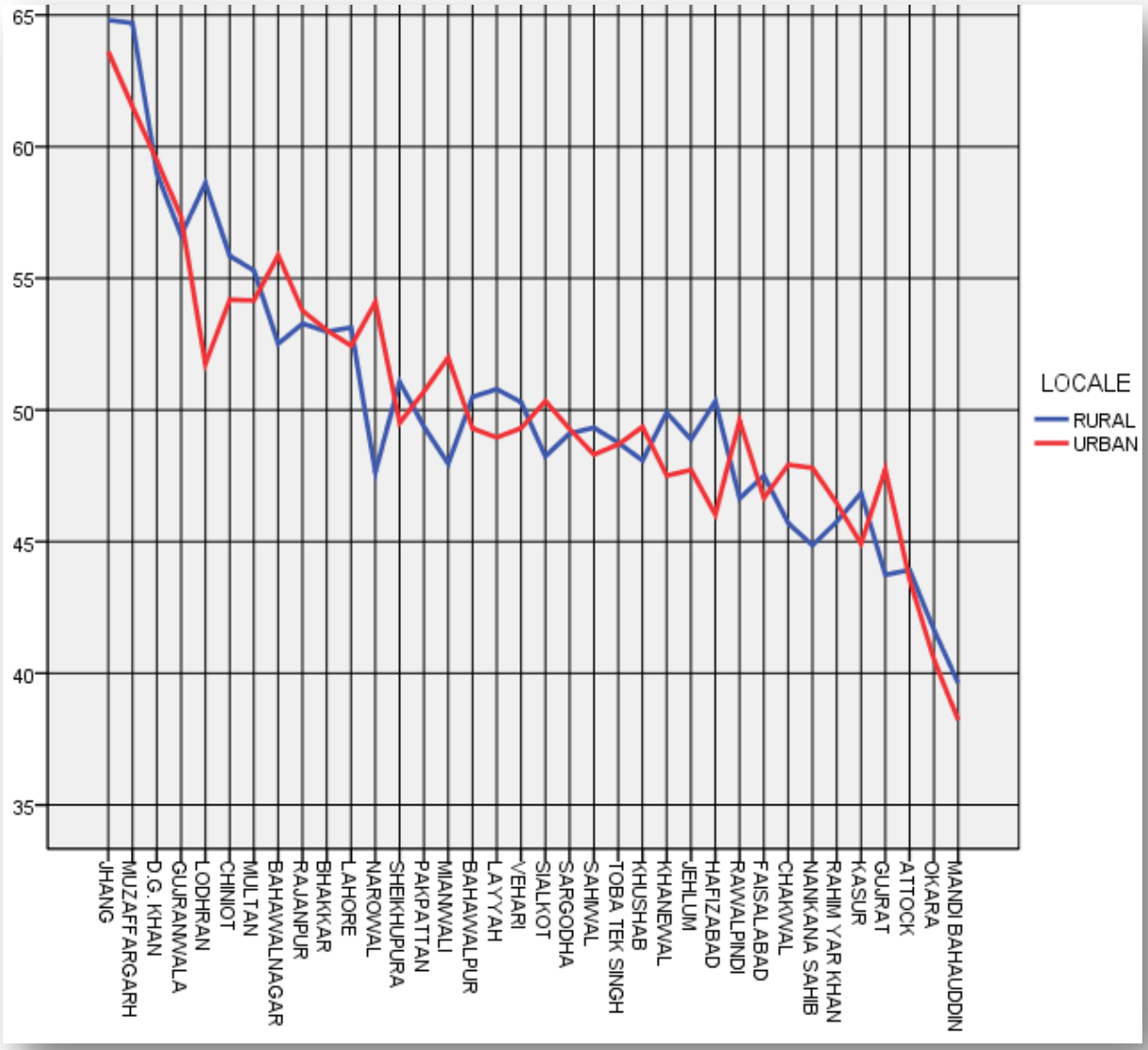

Figure 54: Districts Mean Scores in Social Studies by School Location for Grade 8

Figure 54 reveals that rural schools of more than 50% districts did better in social studies than rural schools for grade 8. Rural schools of both high performing districts Jhang and Muzaffargarh, and low performing districts Mandi Bahauddin and Okara performed better than urban schools. The difference between rural and urban schools in some districts like Lodhran and Narowal is more as compared to other districts. Difference between mean scores of highest performing and lowest performing district is 67.76 to 48.78.

