

Kal Chachani

A Report on Student Interests and Aptitudes

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Leadership for Equity

Leadership For Equity is a systems change and research organisation that aims to help strengthen the effectiveness of public education systems. At LFE, the fundamental belief is that Public Education Systems are by definition 'gatekeepers' of equity; and effective and sensitive public education systems will ensure that quality education is provided to every child.

The team works across hierarchies within the public education system to:

CONSULT: Provide strategic and implementation consulting at a policy level to improve effectiveness of educational programs

ENABLE: Build capacity and support existing officials to operate with increased effectiveness and sensitivity

SCALE: Support high potential innovations to scale and institutionalise within the system

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Executive Summary

The Career Mitra Project equips students with the information regarding their interests, their aptitudes and opportunities available through interests tests, aptitude tests and an online directory following seven key interests areas of - Agriculture, Arts and Humanities, Commerce, Fine Arts, Health and Life Sciences, Technical, and Uniform Services. This report comprises of the analyses and interpretation of student interest and aptitude data based on the tests conducted by Shyamchi Aai Foundation (SAF), focusing on students who appeared for the State School leaving Certificate (SSC) exams in 2017-18 in five states- Goa, Gujarat, Madhya Pradesh, Maharashtra and Rajasthan. It also includes analysis of student interests in Maharashtra for the year 2016-17, availability of programmes for students in Maharashtra, as well as student aptitude data of students in Madhya Pradesh for the year 2017-18.

While exploring the kinds of patterns that students showcased within the seven interest areas across the five states the report finds the following:

- Commerce has the highest share of students across all the five states. It also has the highest share of female students across all the states. On the other hand, Fine Arts has the highest share of male population across all the states.
- Technical has emerged as the interest area with the least share of students across all five states. It also has the least share of male population across all the states. On the other hand, Health and Life sciences has the least share of female students.
- Overall we see that, Commerce is followed by Fine Arts, Agriculture, Uniformed Services, Health & Life Sciences, Arts and Humanities and finally Technical in the share of students interested in any given field. However, at the state level we observe that:
 - In Goa, students are the most interested in Fine Arts and are least interested in Arts and Humanities
 - In Gujarat and Madhya Pradesh, students are the most interested in Commerce and are least interested in Arts and Humanities
 - In Maharashtra, students are the most interested in Commerce and are least interested in Technical
 - In Rajasthan, students are the most interested in and are least interested in Health & Sciences
- Further, the insights in this report challenge conventional norms and gender stereotypes commonly held when we find that:
 - Female students are more interested in Agriculture, Commerce, Technical, and Uniformed Services
 - While male students are more interested in Arts, Fine Arts and Health & Life Sciences
- Between student interest data for 2016-17 and 2017-18 in Maharashtra there is a drastic increase in students interested in Commerce, along with Technical. Student interests have declined in Health and Life Sciences, Fine Arts, Uniformed Services and Agriculture. While share of students interested in Arts and Humanities has remained the same.

- Opportunities in Maharashtra are skewed towards the fields of Arts and Humanities, Technical and Health & Life Sciences and are strained in the fields of Agriculture and Uniformed Services
- In analysing the relationship between interests and aptitudes of a student in Madhya Pradesh, the report finds that there is no distinction with regards to the distribution of aptitude levels across the different interest fields.
- As much as 30% of the total student population who took the interest test do not score above the 50th percentile in any interest field.
- Correlation between all interests areas ranges between 0.82 and 0.31 and at most is the highest between - Health and Life Sciences and Technical, Technical and Uniformed Services, Technical and Agriculture and Agriculture and Commerce - and at most the least between - Fine Arts and Technical, Fine Arts and Uniformed Services, Fine Arts and Agriculture, and Arts and Humanities and Technical. Overall, we find that there are no clear patterns emerging within states or within population groups.

The report concludes with recommendations for future reference in order to make more refined inferential analyses. Following are the recommendations:

- Capturing other socio-economic variables for each student can enable the analysis to make causal linkages between student interests and other factors
- The need for a more sensitive tool for data collection in order to be able to yield richer results
- The report also questions the suitability of percentile scores and suggests that thresholds based on population norms be used as an indicator of single interests
- Ranking of the interests rather than grouping them as single and multiple interests
- Need to carry out a longitudinal study in order to understand whether the Career Mitra Project realised the objectives it set out to achieve

List of abbreviations

- SC: Scheduled Caste
- SAF: Shyamchi Aai Foundation
- SSC: Secondary School Certificate
- ST: Scheduled Tribe
- MNC: Municipal Corporation
- MP: Madhya Pradesh
- NP: Nagar Palika
- U-DISE: Unified District Information System for Education

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1. Introduction

The Career Mitra Project was approved by the Maharashtra Prathamik Shikshan Parishad (Govt. of Maharashtra undertaking) as a CSR initiative in schools under the Rashtriya Madhyamik Shiksha Abhiyan (RMSA) for rollout across Government and local body schools in Pune. SAF's Career Mitra Project is aimed at creating opportunities of career guidance for students writing grade 10 exams. Career Mitra project has been able to reach more than 81 Lakh students from five states - Gujarat, Goa, Madhya Pradesh (MP), Maharashtra and Rajasthan over the past five years. Through its results, this project effectively brings to attention of parents and children the myriad higher education and career options available for students after grade 10. The reality is that for most students options in higher education are limited to various standard pathways that do not necessarily follow their interest or aptitudes.

The Career Mitra Project, launched in collaboration with respective state governments, gives the students an opportunity to assess their interests and aptitudes, through the 'Kal Chachni' or interest tests, an aptitude test and be informed in detail about future opportunities available over an online platform. The test focuses on the following seven interest fields

- Agriculture
- Arts and Humanities
- Commerce
- Fine Arts
- Health & Life Sciences
- Technical
- Uniformed Services

The project has been launched in Maharashtra, Gujarat and Madhya Pradesh. Further, pilot tests have been conducted in Rajasthan and Goa. This report assess student interest data from these five states for 2017-18 academic year, student aptitude data from 2017-2018 academic year from MP, as well as data on institutes and students interests for 2016-17 academic year from Maharashtra.

1.1 Need for the Study

It is well established that sector defining reports can have a big impact on policy decisions, program design of NGOs and Government interventions. The ASER report published every year by Pratham is a sterling example of this. While that has galvanised elementary education stakeholders to rally around the need to strengthen foundational literacy and numeracy, SAF and LFE recognise that at a higher level, we must also draw attention to student's life trajectories after completing secondary education. One of the ways of approaching this is to focus on their interests and aspirations while mapping it to the opportunities that are available for them after secondary education.

Data about student interests from a sizeable chunk of the student population is invaluable for policymakers at the post secondary level, education service providers and other stakeholders. This is

necessary to be able to develop educational and vocational opportunities as per emerging trends of student interests in the respective geographies. It is also important to check for whether the current offerings are indeed aligned to the student interest trends. In order to serve as the first step of what can grow to be a sectoral indicator, this preliminary study was commissioned by SAF in collaboration with LFE.

1.2 Structure of the Report

The following section, Section 2 begins by discussing the methods used in this study and the process followed during analysis. Here we also highlight some important caveats regarding the data analysis presented in the report. Section 3 briefly describes the background of the Career Mitra project and the evolution of the Kalchachani tool. The next section, Section 4, focuses on presenting findings from student interest data from 2017-18 academic year as per each interest field. Here the overall key patterns as well as gender based patterns concerning each interest area is described. This section ends by discussing interest patterns among students with multiple interests. Beyond this, the report in Section 5 also covers patterns found in each of the five states going upto the district level. Here we particularly focus on Maharashtra State, where data from 2016-17 academic year is compared with student data from 2017-18 academic year. Further, this section also discusses data on the number of institutes compared to number of students with an interest in the field. Section 6 takes a different perspective on the data to further enrich the analysis. Finally Section 7, ends the report with conclusions and recommendations. The report also contains extensive annexures in an accompanying document to be referred when required.

2. Method

Datasets Analysed

The inferences presented in this report are based on the analysis of the following datasets:

- Student interest data from interest tests conducted in five states - Goa, Gujarat, Rajasthan, Madhya Pradesh and Maharashtra - for the students writing the secondary school certificate (SSC) exam¹ in the academic year 2017-18.
- Data from interests test conducted in Maharashtra for the students writing the SSC exam in the academic year 2017-18.
- Data from unified district information system for education (U-DISE)² database for secondary schools in Maharashtra.
- Data on students aptitude test conducted in Madhya Pradesh for the students writing the SSC exam in the academic year 2017-18
- Data on institutes and programmes available to students in Maharashtra post secondary education.
- Reports on interest and aptitude published by SAF for the year 2017-18.
- Semi-structured Interviews conducted with two Key members from the SAF team.

The datasets analysed as part of this report have entirely been sourced from SAF, other datasets were included have been explicitly mentioned.

Scope of the Report

In total this report covers interest data on **28,21,031 students across five states** for the year 2017-18 and aptitude data for 4,09,000 across Madhya Pradesh from the same year. For each student the interest and aptitude test captures the percentile score based on a raw score of the student. Thus the analysis presented herein is a descriptive exploration of the data consisting, most importantly and amongst other things, of scores in percentiles of all students who have been tested with the SAF's interest test in the states of Maharashtra, Goa, Gujarat, Madhya Pradesh and Rajasthan.

This report particularly focuses on Maharashtra and thus additionally draws on interest data for 16,67,000 students in Maharashtra for the year 2016-17, U-DISE data on 22,604 schools in the state³ and data on institutes and programmes available to students in Maharashtra to enrich the analysis. The data on availability of programmes in the state has been taken from the data repository present with SAF that was collected from education directorates in 2016.

¹ SSC exam also known as the matriculation exam is a completion exam of secondary education to be written by grade 10 students. These exams are conducted by each State Educational Board.

² U-DISE is a centralised database that records vital information on schools such as infrastructure, access, participation, drop-out rate etc.

³ Of all the schools in the state, only 22,604 schools fall within the purview of this study.

Process followed in Analysis

For each student, apart from having seven percentile scores for seven interest fields, data on gender (female or male), state as well as the district the student resides in was used. Only in case of Maharashtra and Madhya Pradesh additional interest and aptitude data, respectively, was used in the analysis. A vast majority of the analysis involved splicing the available data along different axes of query: the seven interest fields, the five states the student population represents, their district of residence, the number of interests of a student, gender and a few others. A few distinct steps followed in this process were:

- a. Finding the highest score of a student, i.e., the student's interest field/s
- b. Enumerating the number of such interests a student has, i.e., single/multiple interest
- c. Finding the total number of students along a line of query, filtering through the data
- d. Creating readable output - charts, tables, etc.

The data analysis was carried out in RStudio, a “free and open-source integrated development environment (IDE) for R, a programming language for statistical computing and chartics”⁴.

The raw data presented for this study seemed to not abide by a single established schema: of the few quirks of the data from different states, one was the way students' genders was represented - while it followed a regular “Male/ Female” structure in some states, it was “1 / 2 / 3” in another. Thus data fields for all five states were not uniform or standardised. Further, data for Rajasthan state contains only 9811 entries, thus conclusion from its analysis may not be representative of the trends in the entire state.

Maharashtra Deep-dive

Particularly for Maharashtra, this report also compares data on district wise student population with the availability of programmes post grade 10, within that district. As part of the Career Mitra Project, Mahacareermitra web portal hosts information on the institutes and programs available to students. This information sourced from respective directorates is not comprehensive but provides us with a fair idea of availability of opportunities for students in any district. Each interest wise section (Section 5.4.3) discusses this data as relevant. Student populations within each district are divided by the number of programs⁵ available in that district concerning the given interest area.

Beyond data on student interest, the current system instituted by SAF does not capture data on any other socio-economic indicators against each student. However, in order to better understand these patterns school index numbers have been mapped against school U-DISE numbers. While this does not provide us with more detailed information about each student, it does provide us with vital information regarding the school a particular student may attend. Thus, from the U-DISE data we are better able to understand if the student attends a school in Urban or Rural areas, if the school is a government school

⁴ For more information see: <https://www.rstudio.com/>

⁵ Total number of programs within a district here refer to the sum of all trades and combinations of courses offered by different institutes. For the purposes of this study a program in a district is understood as courses and trades available, as shared SAF.

or a private aided school or a private school, as well as further information regarding the school management type. In order to better understand the student interest among students from minority groups, we have additionally focused on students in Social welfare schools⁶ and Tribal welfare schools⁷.

Beyond these categories, student interests can be linked to multiple variables presented in the U-DISE data. For instance information regarding availability of computers in schools can be linked to student interests. However many ways the U-DISE and student interest data can be understood, its inferences remain inconsequential to the study without a guiding hypothesis. Therefore in this report we focus on very limited aspects, as mentioned above. Further, by linking student information to information regarding schools we do not have an exact picture about the student's background but only an approximate one. Hence, as a caveat, we feel it necessary to mention that, given the nature of the data used in this study, inferences presented in section 5.4 may not be comprehensive in themselves.

Operational Definition of 'Student Interests'

A student is said to have an interest in a field if s/he obtains her/his highest score in that particular field of interest in Kalchachani.

Note that highest, here, is from among the set of seven scores the student receives in the tests, and not from amongst the scores of the entire state's student population. Each student thus has a unique highest score, and frequently this score repeats from within the set of seven scores the student receives. In such cases, the student is said to have multiple interests - in each of the interest fields against which s/he has this highest score. **The analysis presented in this report describes students with a clear single interest unless otherwise specified.** In saying that a given percentage of students have an interest in a particular field, we are attempting to describe the percentage of students in the given student population who show a clear single interest in the field.

Margin of Error

Owing to the sheer number of students that represents the data and subsequently in the analyses, most descriptions of data - in percentages, are rounded-off to a single or double digit/s - introduces a minimal error. This stands true of any data presented in the percentage format due to the inherent need to shorten the number form which otherwise presents a formidable representational challenge.

Eg.: 3,33,338 of 10,00,000 students is hereby represented as being 33.33 percent (or 33.3%) of the student population, while the true number would be 33.3338%. This representation introduces an error while trying to (back-)calculate the number of chosen students. 38 (or 338) students are left out of the selection group. Since the questions surrounding these descriptions do not necessitate exact numbers of said students, and trends are what are of primary concern, these approximations do not affect the verity of the report in any detrimental way.

⁶ By definition, social welfare schools are residential schools run by the Social Justice and Special Assistance Department that admit students with a Scheduled Caste (SC) certificate.

⁷ By definition, Tribal welfare schools are residential schools run by the Tribal Development Department that admit students with a Scheduled Tribe (ST) certificate or equivalent tribal backgrounds.

3. Career Mitra Project

3.1 Introduction

The Career Mitra Project is based on the Career Magic Framework by SAF which is based on the idea that one's career is linked to a person's excellence, happiness and all round growth. It is an intersection of one's interests, capabilities and opportunities available to them. To this end, the Career Mitra Project uses an interest and an aptitude test developed in partnership with the University of Pune. The tests are designed to be administered on 10th grade students, as the information regarding one's interests and aptitudes can enable students to make better choices for higher education. An online portal, made accessible to the students after the test, allows them to download their results and access information regarding institutes, courses, and specializations.

The interest test within Career Mitra Project, called 'Kal Chachni' in Maharashtra, tests students along seven dimensions of interests - Agriculture, Arts and Humanities, Commerce, Fine Arts, Health & Life Sciences, Technical and Uniformed Services. These seven fields were chosen after rigorous analysis and discussions with experts from respective fields, psychology and education. These domains are a realistic reflection of the immediate options available for higher education for grade 10 students in India. Each of these domains encompass a large number of fields and career specializations available to students. Table 1 below, provides details of the same.

Table 1: Micro Interest Fields

Sr no.	Interest Field	Micro Fields
1	Agriculture	Animal Farming, Horticulture/ Floriculture, Agro Businessman, Agro Science, Farming, Agro Technology, Agricultural Research, Agro Tourism, Organic Farming, Dairy Farming
2	Arts and Humanities	Political Science, Sociology, Literature, Philosophy, Economics, Journalism, Sociology, History, Psychology, Languages, Geography
3	Commerce	Accountancy, Taxation, Banking, Cashier, Purchase Manager/ Sales, Businessman/ Sales, Finance, Business Analyst, Treasure, Business Development, Entrepreneur, Costing, Auditing, Travel and Tourism, Budget, Retail, Insurance
4	Fine Arts	Artist, Fashion Designer, Singer/ Musician, Sculpture, Acting/Theatre, Flower Arrangement, Interior Designer, chartic Designer, Film Making, Cooking, Food Styling, Architecture
5	Health & Life Sciences	Nursing, Medical Research, Pharmacy, Fitness Trainer/ Nutrition,

		Biotechnology, Community Health Worker, Ayurveda, Doctor, Radiologist/ X-Ray Lab Technician, Surgeon, Psychiatry
6	Technical	Instrumentation, Mechanical, Physics, Electrical, Pure Science, Astronomy, Environmental Science, Engineering
7	Uniformed Services	Navy, Defence Services, Air Force, Police, Fire Fighter, Paramilitary, Military, Traffic Police, Security, Home Guard

Note: Micro-fields presented here are not exhaustive.

Interest Tests

Through Kalchachani, students are tested for and provided information about the broader domain within which their interest falls. The test contains 20 questions, randomly arranged for each domain, making a total of 140 questions for the seven interest fields. For each question the student is required to rate it on a four point scale - Very much, Much, Little, Not at all. Based on the weightage assigned to each response, a total score is calculated and converted into a corresponding percentile score. The field with the highest score is the student's field of interest according to the test. As is seen in the data this may include one or more fields of interest. The percentile scores are based on a pilot conducted including male and female student from different parts of Maharashtra studying in English and Marathi medium. Based on the results from the pilot, raw scores were converted into percentiles for female and male students separately.

Aptitude Test

The Aptitude test, on the other hand, tests for aptitudes along verbal, logical, spatial, and numerical aptitudes of a student. The test has been developed in three different languages - English, Marathi and Hindi. Similar to the interest tests, based on a pilot for a large number of students, as many as four lakh across Maharashtra, raw scores have been converted into percentile scores. Based on this the scores for each student is classified as Excellent, Above average, Below average and Needs improvement. The final test results handed over to the student interprets scores across the four aptitudes and describes the required aptitudes if the student must follow her/his interest. The result further describes various options the student has in order to follow the field of her/his interests. If the student shows two or more interest, the result provides required information for the same.

Evolution of Kal Chachni

Origins of the Idea

In 2011, Ms. Sheetal Bapat, Founder director, SAF, administered the Jnana Prabodhini 'I,am' test⁸ on a grade 10 student in an attempt to help her identify her interest areas. This would, in turn, enable her to make informed choices about the courses she wanted to pursue further. This was the idea behind developing a test that could 'measure' students' interests to enable them to make informed decisions about their career paths.

⁸ For more information see: <http://www.jpip.org/pdf/psychometrics/I-AM.pdf> and <http://www.jpip.org/index.php?r=site/page&view=product>

As a culmination of various factors such as the above mentioned, Shyamchi Aai Foundation (SAF) started looking for subject experts to envision innovative ways of career guidance. Dr. Shriram Geet, a well known career guidance counselor, was consulted to design a framework of career guidance that could help students identify their potential interest areas.

Figure 1: Evolution of Maha Career Mitra Project

2013-14	2014-15	2015-16	2016-17	2017-18
1,957 PMC students	2,499 PMC students	16 lakh Maharashtra students	166,745 Maharashtra students	17,36,104 in Maharashtra 5,41,219 in MP 5,18,176 in Gujarat 1,858 in Goa 9,811 in Rajasthan
Paper and pencil Aptitude test developed by Jnana Prabodhini	Paper and pencil IQ test developed by IVGS	Offline Computer test Interest test (5-field inventory) developed by IVGS	Offline Computer test Interest test (7-field inventory) developed by SAF	Offline Computer test and Career Mitra App, Interest test (7-field inventory) developed by SAF and Aptitude test developed by SAF (only in MP)

Piloting the Idea

Finally, by 2013, a group of 2000 PMC schools were selected and the ‘I,am’ aptitude test was administered on the class 10 students of these schools. This particular test was selected because it was the only tool available in Marathi at that time. However, the children found it long and tiresome. Since it happened to be pen-paper test, its processing proved to be an onerous task. Upscaling such a test to a wider set of students therefore seemed to be next to impossible. When the results of this administered test were analysed, it was found that almost 70% of the students had their interests aligned to vocational courses. However, conversations with these students and their teachers brought to light their lack of knowledge regarding these courses, the institutes offering them, and of students' future prospects.

Therefore, SAF compiled information about the institutions offering various kinds of vocational courses, and handed it over to the schools. This data was matched against individual students whose test results showed a leaning towards vocational courses. Nevertheless, when the same students were backtracked after their higher secondary admissions, it was found that there was hardly any compliance to the recommendations made by SAF.

Engaging the Government

When the SAF team checked on the same students an year later, it was found that around 40% of the 2000 students who were tested had dropped out of the respective courses in which they had enrolled themselves after grade 10. SAF then approached the Government of Maharashtra with these findings and presented them before the Ministry of Education in 2014.

The state government, taking note of these findings, declared career guidance compulsory for all 10th standard students. Kal Chachni took on its nascent form hereon when the government partnered with SAF to carry out a career guidance programme for the entire state of Maharashtra. A model had to be developed that was both sustainable and scalable. SAF joined hands with the Institute for Vocational Guidance and Studies (IVGS) in order to develop a test that could be administered for all students in grade 10 in SSC board. For the first time, such a test was rolled out in 2015, checking for children's interest areas across seven interest fields.

Creation of Interest Test, Aptitude Test and Maha Career Mitra Portal

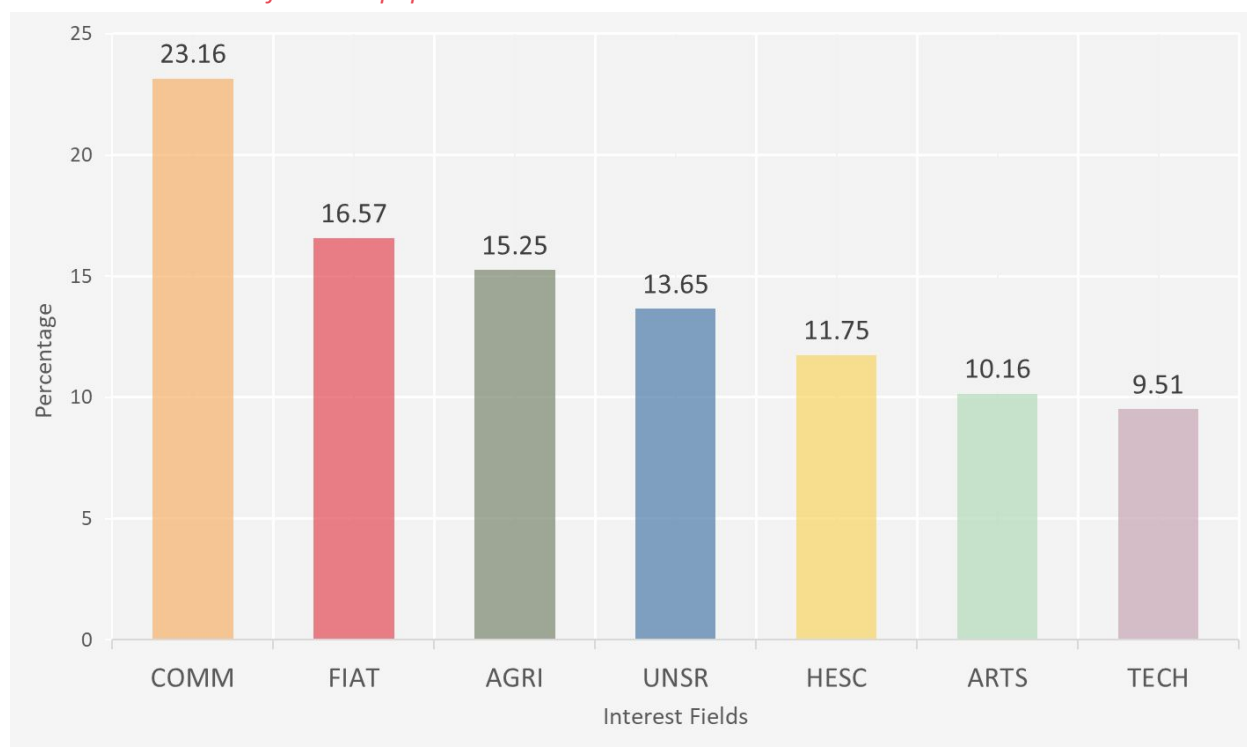
The tool used in 2015 was the same one IVGS had been using for about 50 years. Therefore, many of the questions were irrelevant to the current context of students, as voiced by the media and others. It was decided that for 2016, a new tool was to be developed in partnership with University of Pune. Alongside, it was also decided that two more interest areas - Agriculture and Uniformed Services are to be added to make it more relevant to the current context. Subject experts on each of the seven fields were consulted to create a new questionnaire for the tool. The new tool was sent for screening to a board at Balbharati and after a few rounds of discussion, the tool was revised and a pilot was carried out. As a result the Kal Chachni or interest test as well as an aptitude test was created.

The interest and aptitude tests were first administered to students in Maharashtra through an offline test. As the project progressed into other states of MP and Gujarat attempts were made to administer the test through an app and make the test results available to students to download over the Career Mitra portal. The portal contains vital information on various career choices, interest fields, specializations and available courses. By equipping the students with information about their interests, abilities and opportunities the Career Mitra Project aims to enable students to make better decisions regarding their future.

4. Comparing Interests

The interest test was administered in five states - Goa, Rajasthan, Gujarat, and Madhya Pradesh, for the academic year 2017-18. Chart 1 provides an overall glimpse of the percentage share of students against seven interest fields who chose the same as their area of interest.

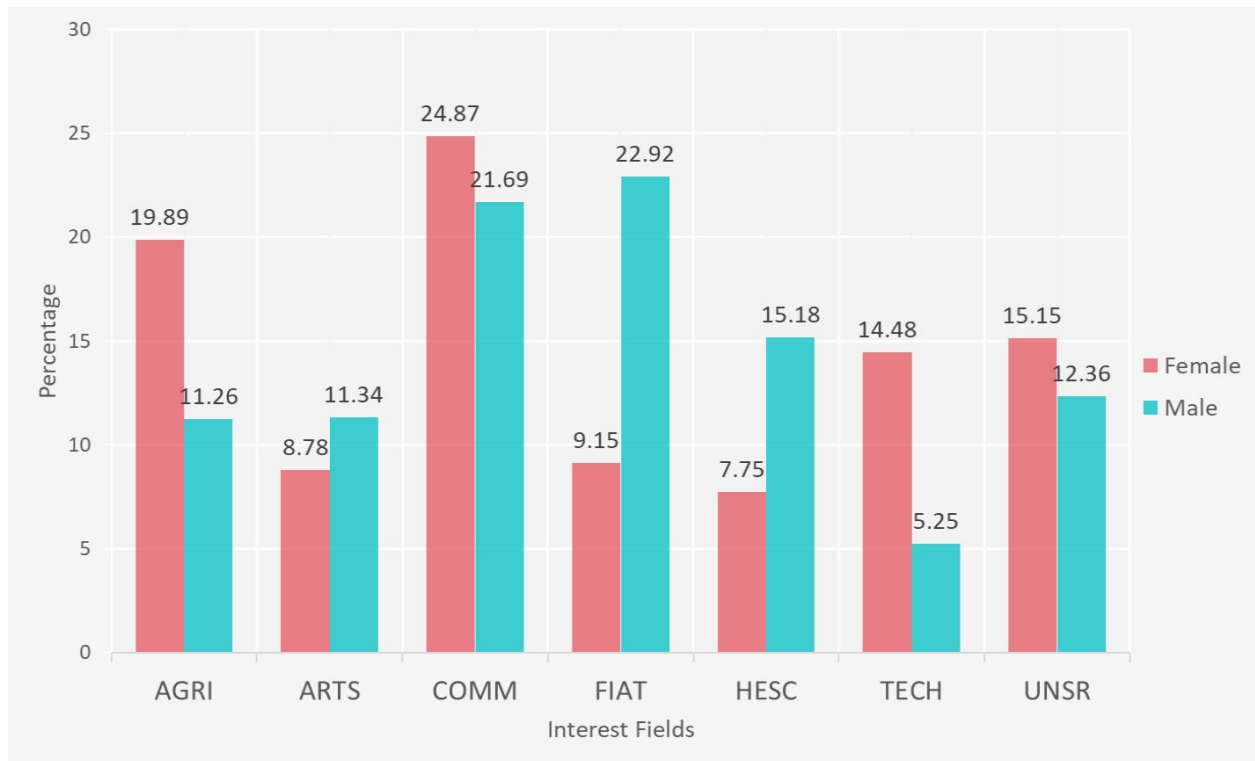
Chart 1: Distribution of student population across interests



This chart shows interests arranged in descending order of percentage share of students with single interest. Eg. 23.16% of students with single interest show an interest in Commerce.

- **Highest:** Commerce with a share of 23.16%
- **Lowest:** Technical at 9.51%
- The gap between Commerce and Fine Arts is the widest at 6.5 percentage points. For all the other interest areas, such a difference hovers around 1-2 percentage points with the least being 0.65 percentage points between the interest areas of Arts and Humanities and Technical.
- Commerce as an interest area is ahead of all the other areas in terms of student share by a margin higher than any other interest area.

Chart 2 : Gender-wise distribution of student population with single interest



This chart shows the percentage of female and male students interested in the seven interest fields.

- **Female students:** Highest (24.87%) share of them have identified Commerce as their area of interest with the lowest being Health & Life Sciences (7.75%)
- **Male students:** The largest section of male students finds their area of interest in Fine Arts (22.92%) and it is least in the case of Technical (5.25%)
- **Female students tend to be more interested in Agriculture, Commerce, Technical and Uniformed Services, as compared to the male students.**
- **Male students tend to be more interested in Arts, Fine Arts and Health & Life Sciences.**
- The male-female discrepancy is the highest for Fine Arts with a gap of 13.77 percentage points.
- The male-female discrepancy is the lowest for Arts and Humanities and Uniformed Services, with a gap between 2-3 percentage points.

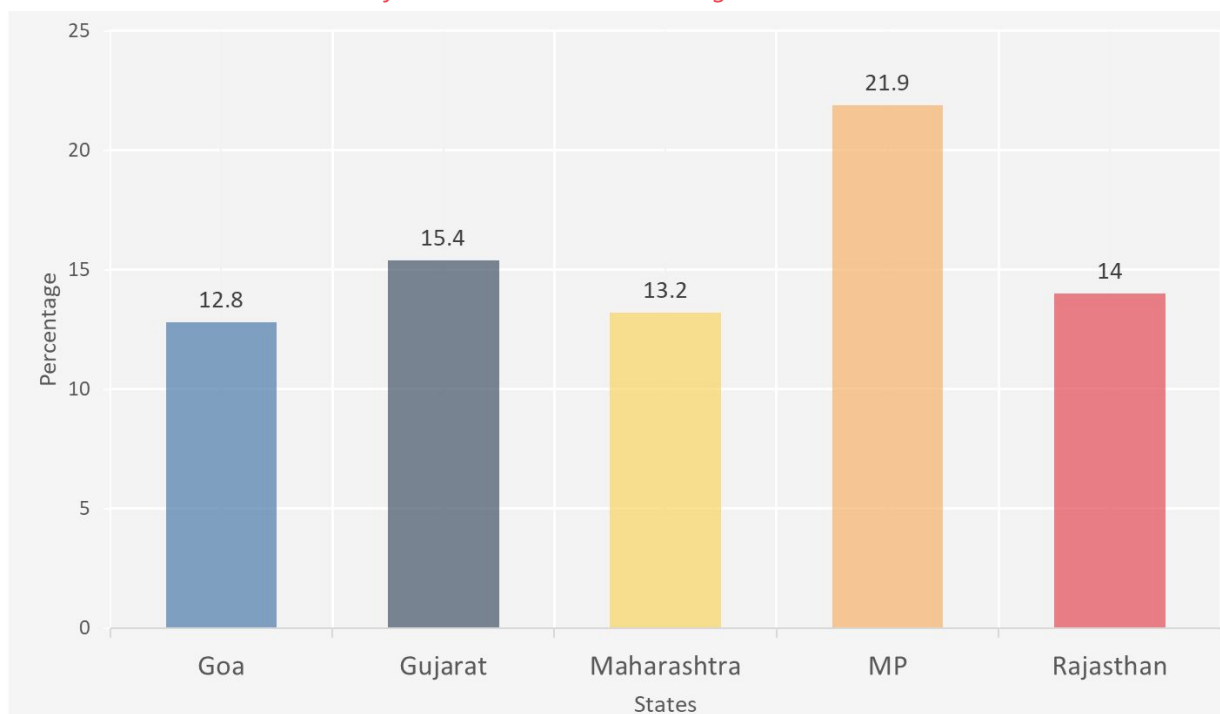
4.1 Agriculture

Agriculture was included as an interest field in Career Mitra Project to identify student interests leaning towards higher studies in areas such as horticulture, floriculture, fisheries, forestry, Agri-biotechnology, animal husbandry etc. The following paragraphs explain in detail the various trends that students who chose Agriculture as their single interest area showcase across different geographies and gender.

Overall Trends

- Overall 3rd highest share at 15.25% (Chart 3)
- Comprises of a significantly higher amount of female students (19.8%) than male (11.26%)
- 3rd highest gender discrepancy of 8.63 percentage points (following Fine Arts and Technical).