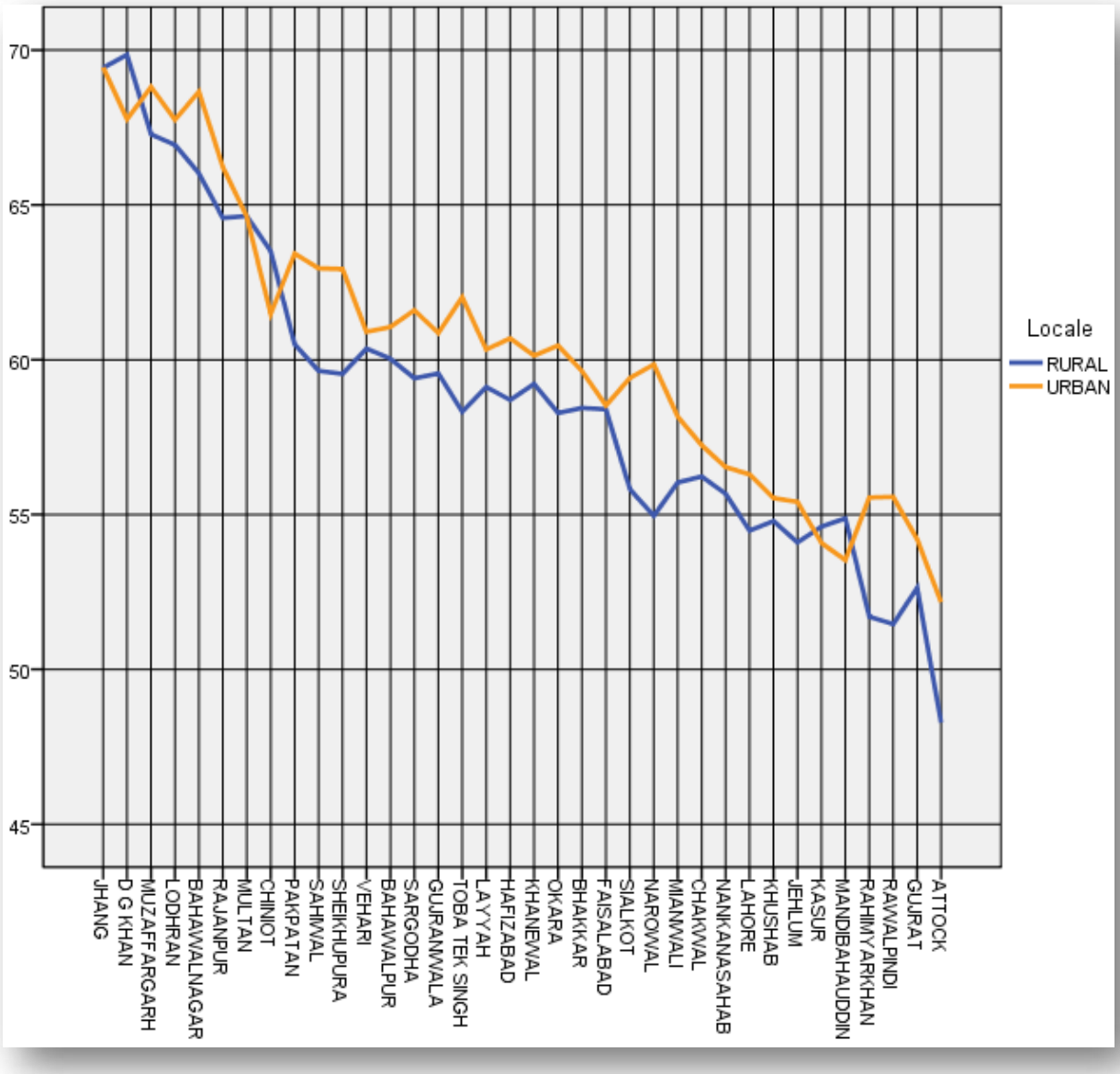

Figure 55: Districts Mean Scores in Islamyat by School Location for Grade 5

Figure 55 reveals that in all the districts urban schools did better in Islamyat than rural schools except districts Mandi Bahauddin, Kasur, Chiniot and D.G.Khan In high performing districts Muzaffargarh, Chiniot, and Multan rural schools performed better as compared to urban schools. District Attock, Rahim Yar Khan, and Hafizabad are the low performing districts. The range from lowest to highest mean score in Islamyat for grade 5 is from 48.28 to 69.85.