Chart 3: State-wise distribution of students with Interest in Agriculture



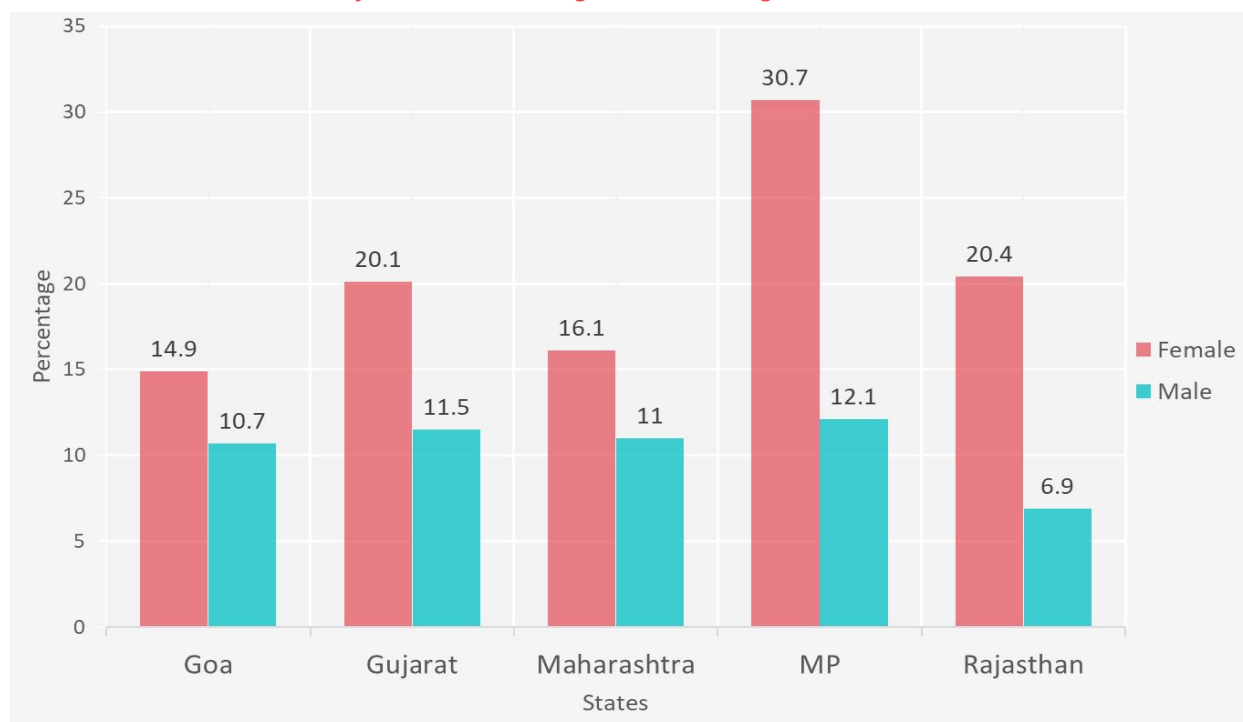
This chart shows the percentage share of students with single interest in Agriculture across states.

State-wise Trends

- **Highest:** Madhya Pradesh (21.9%)
- **Lowest:** Goa (12.8%)
- **Highest Difference:** between MP and Gujarat 6.5 percentage points. The same between all the other states hovers around 1 percentage point.
- **Skew:** Total student share with single interest in Agriculture is skewed towards MP, while considering the entire student population.

Gender-wise Trends

Chart 4: Gender distribution of students with single interest in Agriculture



This chart shows the percentage share of male and female students with single interest in Agriculture

- Female students are more interested in Agriculture compared to male students in all the five states.
- **Distribution:** Percentage share of male students is more evenly distributed throughout states than females.
- **Gender difference:** Highest in MP (18.5 percentage points), lowest in Goa (4 percentage points)
- **Highest share:** The share of both male and female students with Agriculture as their interest area is the highest in MP.
- **Female share:** MP, has highest with 30.7% female students choosing Agriculture. This is at least 10 percentage points greater than the state with the second highest share of female students with interest in Agriculture- Rajasthan at 20.4%.
- **Male share:** MP has highest share with 12.1% male students. The highest difference here is between Rajasthan and its succeeding state of Goa at 3.8 percentage points.

Key Conclusions

- **Overall even state-wise distribution:** All states have a fairly even distribution of total student population interested in Agriculture, except for MP. The percentage point difference between all the other states with its immediate successor is at less than 1.5 percentage points whereas MP and state with next highest share is greater than 6 percentage points.

- **Even distribution of male students:** The male students interested in Agriculture are evenly distributed across all the states (average difference being 1.3 percentage points). As opposed to this, there is a higher concentration of female students in the state of MP in relation to female students in other states.
- **Higher proportion of female students:** In all five states, female students are more interested in Agriculture than male students. This is true only for Agriculture across all the seven interest fields.

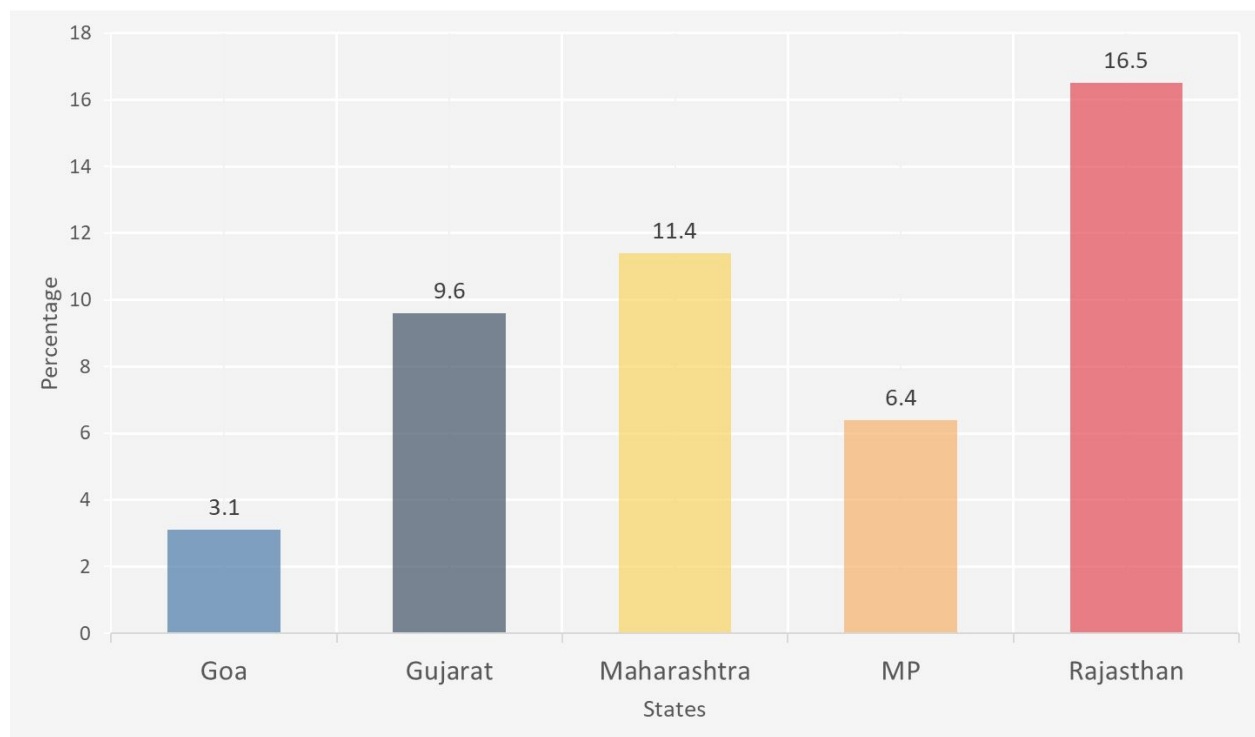
4.2 Arts and Humanities

Arts and Humanities as an interest area in the Career Mitra framework aims at identifying student interests leaning towards higher studies in subject areas of History, Geography, Literature, Sociology, Economics, Psychology, Foreign languages etc. The trends that came about in this subject area from the 2017-18 interest test conducted across the five states are discussed in detail below.

Overall Trends

- Second least preferred area of interest (Chart 5)
- Comprises of higher percentage of male students (11.34%) than females (8.78%).
- Gender difference is of 2.5 percentage points, the least of such difference across all the interest fields.

Chart 5: State-wise distribution of students interested in Arts and Humanities

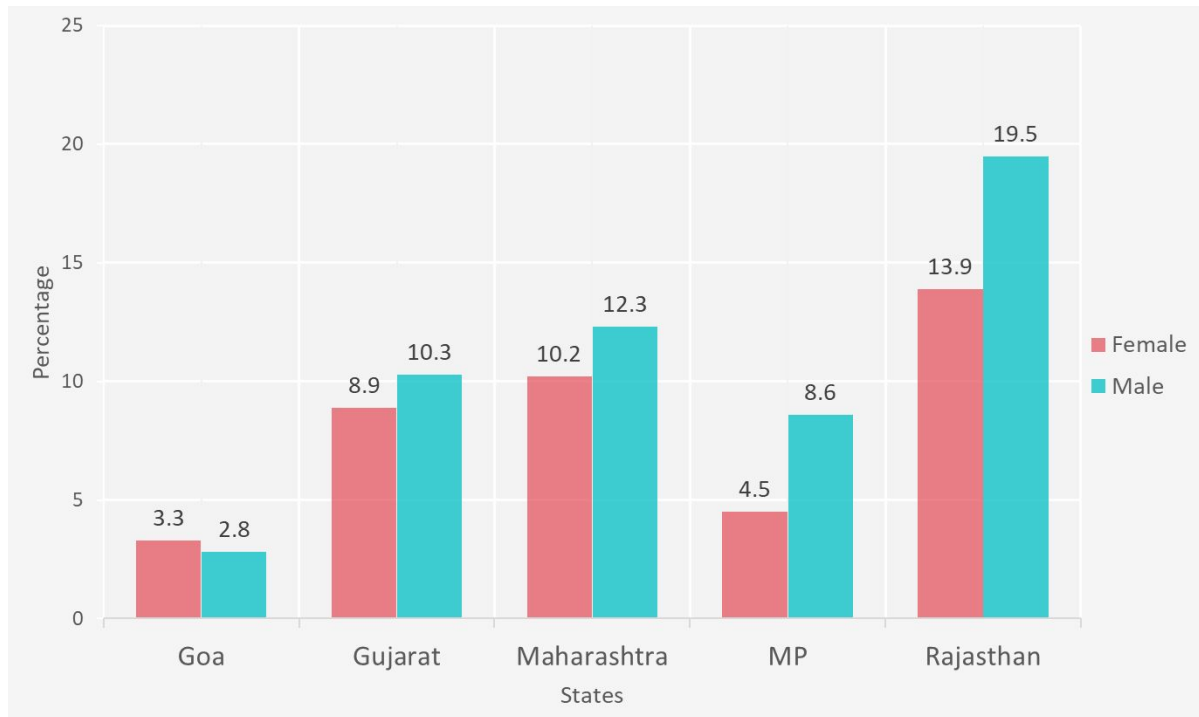


- **Highest:** Rajasthan (16.5%)
- **Lowest:** Goa(3.1%), lowest recorded in any interest area across states.

- **Highest difference:** Between Rajasthan and Maharashtra at about 5 percentage points.
- **Skew:** Overall, only two states, Rajasthan and Maharashtra have a percentage share of students greater than 10% who have identified Arts and Humanities as their interest area.

Gender-wise Trends

Chart 6: Gender-wise distribution of students interested in Arts and Humanities



- Higher share of male students than females, in all states except Goa. Even so, females outrun male students only by 0.5% in Goa.
- **Highest share:** Highest share of both male (19.5%) and female (13.9%) students is in Rajasthan
- **Lowest share:** Goa has the lowest share of students overall (3.1%) as well as when dissected by gender, with only 2.8% of male students and 3.3% of female students of the state choosing Arts and Humanities as their single interest area.
- **Distribution across states:** The order of states when arranged in descending order of percentage share of overall students with an interest in Arts and Humanities is the same as that when arranged separately according to the share of male students and female students. In other words, the state that has the highest share of students overall with single interest also has the highest share share of male and female students when taken separately.
- **Gender difference:** Highest in Rajasthan (5.6 percentage points) which also has the highest share of both female and male students. At less than 0.7 percentage points, the gender discrepancy is least in Goa.

Key Conclusions

- **Least gender discrepancy:** This is the interest area with the least gender discrepancy at the overall level across all the interest areas.
- **Higher share of male students:** Across all states, the percentage share of male students who have identified Arts & Humanities as their interest is higher than that of females, except in Goa.
- **Lowest share in Goa:** The proportion of female and male students with single interest in Arts and Humanities in Goa is the lowest of such share for both the genders across all the states and all the other interest areas.

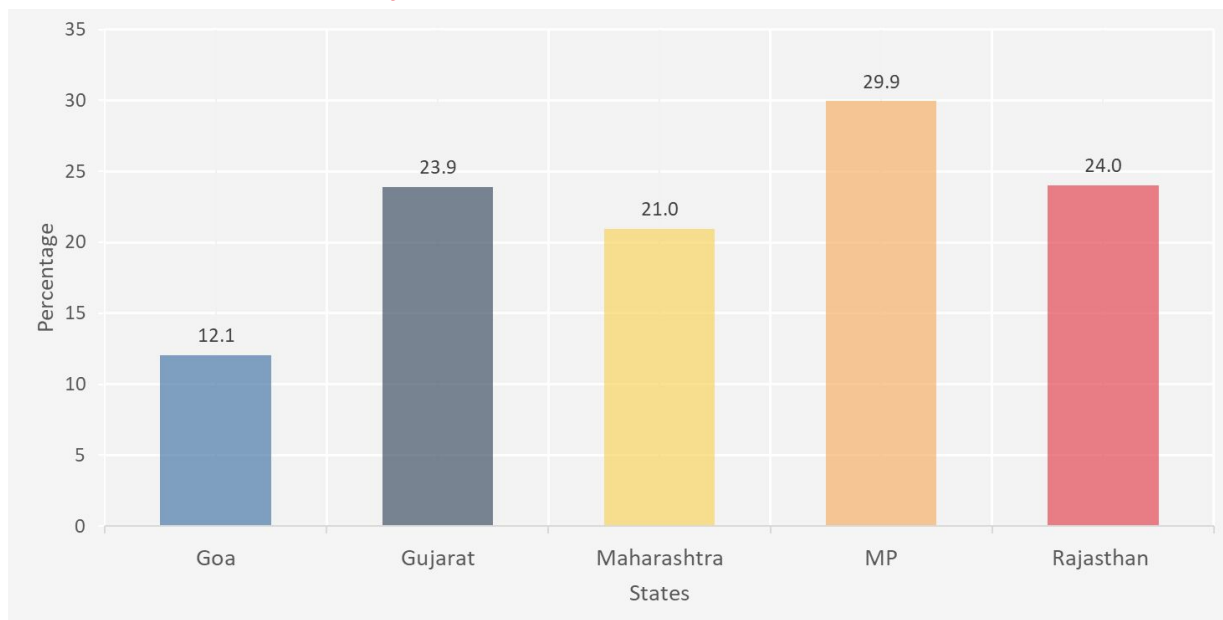
4.3 Commerce

Commerce as an interest area helps identify students who are interested in pursuing further studies in the fields like taxation, banking, sales and marketing, retail management, business development, finance etc. The various patterns associated with this interest area at the level of state and gender of the students is discussed below

Overall Trends

- Most preferred interest area across geographies and gender (23.16%)
- **Female share:** Interest field with maximum number of female students (24.87%)
- **Male share:** Second highest share of male students after Fine Arts (21.69%)
- **Gender Difference:** A higher proportion of female students have an interest in Commerce as opposed to male students with a difference of 3 percentage points.

Chart 7: State-wise distribution of students interested in Commerce



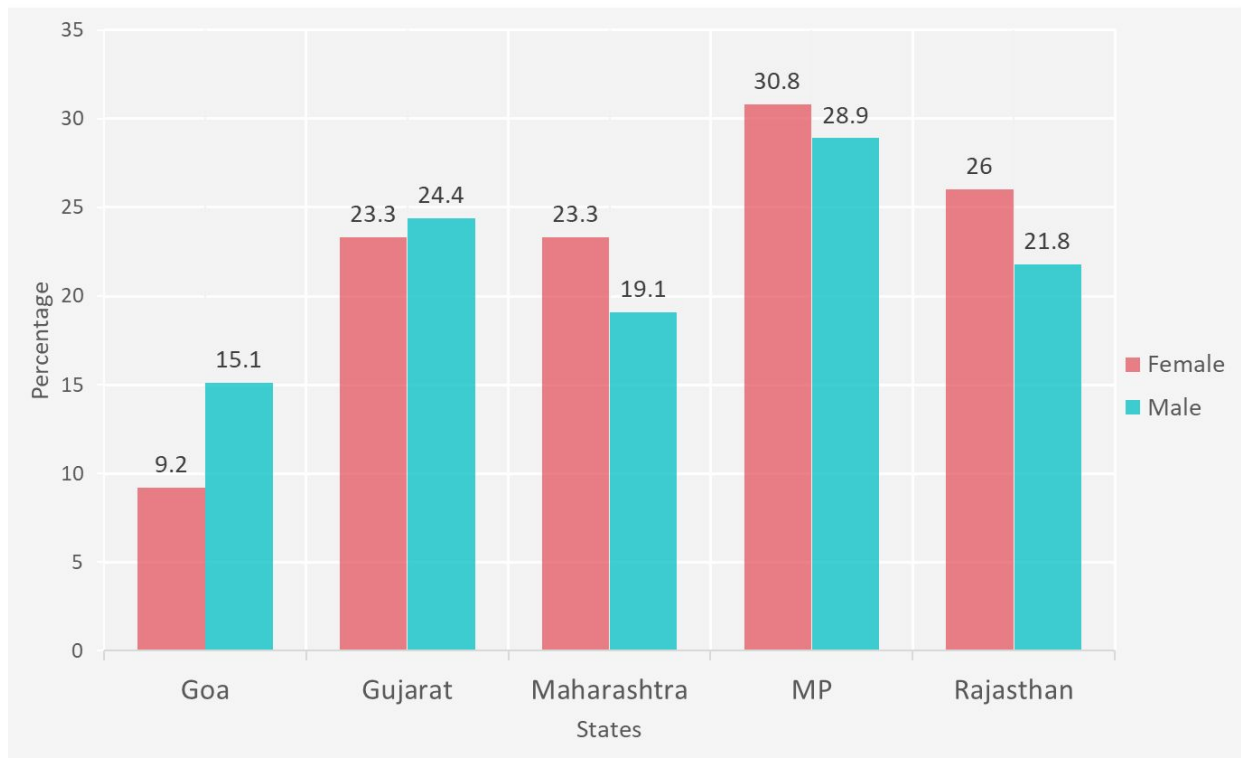
State-wise Trends

- **Highest:** Madhya Pradesh (30%)
- **Lowest:** Goa (12.1%)
- **Distribution across states:** In all the states with the exception of Goa, students with an interest in Commerce are more than 20% the student population.
- **Difference:** The widest gap that exists between any two states is between Maharashtra and Goa (the two states with the lowest share of students) at 8.9 percentage points.

Gender-wise Trends

- A higher share of female students (24.87%) are interested in Commerce compared to their male counterparts (21.69%).
- In all states except Goa and Gujarat there is a higher proportion of female students with interest in Commerce exceed male students.

Chart 8: Gender-wise distribution of students with an interest in Commerce



- **Female share:** Highest share of female students across interest areas (24.87%)
- **Male share:** Second highest share of male students across all the interest areas (21.69%)
- **Highest share:** MP has the highest percentage share of both female (30.8%) and male students (28.9 %). This is the second highest share of both male and female students marked for a particular interest area across all the interest areas and geographies.

- **Lowest share:** Goa, which has the least share of students interested in the field overall, also has the least share of male (15.1%) and female (9.2%) students taken separately.
- **Distribution across states:** Both female and male students across all the states tend to show a percentage share higher than 20% with the exception of Goa.
- **Gender difference:** Widest in Goa at 5.9 percentage points. It is lowest for the state of Gujarat at 1.1 percentage points.

4.4 Fine Arts

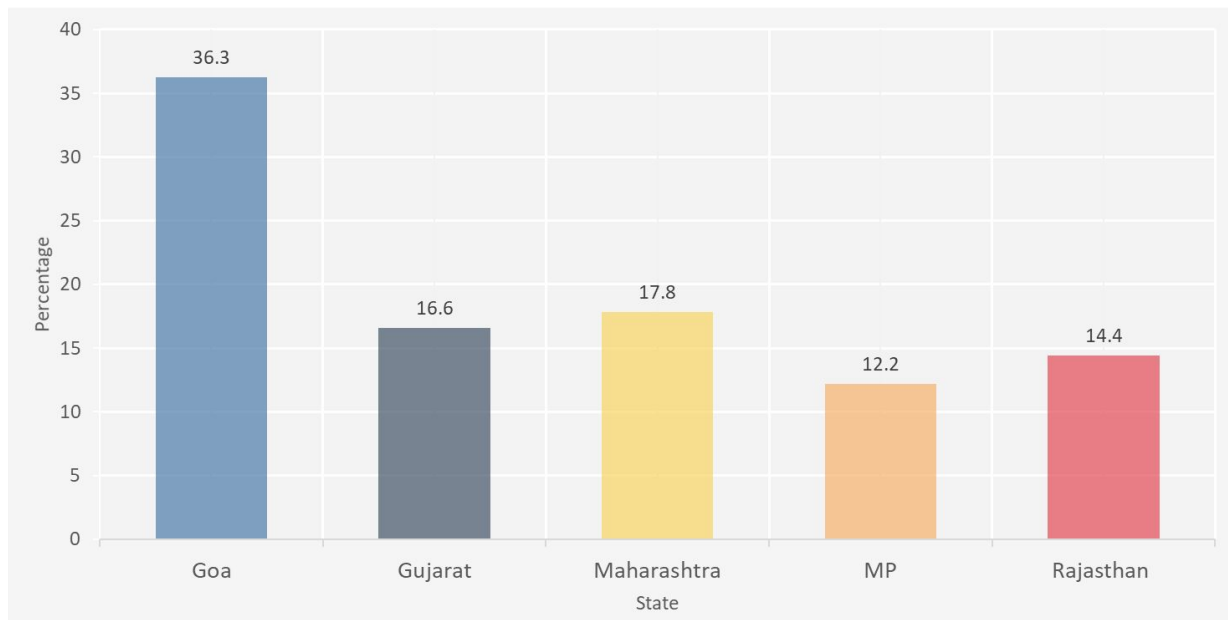
Fine Arts as an interest area aims to identify students who are interested to pursue higher studies in visual arts, performing arts, animation, multimedia etc.

Overall Trends

- Second most preferred interest area across gender and states (16.57%)
- **Highest male share:** At 22.92%, Fine Arts has the highest share of male population across all interest areas.
- **Gender difference:** As opposed to this, only 9% of the total female population is interested. This makes the gap between the share of female and male population with single interest in Fine arts at 13.7%, widest across any given interest area.

State-wise Trends

Chart 9: State-wise distribution of students interested in Fine Arts

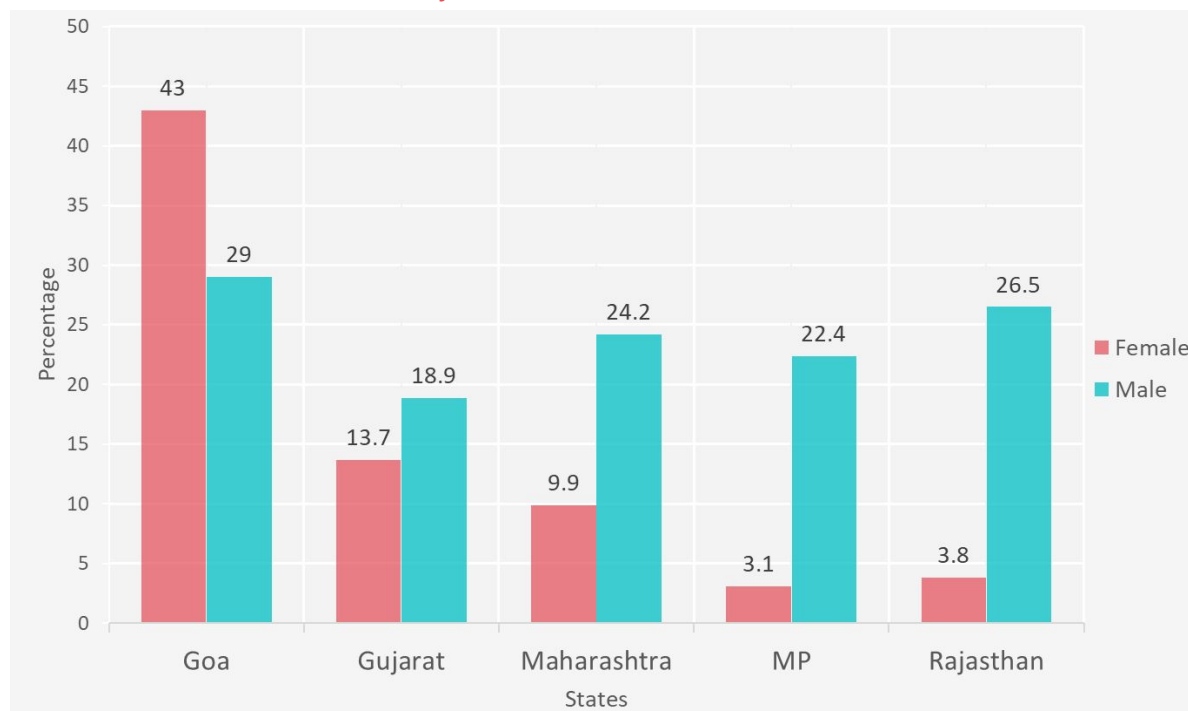


- **Highest :** Goa (36.3%). Maharashtra, following Goa has a share of 17.8% students, which is less than half of that in Goa.
- **Lowest:** Madhya Pradesh (12.2%)

- **Skew:** All the four states except Goa have a share less than 20%, i.e, less than half the share in Goa (36.3%) . While the distribution of students with single interest in fine arts is skewed towards Goa, within the remaining four states it has fairly equal distribution falling within the range of 10% to 20%.

Gender-wise Trends

Chart 10: Gender-wise distribution of students with interest in Fine Arts



Overall trends:

- **Males are more interested:** The higher preference for Fine Arts as an interest area by male students compared to female students stands true for all the states, except in the case of Goa.

Male share:

- **Highest share in Goa:** Goa has the highest share of male students across all the states at 29%. This is the only state where there is a higher share of females than males. This is the highest share found for male students in any given interest area across states.
- **Even distribution:** Males showcase a fair distribution across states with their percentages almost falling between 20%-30%.

Female share:

- **Significantly skewed distribution:** towards Goa (43%) followed by Gujarat at a share of only 13.7% of female students. Here the discrepancy between Goa and Gujarat is at 28.3 percentage points which is the highest of such difference across all interest areas and states.
- **Highest:** Goa (43%) is the highest such share recorded for females across geography and interest areas.
- **Lowest:** MP (3.1%) which is also the lowest share of females found for any interest area across geography.

Gender difference:

- The gender difference is the highest for the state of **Rajasthan** with a gap of 22.7 percentage points. This is the highest recorded difference between male and female share of a particular interest. The least of such difference is seen in Gujarat at 5.2 percentage points.

Key Conclusions

- **Highest share** : Fine Arts has the highest share of both male (29%) and female (42%) students recorded for a given interest area across geography.
- **Female skew towards Goa**: Female students are highly skewed towards Goa. While Goa has a share of 42% of female students with single interest in arts, all the remaining states have a share that is less than 15%.
- **Lowest female share in Rajasthan**: The females in Rajasthan have the lowest share recorded for females across states and interest fields.

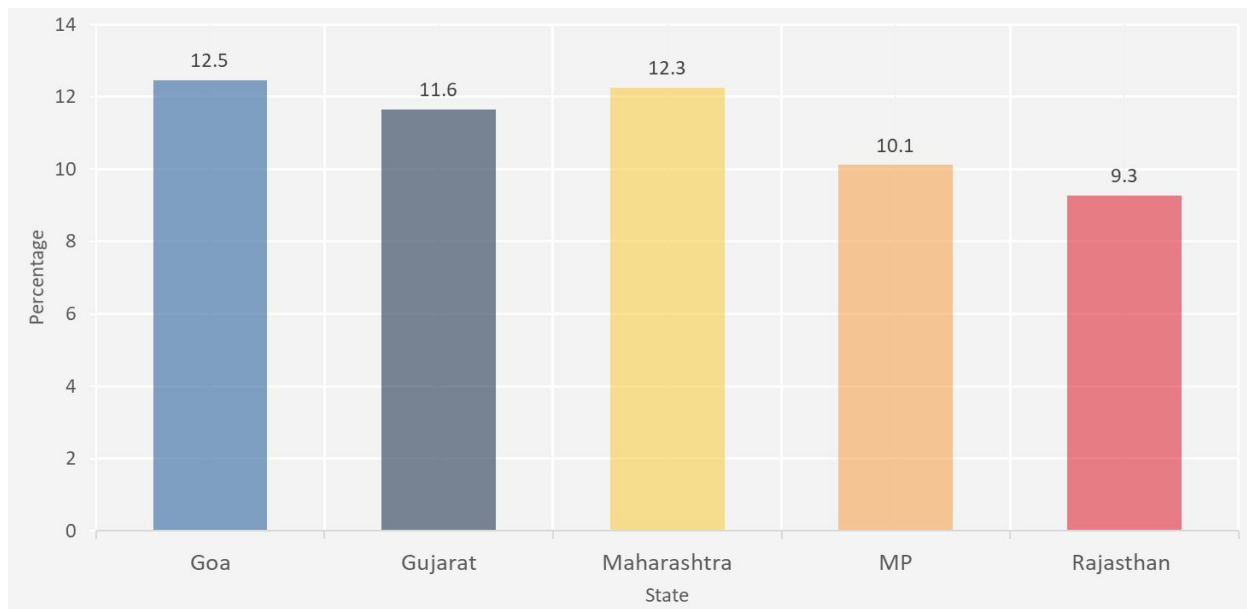
4.5 Health & Life Sciences

The interest area of Health & Life Sciences is aimed at identifying students who would be interested in pursuing future careers in areas like MBBS, BHMS, BAMS, BDS, nursing, pharmacy, paramedicine, nutrition etc.

Overall Trends

- Third least preferred category with a share of 11.75% students
- A higher proportion of males students (15.18%) are interested than female students (7.75%)
- The male-female gap at 7.43 percentage points

Chart 11: State-wise distribution of students with interest in Health Science

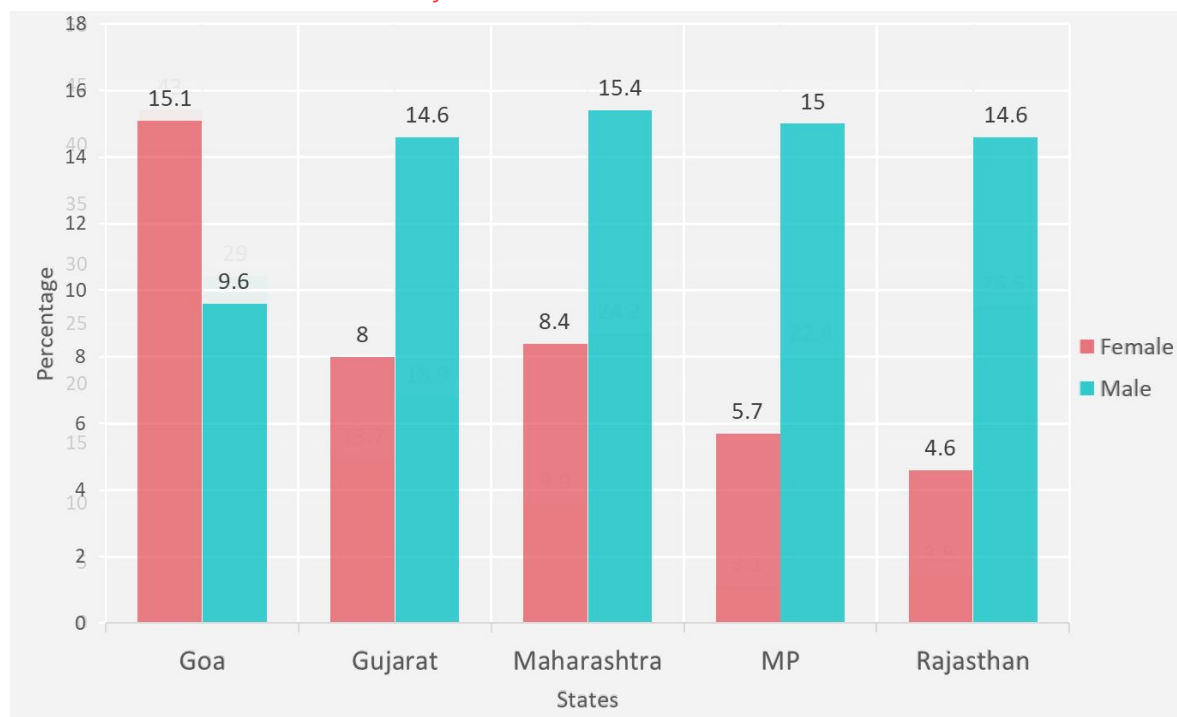


State-wise Trends

- **Consistent Distribution:** The percentage share of students for all states lie within the range of 9%- 13%., thus the 11.75% of the total population interested in Health & Life Sciences are spread across the five states in fairly equal manner.
- **Highest share:** Goa (12.5%)
- **Lowest share:** Rajasthan (9.3%)

Gender-wise Trends

Chart 12: Gender-wise distribution of students interested in Health Science



Overall

- **Female students are marginally more interested overall:** Female students outnumber their male counterparts by a margin of 7.43 percentage points.
- **Male students are more interested amongst states:** At the level of each state, only the state of Goa has a higher share of female students who chose Health & Life Sciences as their single interest area than its male students.