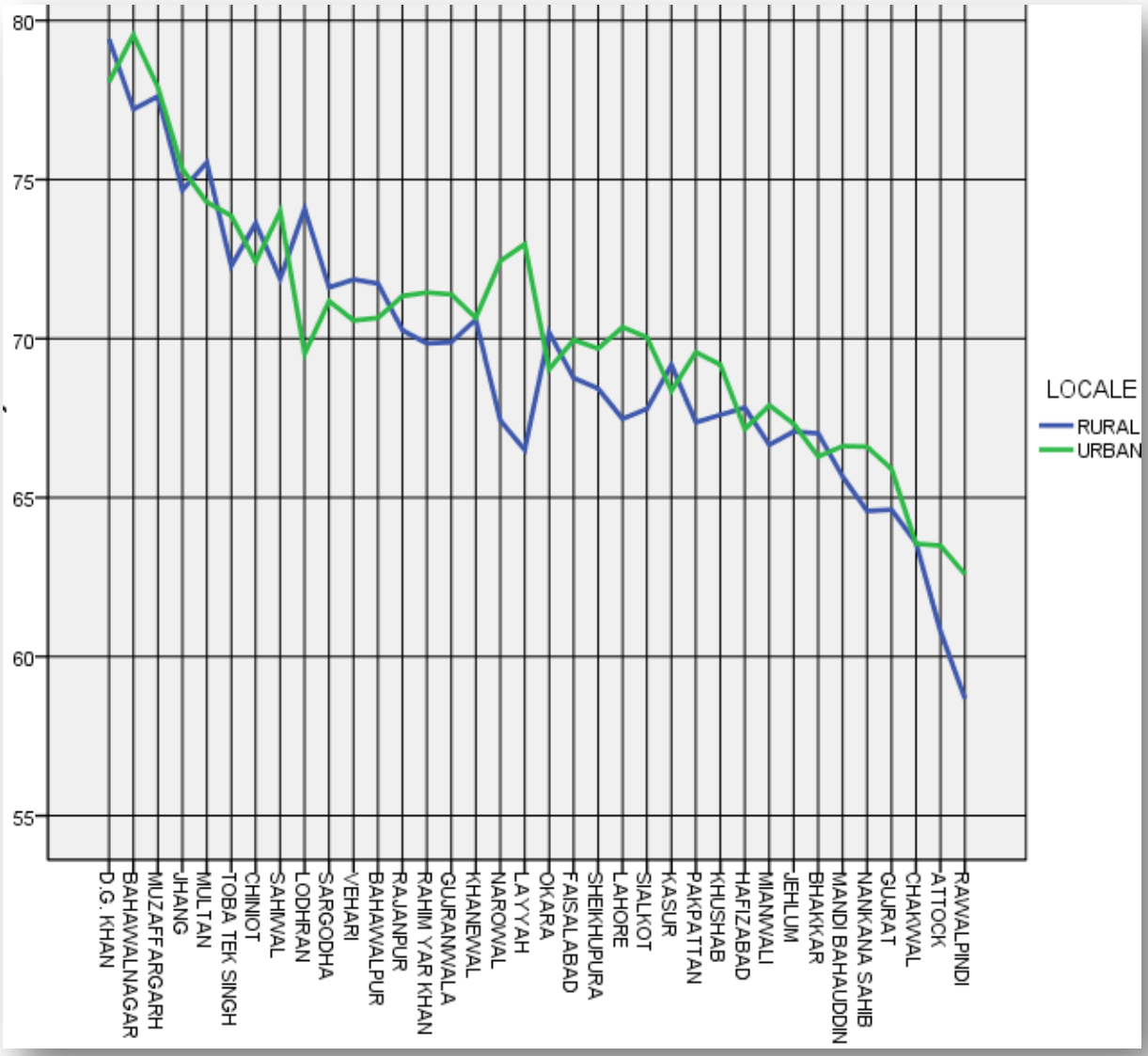

Figure 56: Districts Mean Scores in Islamyat by School Location for Grade 8

Figure 56 shows that in 24 districts urban schools did better in Islamyat than rural schools. Rural area schools in the highest achiever district D.G. Khan got better mean score than urban schools. In some schools like Lodhran, Narowal, Layyah and Rawalpindi the difference between rural and urban schools is greater. The range of scores among districts in subject of Islamyat for grade 8 is from 58.68 to 79.55. The overall performance of districts in this subject is very good.

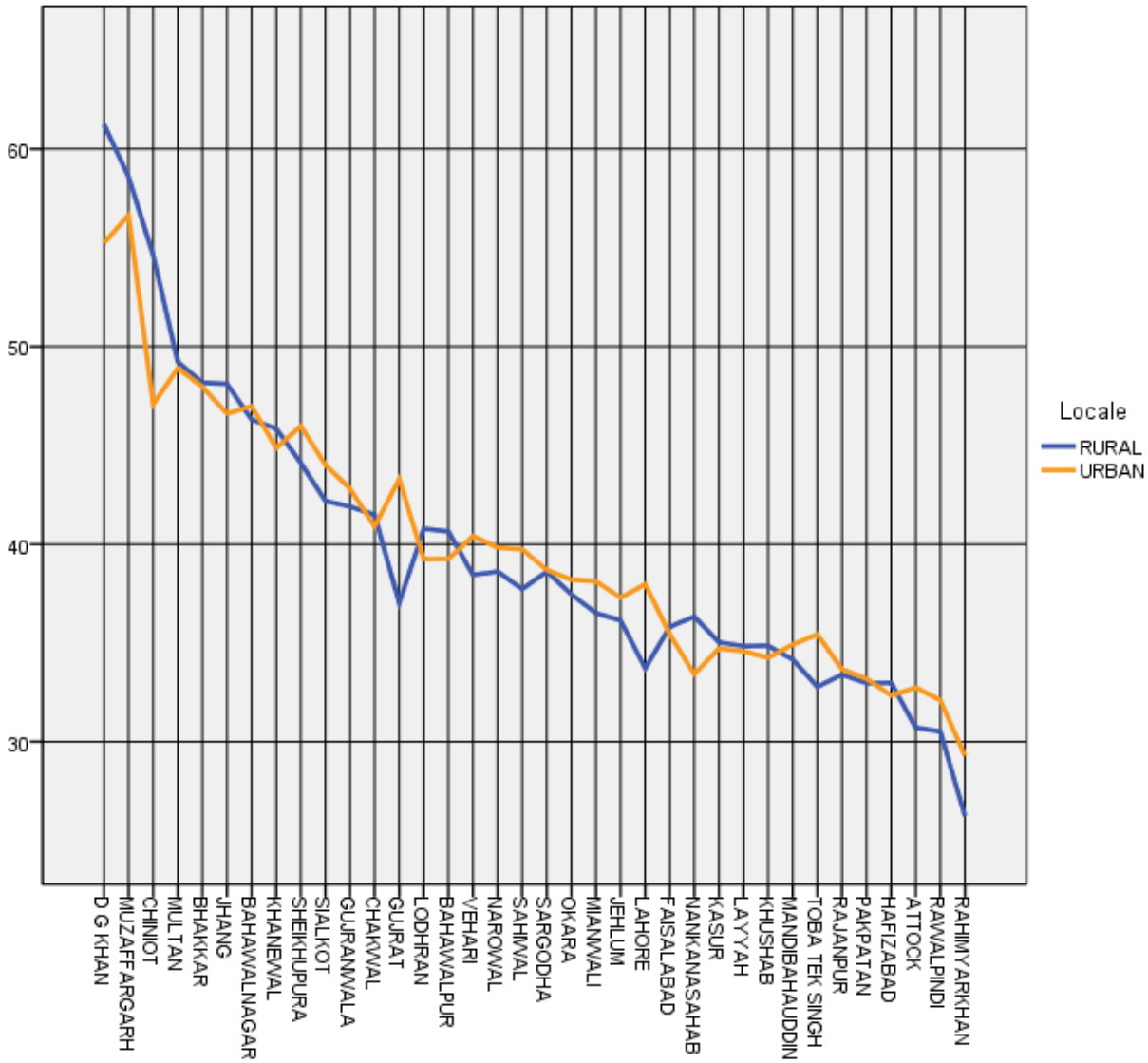

Figure 57: Districts Mean Scores in Science by School Location for Grade 5

Figure 57 shows that in more than 50% districts urban schools did better in Science than rural schools. In high performing districts in subject Science for grade 5, D.G. Khan, Muzaffargarh, Chiniot and Multan rural schools performed better. The urban schools from low performing districts, Rahim Yar Khan, Rawalpindi, and Attock did better in science than rural schools. The range of lowest to highest mean scores in Science grade 5 is 26.24 to 61.23.