Female Share

- **Female share:** Goa has the highest share (15%) and Rajasthan (4.6%) has the least share of female students interested in Health & Life Sciences.

Male Share

- **Male share:** In the case of male students, the highest share is found in Maharashtra (15.4%) and least in Goa (9.6%)

- **Gender difference:** The gap is the highest in Rajasthan (10 percentage points) and least in Goa (5.5 percentage points).

Key Conclusions

- **Even distribution of students:** The percentage of female students interested in Health & Life Sciences across states is only between 5%-10%, except in Goa where it is 15%. The same for male students hover around 15% for all the states except goa where it is at roughly 10%.
- **Goa as an outlier:** In the field of Health & Life Sciences, the general trend in all states except Goa is that more male students than female students seem to find an active interest; Goa sees this trend reversed, with more female students interested in the Health & Life Sciences.

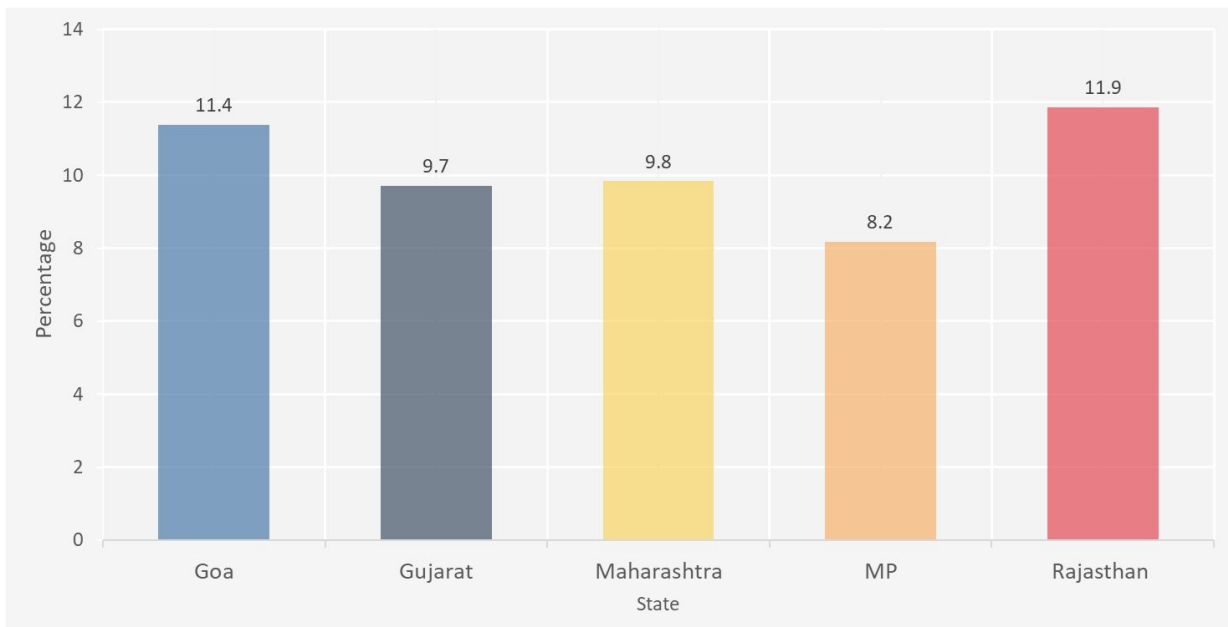
4.6 Technical

The interest field 'Technical' is aimed at identifying students interested in pursuing future career paths in the areas of engineering, ITI, physical sciences etc. The trends found in this interest area are further discussed below.

Overall Trends

- Least preferred interest area across gender and states (9.51%)
- Within this, there is a higher share of females (14.48%) than males (5.25%) (Chart 13)
- The discrepancy between female-male share is the second highest across all the interest areas at 9.27 percentage points.

Chart 13: Distribution of students with Interested in Health Science

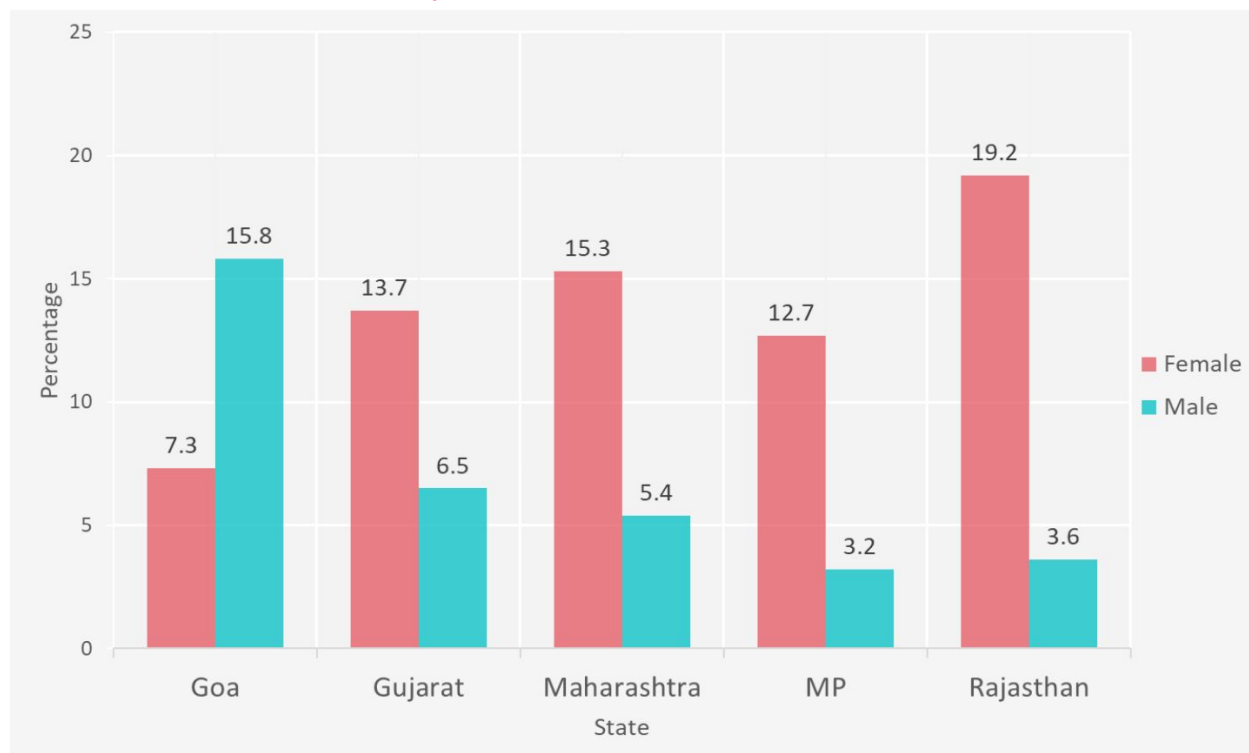


State-wise Trends

- **Highest:** Rajasthan (11.9%)
- **Lowest:** Madhya Pradesh (8.2%)
- **Even distribution:** As is evident from these figures, there is fairly an equal distribution of students across all the states, between 9% -12%.

Gender-wise Trends

Chart 14: Gender-wise distribution of students interested in Technical



Overall Trends

- **Female students tend to be more interested:** A predominantly higher share of female students are interested in Technical than male students with a difference of 9.27 percentage points. This pattern stands true for all the four states except in the case of Goa where there is a higher share of males than female students.
- **Median share among female students:** Moreover, the share of female students, overall is the median figure within the female population across all seven interest areas. However, the similar share for male students is the lowest (5.25%) compared to all the other interest areas. (see chart 2)

Female Share

- Across states, the share of females is **highest in Rajasthan(19%) and lowest in Goa (7.3%)**. For rest of the three states, it lies within the range of 12% -15%.

Male Share

- **Skewed towards Goa:** Goa (15.8%) has a significantly higher share of male students interested in Technical, while least is observed in MP (12.7%). Therefore, the distribution of student share among males is highly skewed towards Goa.

Key Conclusion

- **Female share exceeding male share:** The general trend in all states except Goa, is that the share of females exceed that of males at a rate higher than twice the share of male students.
- **Goa as an outlier:** In the case of Goa, which is an exception, the percentage of male students is more than double that of their female counterparts.
- **High male-female discrepancy:** The discrepancy between male-female share for this interest area is the second highest across all the interest areas at 9.27 percentage points.

4.7 Uniformed Services

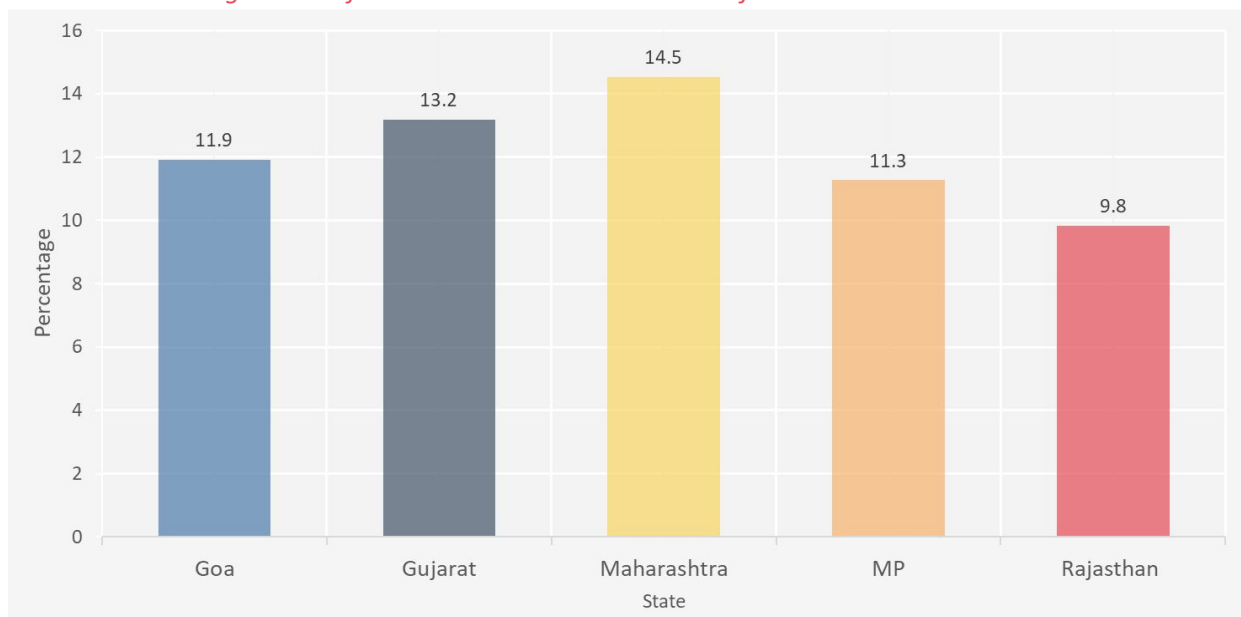
Uniformed Services as an interest area is aimed at identifying students interested in pursuing potential career paths in the fields of armed, maritime and air forces, paramilitary forces, civil defence organisations etc.

Overall Trends

- Has the **median student share** across all the interest areas (13.65%)
- There is a **higher share of female students (15.15%)** than males (12.36%)
- Gender difference is at about 3 percentage points

State-wise Trends

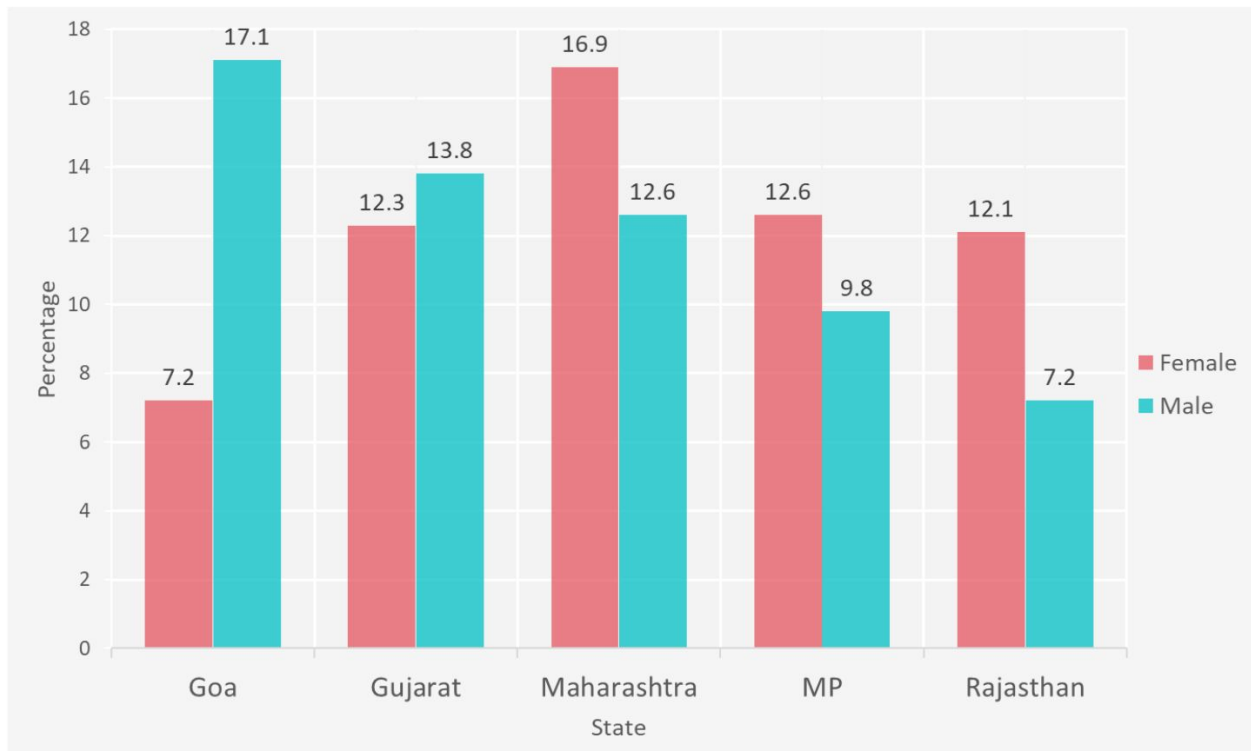
Chart 15: Percentage share of students with an interest in Uniformed Services



- **Highest share:** Maharashtra (14.5%)
- **Lowest share:** Rajasthan (9.8%)
- **Even distribution:** The student share across states lie within the bracket of 10%- 15%, thus is evenly distributed across states.

Gender-wise Trends

Chart 16: Gender-wise distribution of students with an interest in Uniformed Services



Overall trends

- **Male students in Goa and Gujarat are more interested:** The overall pattern of a higher female share stands true for all states except Goa and Gujarat, where male students exceed their female students by almost 10% points, and 1.5 percentage points, respectively.
- **Gender difference highest in Goa:** Male students in Goa (17.1%) have the highest percentage share across all the states and gender while female students have the lowest percentage share (7.2%) across all states and gender. This makes Goa the state with the highest gender difference among students interested in Uniformed Services.

Male share

- **Highest:** Goa (17.1%)
- **Lowest:** Rajasthan (7.2%)
- Therefore, when arranged in descending order of the share of its male students, the highest difference between a state and its immediate successor is that between Goa and Gujarat at 3.3 percentage points.

Female share

- **Highest:** Maharashtra (16.9%) **Lowest:** Goa (7.2%)
- When arranged in descending order of female student share, the highest difference between a state and its immediate successor is between Rajasthan and Goa (least share state) at 4.9% points.