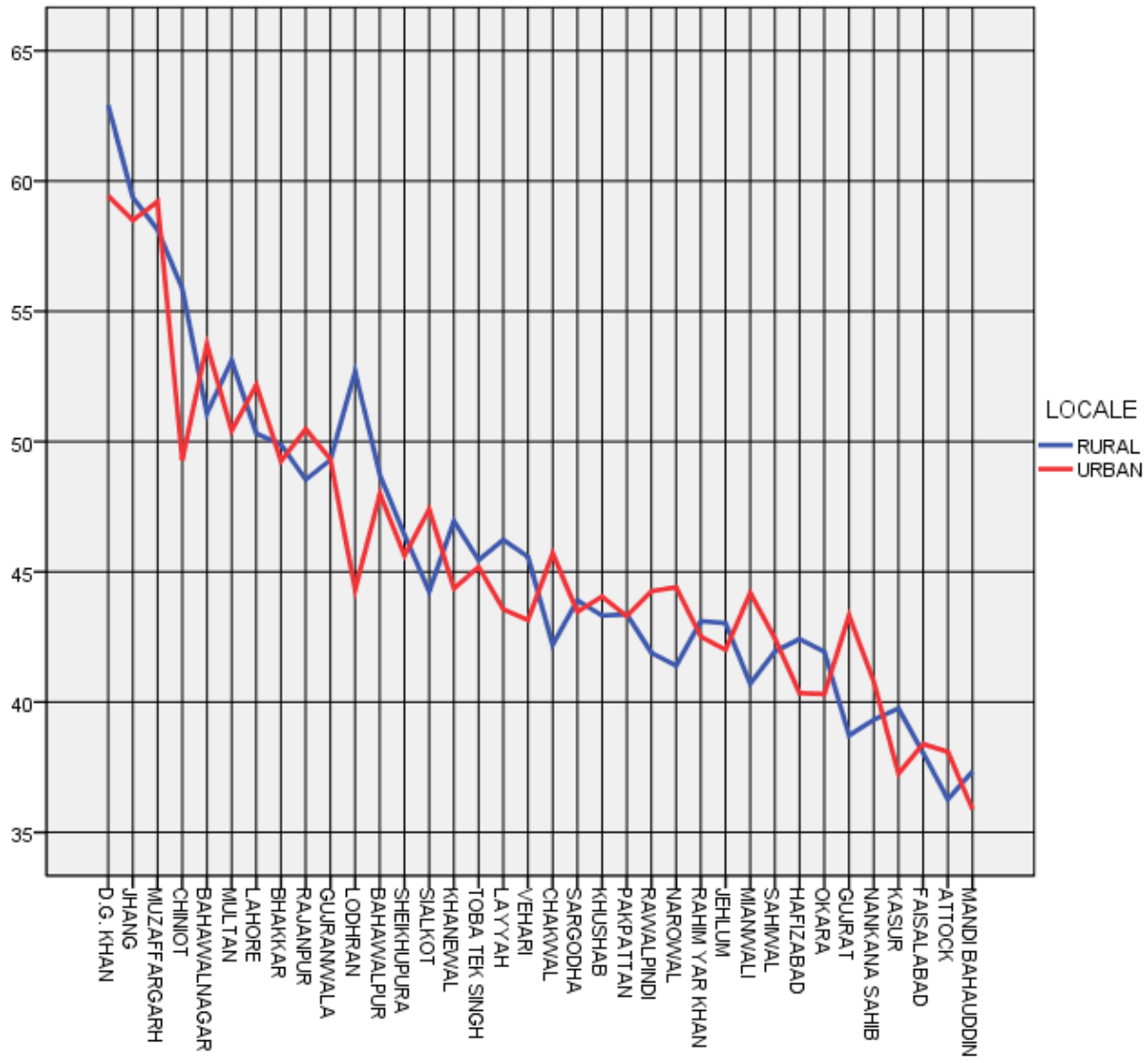

Figure 58: Districts Mean Scores in Science by School Location for Grade 8

Figure 58 shows that in more than 50% districts rural schools did better than rural schools in Science grade 8. The difference of mean scores of rural and urban schools in most of the districts is small except a few districts like Lodhran, and Gujrat. The range of lowest to highest mean scores in Science grade 8 is 35.88 to 62.92. The achievement of high and low performing districts in grade 8 is better than grade 5. In grade 8 only six districts got less than 40 mean score but 23 districts in grade 5 got mean score less than 40.

SECTION 3

CLUSTER ANALYSIS OF DISTRICTS, TEHSILS, ACCORDING TO PERFORMANCE LEVELS

3.1 Introduction

The above analyses have explored the main and interaction effects of grouping factors like school type, gender, level, location and medium of instruction on mean levels of student performance at district and Punjab levels. It is clear from these analyses that there is a great deal of diversity across districts according to these different factors. Objective statistical procedures (hierarchical cluster analysis) were used to classify districts in the Punjab according to levels of performance, and then to classify tehsils within districts according to performance. The district level classification should be useful for Punjab level policy and planning, and the tehsil and lower level classifications for decentralized planning and operational management.

3.2 Classification of Districts According to Performance

The analysis yielded four distinct clusters of districts. Districts in each cluster are all similar in terms of mean scores and standard deviations for each subject and significantly different from those in other clusters. The cluster structure is presented in Table 1 and 2 for grade 5 and 8 students, respectively.

Table 1: District Cluster Analysis for Grade 5

1st CATEGORY	2nd CATEGORY	3rd CATEGORY	4th CATEGORY
MUZAFFARGARH	CHINIOT	BAHAWALPUR	MANDI BAHAUDDIN
JHANG	MULTAN	BHAKKAR	GUJRAT
D G KHAN	LODHRAN	SHIEKHUPURA	ATTOCK
	BAHAWALNAGAR	GUJRANWALA	RAHIMYAR KHAN
		KHANEWAL	
		NAROWAL	
		RAJANPUR	
		SAHIWAL	
		CHAKWAL	
		SARGODHA	
		VEHARI	
		SIALKOT	
		FAISALABAD	
		TOBA TEK SINGH	
		PAKPATTAN	
		LAYYAH	
		MIANWALI	
		KHUSHAB	
		JEHLUM	

		LAHORE HAFIZABAD KASUR NANKANA SAHIB OKARA RAWALPINDI	

It will be seen from Table 1 that grade 5 students in Muzaffargarh, Jhang and D G Khan performed exceptionally well, while among that did not perform well were Mandi Bahauddin, Gujrat, Attock, and Rahimyar Khan. To a large degree this clustering of districts is also evident from Figure 1.

Table 2: District Cluster Analysis for Grade 8

1st CATEGORY	2nd CATEGORY	3rd CATEGORY	4th CATEGORY
MUZAFFARGARH JHANG D G KHAN	LODHRAN CHINIOT BAHAWALNAGAR MULTAN GUJRANWALA BAHAWALPUR RAJANPUR BHAKKAR LAHORE	KHANEWAL LAYYAH SHIEKHUPURA VEHARI TOBA TEK SINGH SARGODHA SAHIWAL SIALKOT PAKPATTAN KHUSHAB HAFIZABAD JEHLUM CHAKWAL MIANWALI NAROWAL RAWALPINDI	RAHIM YAR KHAN KASUR FAISALABAD OKARA NANKANA SAHIB GUJRAT MANDI BAHAUDDIN ATTOCK

Three districts, including Muzaffargarh, Jhang and D G Khan were in the top category for grade 5, performed exceptionally well in grade 8. Similarly, eight districts Rahim Yar Khan, Kasur, Faisalabad, Okara, Nankana Sahib, Gujrat, Mandi Bahauddin, and Attock performed least well in grade 8. Muzaffargarh, Jhang and D G Khan Jhang fell into top category of districts in grade 5 and 8, essentially because of their performance in all subjects of both the grades at similar level.