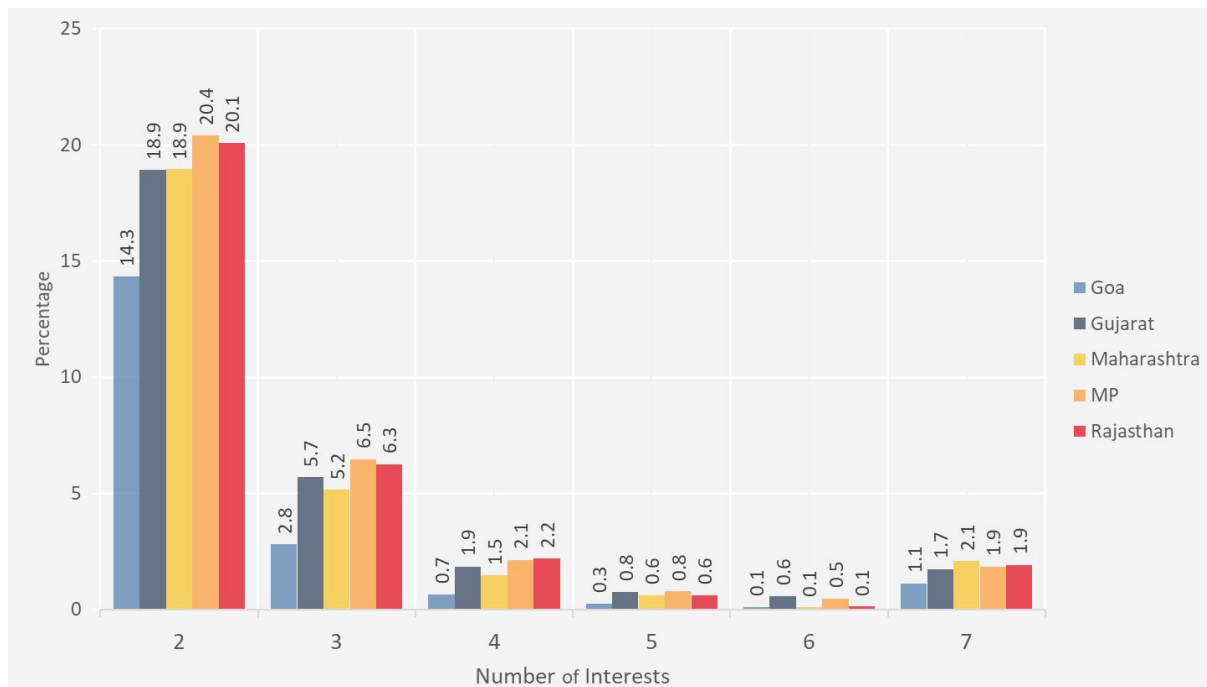
Key Conclusions

- **Even distribution of males:** The share of male students across states is relatively more even than that of female students.

4.8 Multiple Interests

Among the entire student population across five states 70.69 percent students show a single clear interest, while 29.31 percent students show two or more interests. Chart 17 below further shows the distribution of student population with multiple interests across the five states. Among the entire student population 19.21 percent students show two interests, 5.05 percent show three interests, 1.87 percent show four interests, 0.67 percent show five interests, 0.26 percent show six interests and 1.96 percent show an interest in all seven fields⁹.

Chart 17: Multiple interest student population across states



- Amongst the five states, the highest share of population of students with 2 interests is found in Rajasthan and MP both of which have about 20% of their total population of students having

⁹ A detailed table showing interest-wise and state-wise split of the data has been provided in Annexure, section 8.3.

interest in two interest fields. Goa has the least of such share across all the states at about 14.3%.

To further understand the patterns among students with multiple interests frequency of each interest field for students with two, three, four, five and six interests were counted. Table 2 below draws on inferences based on this frequency of interests for each set of student population. **Over all, we see that among students with multiple interests, student interest patterns are similar to the students with a single interest** as described in the table below. While the extremes of highest and lowest frequency follow patterns similar to the overall students population, difference in the fields of interest next to highest and before the lowest are slightly different.

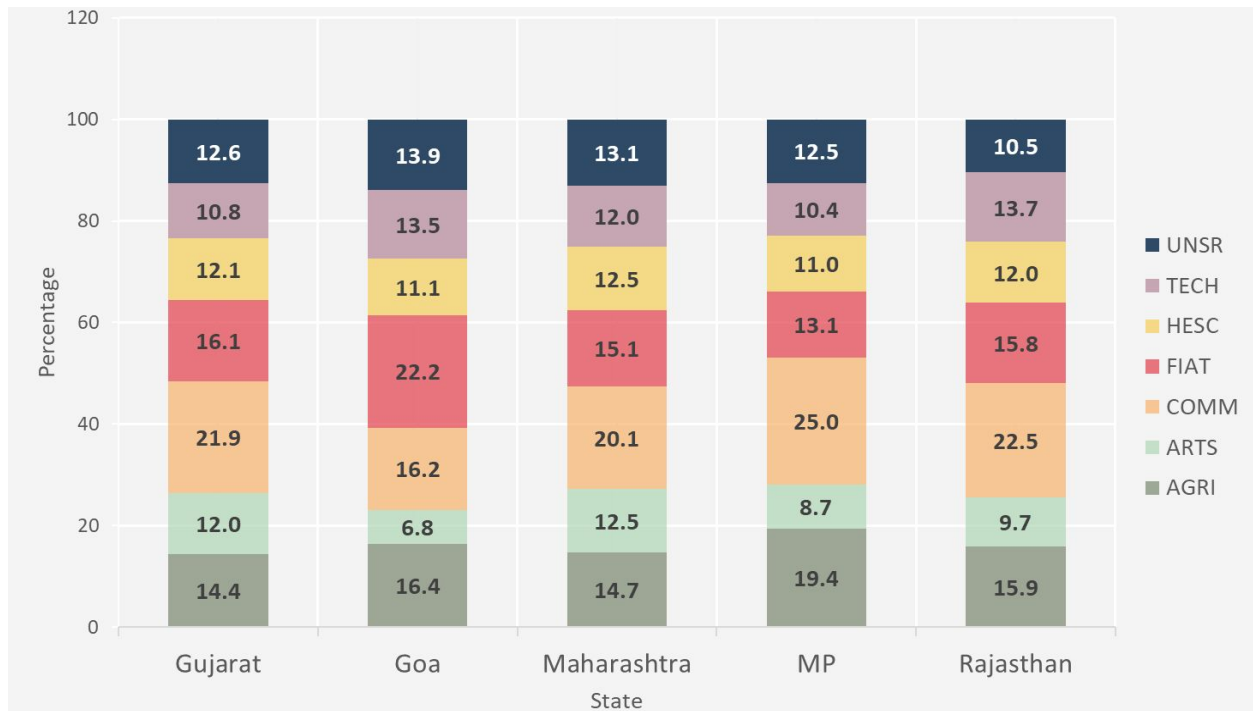
Table 2: Interest fields with highest and lowest frequency¹⁰

Number of Interests	Interest field with highest frequency	Interest field with lowest frequency
2	Commerce	Uniformed Services
3	Commerce	Uniformed Services
4	Commerce	Fine Arts
5	Commerce	Agriculture
6	Agriculture, Uniformed Services, Commerce	Technical

¹⁰ The detailed distribution of frequency has been presented in Annexure, section 8.6.

Multiple Interest : Two Fields

Chart 18: State-wise and interest-wise distribution of students with two interests



This chart shows the percentage share of students with interest in any two areas across states. For example, among students with two interests, in Gujarat, 12.6% of them will have Uniformed Services as one of the two.

In the chart 18 above, the x-axis represents the five states. The y-axis represents the percentage of the frequencies across the seven interest fields. The frequencies are of number of times a given interest field occurs amongst the student population with two interests in a state. As we see, in all states except Goa, the interest field with the highest frequency of students is Commerce, while in Goa it is Fine Arts. While frequencies in the field of Technical and Arts and Humanities seem to be the lowest across states.

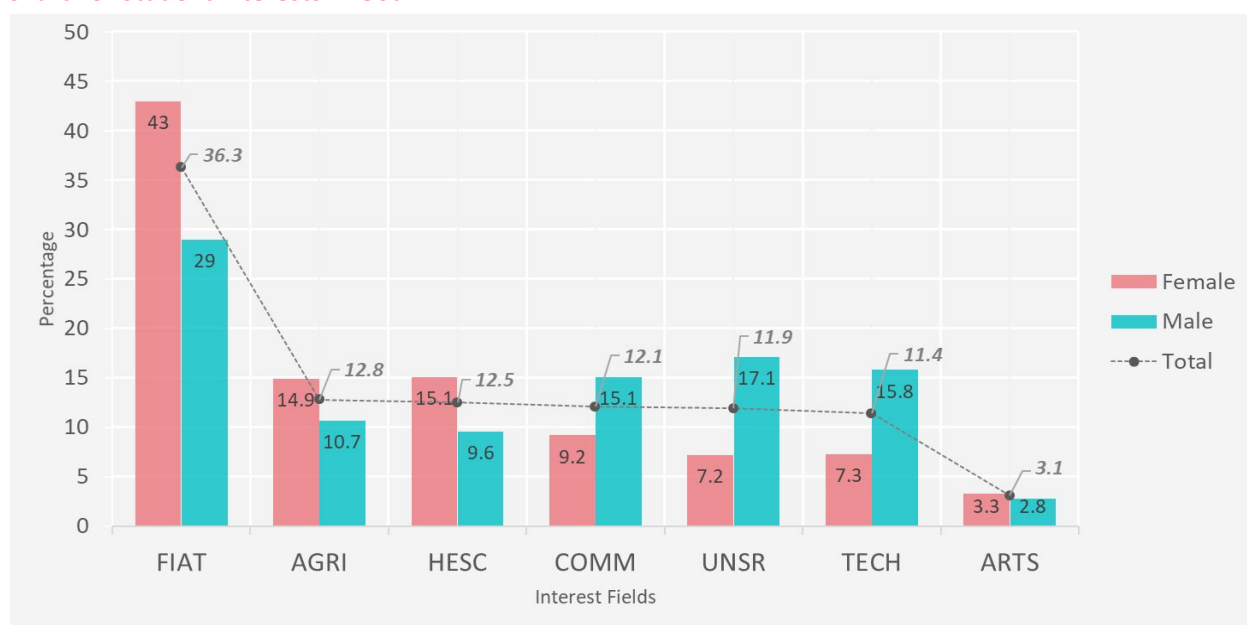
5.State Focus

As we saw in the section above, in four of the five states, Commerce emerges as the field with the largest proportion of students amongst all interest fields. The following section discusses individual state-wide trends in depth. In this section each state has been described in terms of the overall state-wide patterns on the whole, patterns among female and male students, district level and interests wise patterns arranged in descending order of student population with an interest.

5.1 Goa

A total of 1858 students wrote the interest tests for the academic year 2017-18 . This includes 939 female and 919 male students¹¹. Of these, the following section describes 80.7 percent of students with a clear single interest in any field, draws inferences on the key patterns across the state, and compares patterns among proportion of female and male students with a clear single interests.

Chart 19: Student interests in Goa



The chart above shows all seven interest fields arranged in descending order of proportion of students with a single interest. The figures represent the share of students interested in a given field from the total student population, total female population and total male population in the state.

¹¹ 1633 candidates wrote the Goa state board exam in 2017-18. This total merits internal attention by SAF. Source: <https://gbshse.org/sites/default/files/Recent%20Announcement/2018-07-05-result-booklet-ssc-examination-june-2018.pdf>

Overall Trends

- **Highest:** Fine Arts (36.3%)
- **Lowest:** Arts and Humanities (3.1%)
- **Even distribution across interest fields:** Apart from the fields with the highest proportion and least proportion of students with a clear single interest, proportion of students with a clear single interest in the remaining fields is very similar.

Gender-wise Trends : Female

- **Highest :** Fine Arts (43%)
- **Lowest :** Arts and Humanities (3.3%)

Gender-wise Trends: Male

- **Highest :** Fine Arts (29%)
- **Lowest :** Arts and Humanities (2.8%)

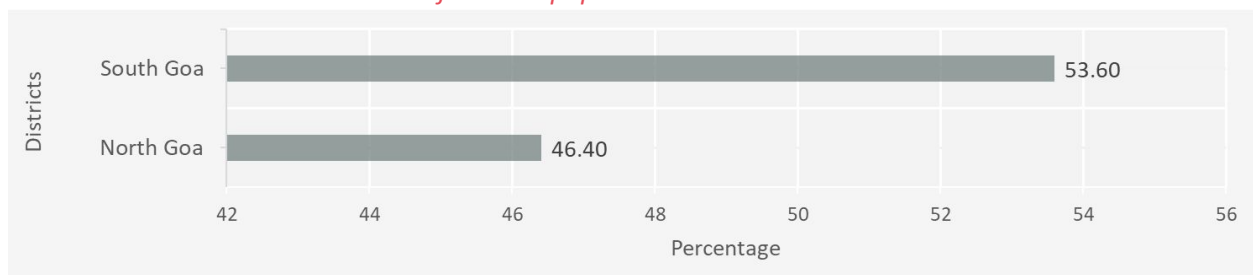
Gender-wise Trends: Comparative

- Both female students and male students, show a clear high interests in Fine Arts and a very low interests in Arts and Humanities.
- **Male students show more interest in fields of Uniformed Services, Commerce and Technical** as compared to female students, i.e by 9.9 percentage points, 5.9 percentage points and 8.5 percentage points, respectively.
- **Female students show more interest in fields of Fine arts, Health & Life Sciences, Agriculture, Commerce and Arts and Humanities** compared to male students, by 14 percentage points, 5.5 percentage points, 4.2 percentage points, 5.9 percentage points and 0.5 percentage points respectively.

5.1.1 District Trends

The following section describes district level interest trends among female and male students in two districts of Goa arranged in descending order of student population. Further, the difference among female and male students have been highlighted within each.

Chart 20: District-wise distribution of student population in Goa



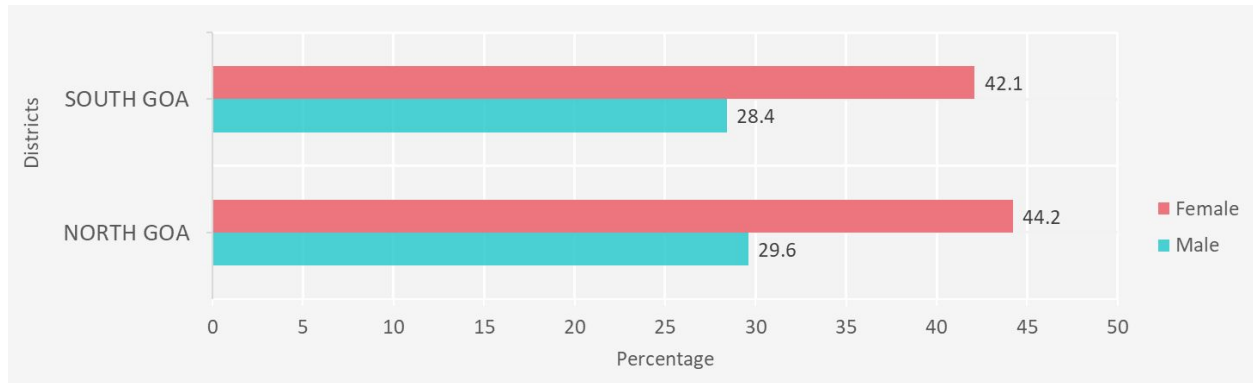
The chart above, shows the spread of student population across the two districts of Goa - North Goa and South Goa, where a higher number of students from South Goa participated in the Interest test in 2017-18.

Fine Arts

Overall Trends

- 36.3 percent of students across Goa show a clear single interests in Fine Arts.
- In North Goa proportion of students interested in Fine Arts is more than those in South Goa.

Chart 21: Goa- district-wise students interested in Fine Arts



The chart above shows the share of the total male and female district population interested in Fine Arts.

Gender-wise Trends

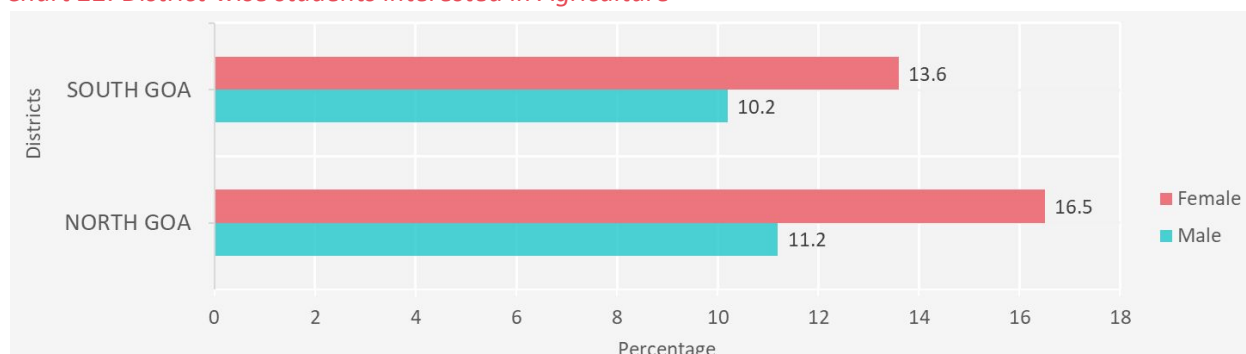
- **More students in North Goa are interested in Fine Arts:** A slightly higher proportion of female and male students in North Goa (44.2% and 29.6% respectively) have a clear single interest in Fine Arts as compared to female and male students in South Goa (42.1% and 28.4%, respectively).
- **Female students are more interested in Fine Arts:** Among female students a high proportion of students (43%) compared to males (29%) show a single interest in Fine Arts.
- **Gender difference:** difference of 14 percentage points between female students with a clear single interests in Fine arts and Male students, is also reflected in both the districts of North Goa and South Goa.