3.3 Classification of Tehsils within Districts According to Performance

Tables 3 and 4 show the classification of tehsils within districts assessed across six subjects for grade 5 and 8 students, respectively. The cluster procedure used the same variables as those used for the district level analysis shown in Tables 1 and 2

Table 3: Listing of Tehsils within Districts by Performance Category Assessed across all Subjects for Grade 5

1st CATEGORY		2nd CATEGORY		3rd CATEGORY		4th CATEGORY	
Districts	Tehsils	Districts	Tehsils	Districts	Tehsils	Districts	Tehsils
Muzaffargarh	Alipur	D.g. Khan	Tuansa	Chakwal	kalarkahar	Rawalpindi	Kallar syedan
Muzaffargarh	Jatoi	Jhang	Ahmad pur sial	Bahawalpur	Yazman	Attock	Hassanabdal
Muzaffargarh	Muzaffargarh	Multan	Jalalpur pirwala	Bhakkar	Darya khan	Gujrat	Sarai alamgir
D.g. Khan	d.g.khan	Bahawalnagar	Minchinabad	Sheikhupura	Sharaqpura	Attock	Hazro
		Jhang	Jhang	Sheikhupura	Muridkey	Rahimyar khan	Liaquatpur
		Jhang	Shorkot	Chakwal	Talagang	Rahimyar khan	Sadiqabad
		Muzaffargarh	Kot addu	Faisalabad	Satiana	Rahimyar khan	Khanpur
		Multan	Shuja abad	Bahawalpur	Ahmadpur east		
		Lodhran	Lodhran	Gujranwala	Gujranwala		
		Lodhran	Kahror pacca	Sargodha	Sillanwali		
		Multan	Multan sadar	Rajanpur	Rojhan		
		Chiniot	Chiniot	Bhakkar	Bhakkar		
		Bahawalnagar	Chishtian	Bahawalnagar	Haroonabad		
		Khanewal	Kabirwala	Lodhran	Dunyapur		
		Bahawalpur	Hasilpur	Bhakkar	Kalur kot		
		Bahawalnagar	Bahawalnagar	Bhakkar	Mankera		
		Multan	Multan city	Sheikhupura	Sheikhupura		
				Sahiwal	Chichawatni		
				Sialkot	Pasrur		
				Narowal	Shakargarh		
				Gujranwala	Kamoki		

				Vehari Bahawalpur Rajanpur Faisalabad Gujranwala Sheikhupura Sargodha Jehlum Mianwali Faisalabad Bahawalnagar Pakpattan Kasur Khanewal Faisalabad Jehlum Gujranwala Sargodha Vehari Chiniot Toba tek singh Toba tek singh Faisalabad Narowal Sargodha Faisalabad Khanewal	Mailsi Bahawalpur Jampur Layal pur town Nowshera virkan Ferozwala Shahpur Sohawa Piplan Madina town Fort abbas Pakpattan Kot radha kishan Mian channu Khurrianwala Pind dadan khan Wazirabad Bhalwal Burewala Lalian Gojra Kamalia Jinah town Zafarwal Sargodha Samundri Khanewa		

				Kasur Faisalabad Bahawalpur Sialkot Narowal Sahiwal Rajanpur Sialkot Layyah Faisalabad Chakwal Sialkot Faisalabad Chakwal Layyah Khushab Hafizabad Mianwali Vehari Khushab Faisalabad Nankana sahib Lahore Lahore Lahore Layyah Khushab Faisalabad Nankana	l Pattoki Tandlianwala Khairpur tamewali Sambrial Narowal Sahiwal Rajanpur Daska Karor lalisan Jaranwala Chakwal Sialkot Iqbal town Choa saidan shah Choubara Khushab Pindi bhattian Mianwali Vehari Quaidabad Chak jhumra Sangla hill Lahore Lahore cantt Lahore city Layyah Nurpur thal Faisalabad saddar Shahkot		

				sahib Nankana sahib Mianwali Okara Faisalabad Okara Hafizabad Rawalpindi Jehlum Kasur Rawalpindi Toba tek singh Pakpattan Rawalpindi Mandi bahaud din Gujrat Khanewal Kasur Nankana sahib Mandi bahaud din Rawalpindi Rahim yar khan Attock Mandi bahaud din Jehlum Rawalpindi	Nankana sahib Isa khel Depalpur Faisalabad city Okara Hafizabad Gujar khan Jehlum Kasur Kahuta Toba tek singh Arifwala Kotli sattian Phalia Gujrat Jehanian Chunian Safderabad Malikwal Rawalpindi Rahim yar khan Fateh jang Mandi baha ud din Dina Taxila		

				Gujrat Attock Rawalpindi Attock Attock	Kharian Pindi gheb Murree Jand Attock		

Most of the tehsils shown in the 1st category are located in the districts that were classified as 1st category districts and, similarly, those shown in the below category are located in districts which were classified as below category. But that is not always the case. For example, there is a tehsil Haroonabad in Bahawalnagar, and tehsil Dunyapur in Lodhran district that are in 3rd category although those districts were classified in 1st category.

Table 4: Listing of Tehsils within Districts by Performance Category Assessed across all Subjects for Grade 8

1st CATEGORY		2nd CATEGORY		3rd CATEGORY		4th CATEGORY	
Districts	Tehsils	Districts	Tehsils	Districts	Tehsils	Districts	Tehsils
Muzaffargarh Muzaffargarh D.g. Khan Jhang Muzaffargarh Jhang Multan Bahawalnagar	Alipur Muzaffargarh Tuansa Jhang Jatoi Ahmad pur sial Jalalpur pirwala Minchinabad	Bahawalpur Lodhran Jhang Muzaffargarh D.g. Khan Bahawalnagar Bhakkar Lodhran Bahawalpur Multan Chiniot Multan Rajanpur Gujranwala Lodhran Bahawalnagar Sheikhupura	Hasilpur Lodhran Shorkot Kot addu D.g. Khan Chishtian Darya khan Kahror pacca Yazman Multan sadar Chiniot Shuja abad Jampur Gujranwala Dunyapur Haroonabad Sharaqpur	Bahawalpur Khanewal Bhakkar Bhakkar Sahiwal Sheikhupura Lahore Bahawalnagar Vehari Lahore Rajanpur Sheikhupura Sargodha Toba tek singh Narowal Sargodha Bahawalpur	Ahmadpur east Mian channu Mankera Bhakkar Chichawatni Ferozwala Lahore cantt Fort abbas Burewala Lahore city Rajanpur Sheikhupura Sillanwali Gojra Zafarwal Shahpur Bahawalpur	Rawalpindi Attock Rawalpindi	Taxila Hazro Kotli sattian

		Khanewal Gujranwala Bahawalnagar Rajanpur Gujranwala Bhakkar Jehlum Multan Lahore Layyah	Kabirwala Kamoki Bahawalnagar Rojhan Nowshera virkan Kalur kot Pind dadan khan Multan city Lahore Karor lalisan	Gujranwala Layyah Vehari Chakwal Sialkot Toba tek singh Pakpattan Toba tek singh Kasur Sargodha Vehari Chakwal Sargodha Kasur Sialkot Nankana sahib Hafizabad Khushab Bahawalpur Sheikhupura Khushab Khanewal Rahim yar khan Sialkot Faisalabad Sialkot Sahiwal Mianwali Khushab	Wazirabad Layyah Mailsi Kalarkahar Pasrur Kamalia Pakpattan Toba tek singh Kot radha kishan Bhalwal Vehari Talagang Sargodha Pattoki Daska Shahkot Hafizabad Quaidabad Khairpur tamewali Muridkey Khushab Khanewal Liaquatpur Sambraial Chak jhumra Sialkot Sahiwal Isa khel Nurpur thal		

				Rawalpindi Faisalabad Narowal Pakpattan Khanewal Rahim yar khan Hafizabad Faisalabad Mianwali Mianwali Rahim yar khan Faisalabad Rawalpindi Faisalabad Chakwal Okara Faisalabad Gujrt Jehlum Jehlum Chakwal Faisalabad Layyah Faisalabad Rawalpindi Rawalpindi Rawalpindi	Gujar khan Madina town Shakargarh Arifwala Jehanian Rahim yar khan Pindi bhattian Faisalabad saddar Mianwali Piplan Khanpur Iqbal town Kallar syedan Satiana Chakwal Okara Laylpur town Gujrat Sohawa Jehlum Choa saidan shah Tandlianwala Choubara Jinah town Kahuta Murree Rawalpindi		

				Kasur Narowal Faisalabad Faisalabad Nankana sahib Nankana sahib Rahim yar khan Attock Okara Jehlum Faisalabad Faisalabad Gujrt Mandi bahud din Mandi bahaud din Kasur Mandi bahaud din Attock Attock Attock Nankana sahib Gujrt Attock	Kasur Narowal Samundri Faisalabad city Sangla hill Nankana sahib Sadiqabad Fateh jang Depalpur Dina Khurrianwala Jaranwala Kharian Phalia Malikwal Chunian Mandi bahaud din Pindi gheb Jand Attock Safderabad Sarai alamgir Hassanabdal		

Again, the majority of tehsils shown in the 1ST category for grade 8 are in those districts, Muzaffargarh Jhang, and D G Khan which were classified in the 1st category in the district cluster analysis. Noticeably, there are tehsils in 1st category which are located in districts that were in lower categories in the district cluster analysis. For example, tehsil Jalalpur Pirwala, and Minchinabad are in districts of Multan and Bahawalnagar which are in the 2nd

Category of districts. Similarly, there are two districts, D G Khan and Jhang that were classified as 1st category districts but their tehsils D G Khan and Shorkot respectively are in the 2nd tehsil category. The same examples are also available in 3rd category. The frequency distribution of tehsils according to performance category by district is shown in following Table 5 and 6 for grade 5 and 8 students, respectively.