Agriculture

Overall Trends

- **12.8%** of students in a Goa show a clear single interest in Agriculture
- Students from North Goa are more interested in Agriculture

Chart 22: District-wise students interested in Agriculture



The chart above shows the share of the total male and female district population interested in Agri

Gender-wise Trends

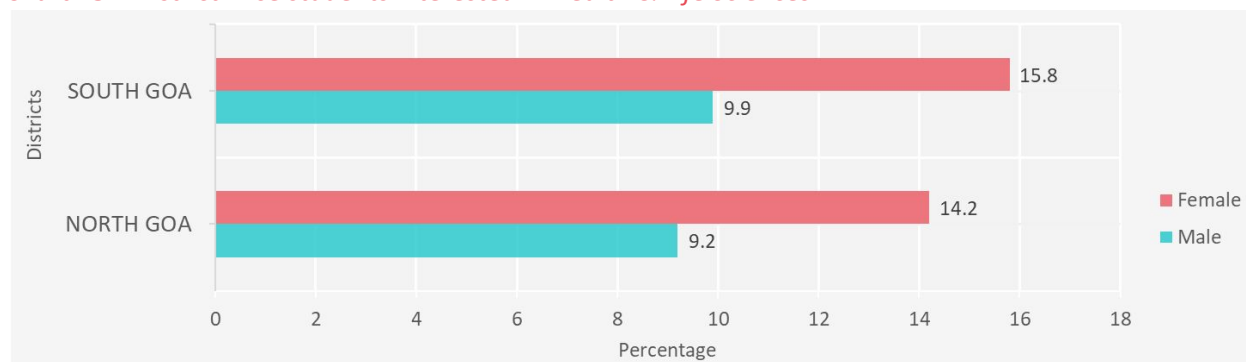
- 14.9% of female students and 10.7% of male students show a clear interest in Agriculture in Goa.
- **Female students are more interested in Agriculture:** With a difference of 4.2 percentage points reflected in the two districts, a higher proportion of female students show a clear interest in Agriculture in both districts over male students.
- **Female and male students in North Goa are more interested:** More number of students in North with a clear single interest in Agriculture, among both male and female students, exceeds that of male and female students in South Goa.

Health & Life Sciences

Overall Trends

- 12.5% students in Goa show a clear single interest in Health & Life Sciences
- Students from South Goa are more interested in Health & Life Sciences

Chart 23 : District-wise students interested in Health & Life Sciences



The chart above shows the share of the total male and female district population interested in Health & Life Sciences.

Gender-wise Trends

- **Female students are more interested in Health & Life Sciences:** A much higher proportion of female students 15.1% show a clear single interest in Agriculture, over male students, i.e. 9.6%

among male students. This is also the case among female and male students of North and South Goa.

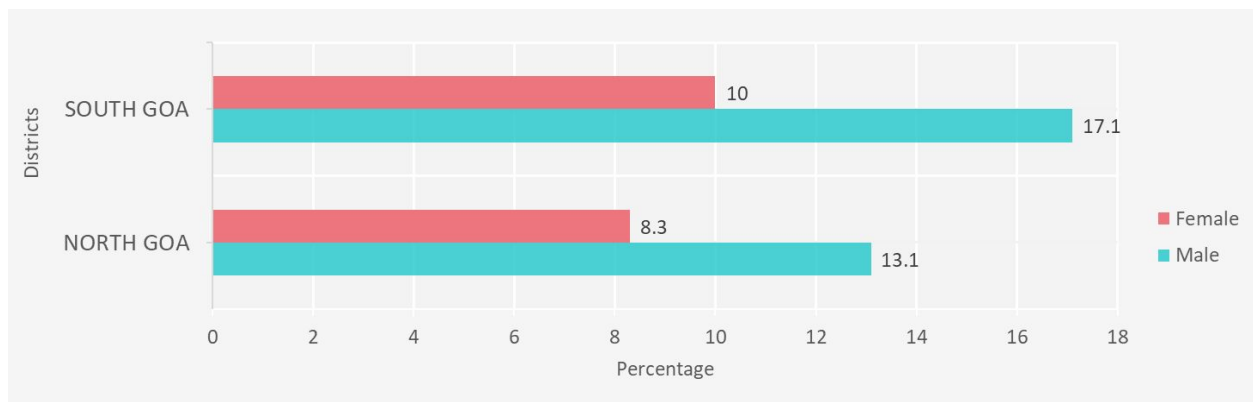
- **Female students from South Goa are more interested:** a higher proportion of female students from South Goa (15.8 %) have a clear single interest in Health & Life Sciences over female students from North Goa (14.2 %). However, the difference in the proportion of male students with a clear single interests in Health & Life Sciences in North and South Goa is negligible (9.2 % and 9.9% respectively).

Commerce

Overall Trends

- 12.1 percent students overall have a interest in Commerce
- Students in South Goa are more interested in Commerce

Chart 24: Goa district-wise students interested in Commerce



The chart above shows the share of the total male and female district population interested in Commerce.

Gender-wise Trends

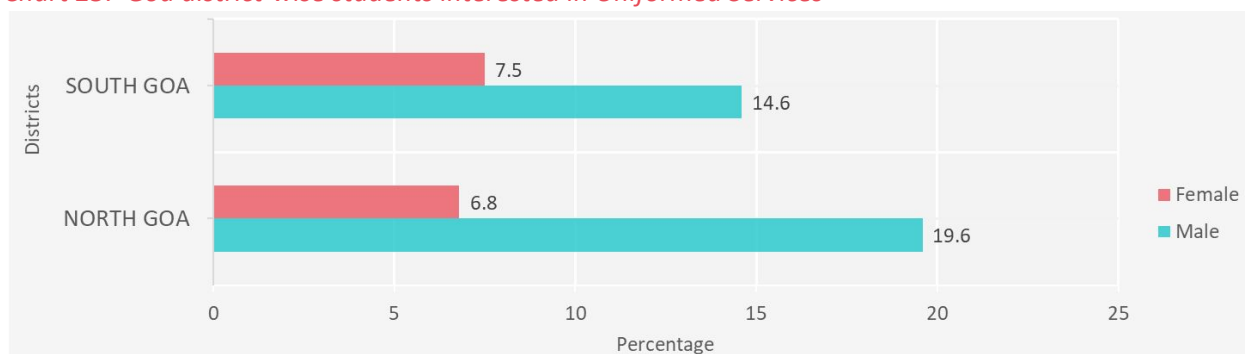
- **Male students are more interested in Commerce:** 15.1 percent of male students show a clear interest in Commerce versus only 9.2 percent of female students, while. In both North and South Goa districts, the proportion of male students with a single interest in Commerce exceeds that of proportion of female students with a single interest in Commerce by a difference of 4.8 percentage points in North Goa and of 7.1 percentage points in South Goa.
- **High proportion of males form South Goa have an interest:** among male students in South Goa, a very high proportion show a clear single interest in Commerce, among all interests fields, second only to Fine Arts. This proportion is seen to be much lower when comparing interest fields for male and female students in other district.

Uniformed Services

Overall Trends

- 11.9 percent students in the state have a clear single interests in Uniformed Services
- Students in North Goa are more interested

Chart 25: Goa district-wise students interested in Uniformed Services



The chart above shows the share of the total male and female district population interested in Uniformed Services.

Gender-wise Trends

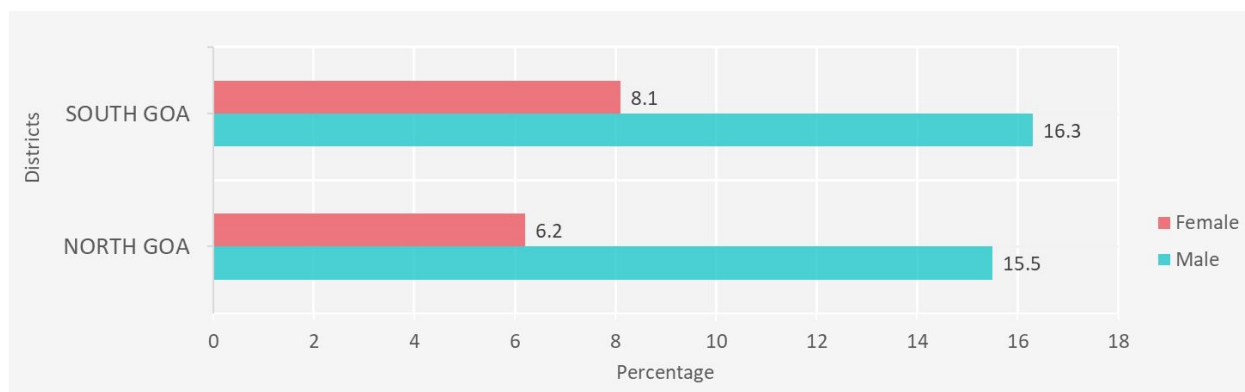
- **Male students are more interested in Uniformed Services:** this proportion is much higher among male students (17.1%) as compared to female students (7.2 %) in the state.
- **Female students from South Goa show more interest:** proportion of female students with a clear interest in Uniformed Services is slightly higher among female students in South Goa (7.5%) as compared to female students in North Goa (6.8%),
- **Male students from North Goa show more interest:** Difference is higher among male students of North Goa (19.6%) compared to male students of South Goa (16.3%).
- **Gender difference:** Difference between male and female students interested in Uniformed Services is higher in North Goa (12.8 percentage points difference) compared to South Goa (7.1 percentage points).

Technical

Overall trends

- 11.4 percent of students across the state show a clear interest in Technical
- Students from South Goa are more interested in Technical

Chart 26: Goa district-wise students interested in Technical



The chart above shows the share of the total male and female district population interested in Technical

Gender-wise Trends

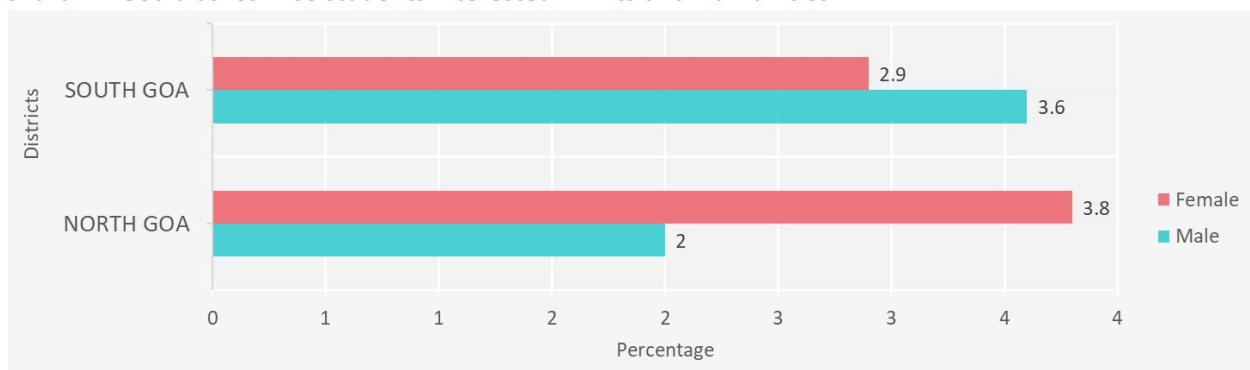
- **Male students are more interested in Technical:** a higher percentage of male students are interested in Technical in both North and South Goa as compared to female students in North and South Goa.
- **Female students in South Goa are more interested:** among female students, a higher proportion of students in South Goa (7.5 %) have a clear interests in Technical as compared to female students in North Goa (6.8 %).
- **Male students in North Goa are more interested:** proportion of male students from North Goa (19.6%) with a clear interests in Technical is higher than that of male students with a clear interests in Technical from South Goa (14.6%).

Arts and Humanities

Overall Trends

- Students in the state of Goa are the least interested in Arts and Humanities, as only 3.1 percent of students show a clear single interest in Arts and Humanities amongst all interest fields.
- Among districts, students from South Goa are more interested in Arts and Humanities

Chart 27: Goa district-wise students interested in Arts and Humanities



The chart above shows the share of the total male and female district population interested in Arts and Humanities.

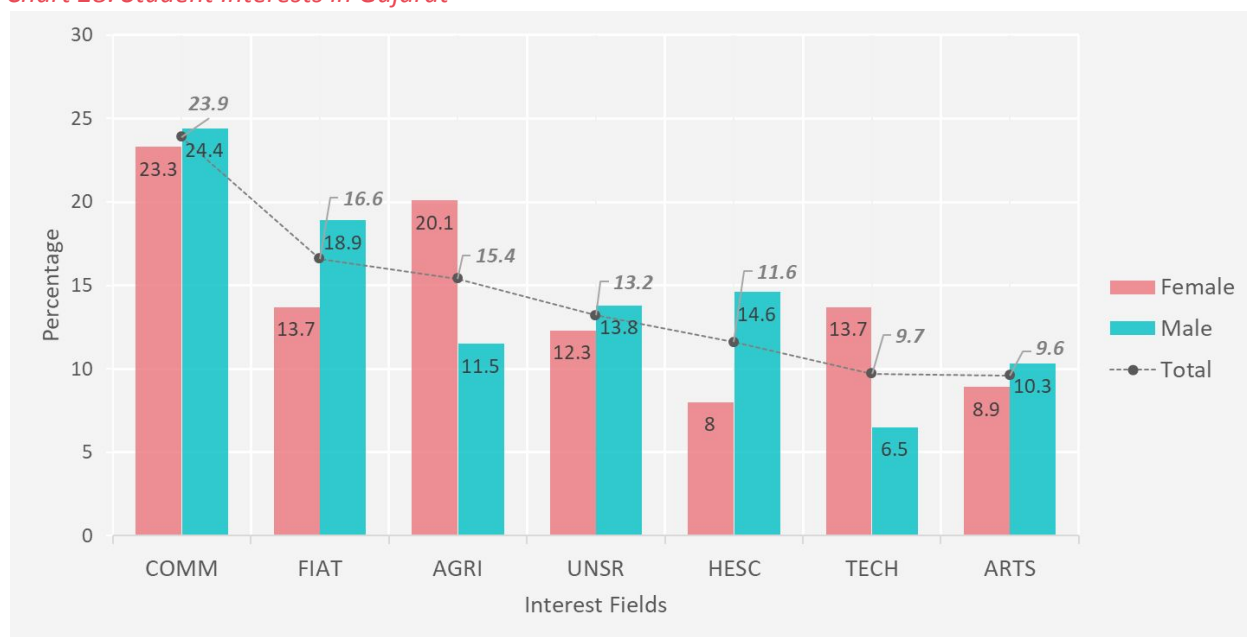
Gender-wise Trends

- **Female students are more interested:** A slightly higher proportion of female students (3.3%) show a clear single interest in Arts and Humanities as compared to male students (2.8 %) with a clear single interest in Arts and Humanities.
- **Even distribution of female and male students in South Goa:** While this pattern is seen in North Goa, where the difference between female and male students is of 1.8 percentage points, the difference is almost negligible in South Goa at 0.7 percentage points.
- **Female students from North Goa and male students from South Goa are more interested:** a higher proportion of female students from North Goa show a clear single interest in Arts and Humanities among female students, a higher proportion of male students from South Goa show interests when comparing the two districts.

5.2 Gujarat

During the academic year 2017-18, a total of 518,176 students appeared for the Kal Chachani, this covers 46.95 % of 11.03 lakh¹² students who appeared for the SSC exam in the same year. Of which 44.17 % are female students and 55.82 % are male students. Among students who gave Interest test in Gujarat, 70.44 percent or 364,997 show a single interest¹³. The following sections details findings among male and female students with a single interest in the state of Gujarat and discusses patterns among male and female students.

Chart 28: Student Interests in Gujarat



The chart above shows share of female students, male students and total state population split by interest areas.

Overall Trends

- **Highest:** Commerce (23.9%); **Lowest:** Arts and Humanities (9.6%)
- Proportion of students with a clear single interest in Commerce far outnumbers proportion of students interested in Fine Arts (16.6 %) or Agriculture (15.4 %).

Gender-wise Trends: Female

- **Highest:** Commerce (23.3%)
- **Lowest:** Health & Life Sciences (8 %)

¹²source:<https://www.financialexpress.com/education-2/gseb-10th-result-2018-gujarat-board-ssc-result-date-time-confirmed-how-to-check-at-gseb-org/1177045/>

¹³ Here 241 student entries without districts have been further ignored for analysis.