Table 5: Number of Tehsils within Districts by Performance Category Assessed across all Subjects for Grade 5

Districts	1st CATEGORY	2nd CATEGORY	3rd CATEGORY	4th CATEGORY
ATTOCK			4	2
BAHAWALNAGAR		3	2	
BAHAWALPUR		1	4	
BHAKKAR			4	
CHAKWAL			4	
CHINIOT		1	1	
D G KHAN	1	1		
FAISALABAD			12	
GUJRANWALA			4	
GUJRAT			2	1
HAFIZABAD			2	
JEHLUM			4	
JHANG		3		
KASUR			4	
KHANEWAL		1	3	
KHUSHAB			3	
LAHORE			3	
LAYYAH			3	
LODHRAN		2	1	
MANDI BAHAUDDIN			3	
MIANWALI			3	
MULTAN		4		
MUZAFFARGARH	3	1		
NANKANA SAHIB			4	
NAROWAL			3	
OKARA			2	
PAKPATTAN			2	
RAHIM YAR KHAN			1	3
RAJANPUR			3	
RAWALPINDI			6	1
SAHIWAL			2	
SARGODHA			4	
SHIEKHUPURA			4	
SIALKOT			4	
TOBA TEK SINGH			3	
VEHARI			3	
Total	4	17	107	7

It will be noted from Table 5 that in most cases tehsils within districts are classified into adjacent performance categories. This implies that the diversity evident in the district classification does not extend to tehsils. In other words, whilst the Punjab is characterised by diversity at the district level, within districts there is some degree of consistency among tehsils. Most of the tehsils fall under category three.

Table 6: Number of Tehsils within Districts by Performance Category Assessed across all Subjects for Grade 8

Districts	1st Category	2nd Category	3rd Category	4th Category
ATTOCK			5	1
BAHAWALNAGAR	1	3	1	
BAHAWALPUR		2	3	
BHAKKAR			2	
CHAKWAL			4	
CHINIOT		1		
D G KHAN	1	1		
FAISALABAD			12	
GUJRANWALA		3	1	
GUJRAT			3	
HAFIZABAD			2	
JEHLUM		1	3	
JHANG	2	1		
KASUR			4	
KHANEWAL		1	3	
KHUSHAB			3	
LAHORE		1	2	
LAYYAH		1	2	
LODHRAN		3		
MANDI BAHAUDDIN			3	
MIANWALI			3	
MULTAN	1	3		
MUZAFFARGARH	3	1		
NANKANA SAHIB			4	
NAROWAL			3	
OKARA			2	
PAKPATTAN			2	
RAHIMYAR KHAN			4	
RAJANPUR		2	1	
RAWALPINDI			5	2
SAHIWAL			2	
SARGODHA			4	
SHIEKHUPURA		1	3	
SIALKOT			4	
TOBA TEK SINGH			3	
VEHARI			3	
Total	8	27	96	3

An inspection of Table 6 indicates that there is even more consistency within districts than was the case for grade 5. For example, in every district tehsils are classified in adjacent performance categories; that is, with those exceptions there is no instance within district where tehsils are classified in more than two categories except tehsil Fortabbas of Bahawalnagar District.

3.4 Summary of Cluster Analyses

The outcome of the cluster analyses emphasises the difficulty of generalising about student performance at different levels of aggregation of the administrative hierarchy in the Punjab. For example, if attention is focused only on district clustering the fact that there are schools in districts like D.G Khan and Muzaffargarh that performed at very low levels. Similarly, Table 1 does not reveal that districts like Rahim Yar Khan and Attock which, in general, performed at a low level had schools at 1st category level. It is clear, therefore, that there is great diversity across the Punjab at district level, and within districts by school, in terms of mean levels of student performance. This diversity should be taken into account in education policy analysis and planning in the Punjab.

SECTION 4

RECOMMENDATIONS

The secondary analysis of the grade 5 and 8 data reveals considerable diversity and complexity; hence, it is misleading to make generalised statements about performance levels for the Punjab as a whole, or for districts. This has been the case every year since 2006 when the new examinations system commenced. The following major recommendations are offered for uniformity among districts and for improving students learning level.

1. PEC carries out a secondary analysis of the examination results every year. The trends over time and contrasts over grouping factors, extending back to 2006 can be observed. These trends and contrasts are deemed necessary to be considered to optimize the efficacy of the investment required to improve Primary and Elementary Education in the Punjab.

2. Further field-based, research studies are recommended to uncover reasons for the wide diversity of learning outcomes across and within districts.

3. PEC, DSD, PMIU and districts education department need to collaborate to provide district level workshops to explain and interpret district level findings of the secondary analysis with a view to identifying those schools, and tehsils which are most in need of urgent intervention to improve education quality in primary and middle school.

4. There should be some formal mechanism to share information and to coordinate among major educational organizations for improving students learning.

5. PEC exam mean scores need to be used carefully for incentives and accountability purpose as other factors interfering school performance cannot be ignored. The comparison of performance may be made among similar institutions and districts.

6. Variation among districts means scores demands revision of policy and intervention decisions to narrow down the gapes.

7. The performance of districts by subjects varies so subject based teachers training for each district or group of districts may be designed.

8. The performance of public sector schools may be improved by empowering the heads of institutions, activating an accountability mechanism, and performance based promotions/selection.