- **Skewed distribution among female students:** Among female students, about 43.3 percent show a single interest in two interest fields - Commerce and Agriculture, while the remaining 56.6 % show a single interest in the remaining five interest fields.

Gender-wise Trends : Male

- **Highest:** Commerce (24.4%)
- **Lowest:** Technical (6.5 %)

Gender-wise Trends : Comparative

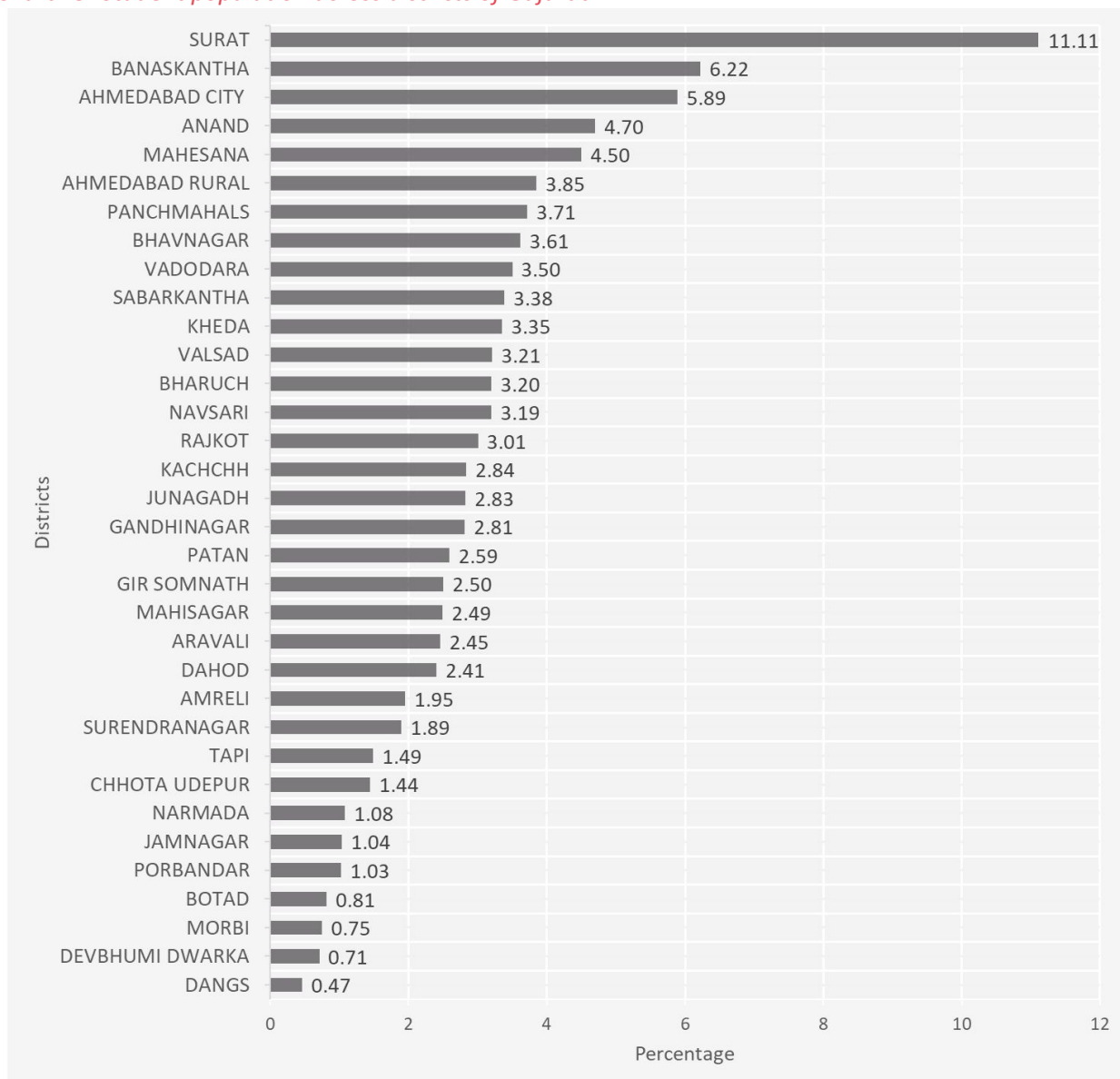
- **A wide gap between Commerce and Fine Arts among female students:** The difference of 7.3 percentage points between proportion of students interested in Commerce and Fine Arts in the state, is exceeded when looking at the proportion of female students interested in Commerce and Fine Arts. This difference of 9.6 percent points is wider, as 23.3 percent female students show a single clear interest in Commerce, and only 13.7 percent in Fine Arts.
- **More male students are interested in Commerce, Fine Arts, Health & Life Sciences, Uniformed Services and Arts and Humanities:** Only a slightly higher proportion of male students show an interest in Commerce, when compared to female students. This is also the case in the fields of Fine Arts, Health & Life Sciences, Uniformed Services and Arts and Humanities, where proportion of male students interested is higher than female students by, 5.2 percentage points, 6.6 percentage points, 1.5 percentage points and 1.4 percentage points respectively.
- **Female students are more interested in Agriculture and Technical:** While proportion of female students with a single interest in Agriculture and Technical exceeds that of male students by 8.6 percentage points and 7.2 percentage points, respectively.

5.2.1 District Trends

Within each of the districts, the distribution of students across the seven interest areas varies. For instance, a minimum difference of 11 percentage points between the highest and lowest proportion of students across interests areas in districts like Bhavnagar and Navsari show a more even distribution of the the student population as opposed to districts like Dahod and Mahisagar where a maximum difference of 19.93 percentage points show a more skewed pattern within the district. For a closer examination of each district, refer to Annexure, section 8.3. In the following sections interests scores for all seven fields are discussed across all of Gujarat state's 34 districts¹⁴. Interests fields are arranged in descending order of proportion of students with a clear single interests in the field. Beginning with the field with the highest proportion i.e. Commerce, and progressing in descending order. Further within each, differences between female and male students in districts are discussed.

¹⁴ The data captured as part of the Kalchachani project separates data for district of Ahmedabad into Ahmedabad city and Ahmedabad rural. Thus presenting data for 34 districts instead of 33 districts in Gujarat.

Chart 29: Student population across districts of Gujarat



The map above shows the all 34 Gujarat districts along with student populations with single interests. As can be seen the chart above Surat district has a high concentration of the student population. As opposed to Surat district, Dang¹⁵ District has the least share of the student population in the state.

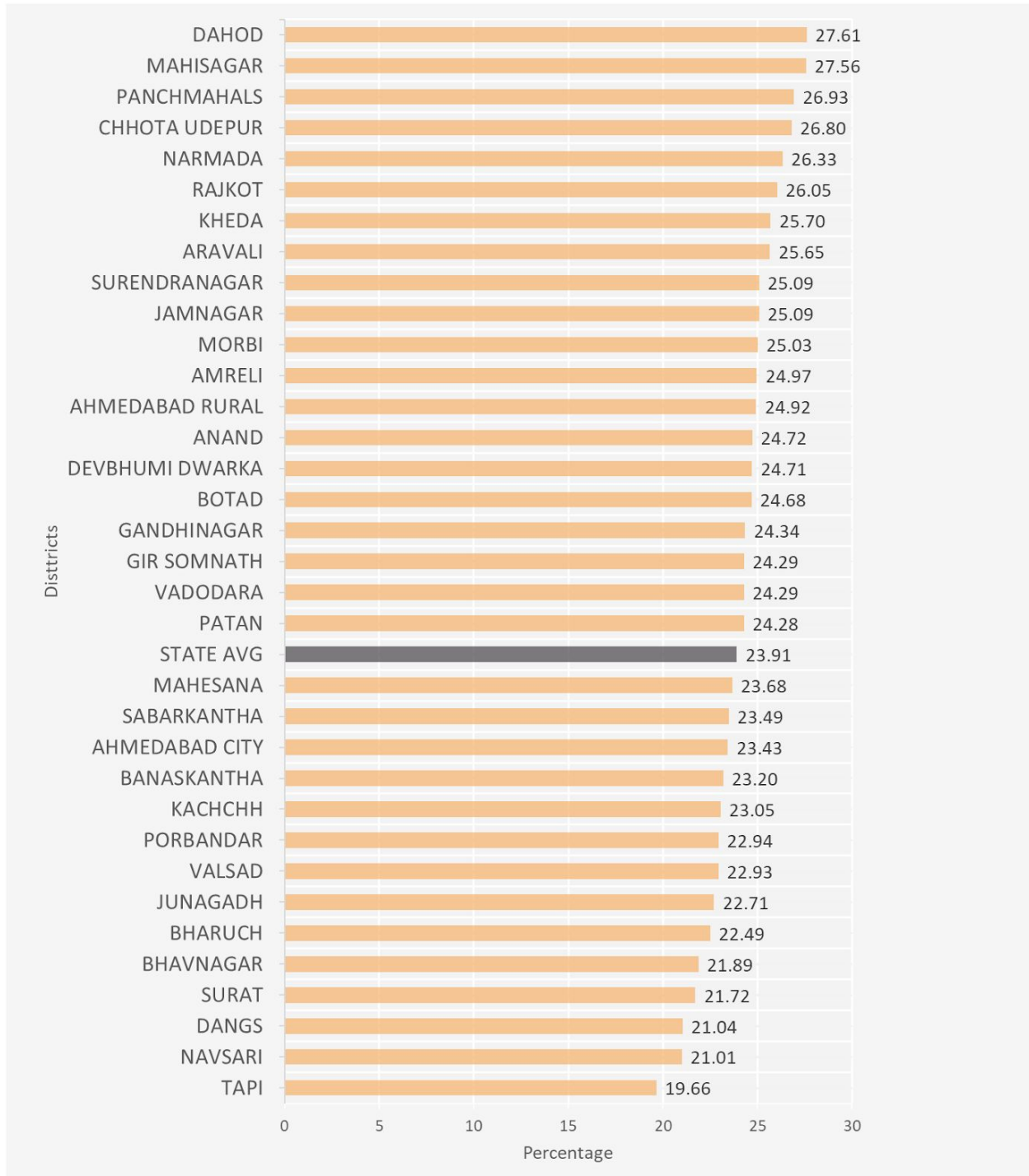
Commerce

Overall Trends

- Commerce (23.9%) is the field of highest interest among all students in the state
- Of the students with a single interest in Commerce, **the highest percentage is observed in Dahod (27.61%) and Mahisagar (27.56%) and the least in Tapi (19.66%) districts.**

¹⁵ Appears as 'Dangs' in SAF Datasets hence the spelling discrepancy in the charts

Chart 30: Gujarat District-wise Student Population Interested in Commerce



The chart above shows the share of the total district population interested in Commerce.

Gender-wise Trends: Female

- **Highest:** Panchmahals (28.5%)
- **Lowest:** Tapi (18.3%)

- **Female students in all districts have a high interest in Commerce:** The difference of only ten percentage points in the highest and lowest here indicates that across all districts female students show a high interest in Commerce.
- **Commerce is second highest field of interest in six districts:** In 28 of the 34 districts, Commerce is the field with the highest proportion of female students. In the remaining six districts - **Dang, Narmada, Navsari, Surat Tapi and Valsad** - Commerce is the second highest field of interest following Agriculture, except in Surat.

Gender-wise Trends: Male

- **Highest:** Morbi (27.2%)
- **Lowest:** Dang (20.5%).
- Male students are most interested in Commerce (24.4%)
- In all districts except **Dang**, Commerce is the field with the highest proportion of male students with a single interest among all interest areas.

Gender-wise Trends: Comparative

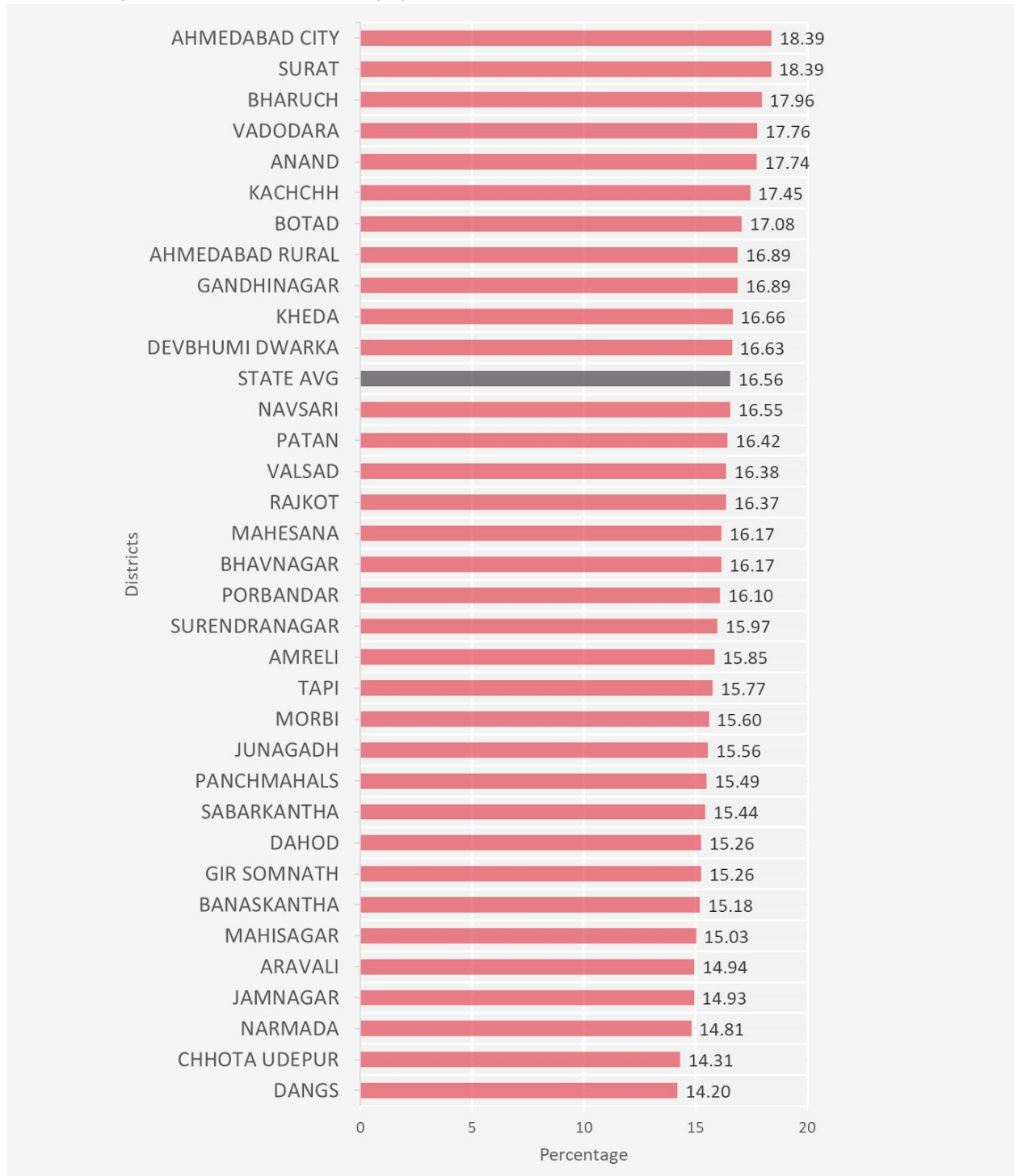
- **Male students show more interest in Commerce:** The difference between proportion of female and male students with a clear single interest differs only by 1.1 percentage points with males exceeding females in the state.
- **Even gender distribution among districts:** In 11 of 35 districts proportion of female students interested in Commerce exceed that of male students by a maximum of 3.9 percentage points (**Dahod district**). While in others proportion of male students with a single interest in Commerce exceeds that of females by a maximum of 4.5 percentage points (**Surat district**).

Fine Arts

Overall Trends:

- 16.6 percent of the students in Gujrat show a clear single interest in Fine Arts.
- **Highest:** Ahmedabad City district (18.39%)
- **Lowest:** Dang district (14.20%)

Chart 31: Gujarat District-wise student population interested in Fine Arts



The chart above shows the share of the total district population interested in Fine Arts.

Gender-wise Trends : Female

- **Highest:** Surat district (21.2%)
- **Lowest:** Mahisagar district (5.8 %)
- 13.7 percent female students show a clear single interest in Fine Arts

- **Uneven ranking compared to other interest fields:** In Surat district Fine Arts has the highest proportion of female students with a single interest. Conversely, in Mahisagar percentage of female students interested in Fine Arts against all other interest field is the least.

Gender-wise Trends : Male

- **Highest:** Narmada (23.2%)
- **Lowest:** Surat (8%)
- Among male students 18.9 percent show interest in Fine Arts
- **In Dang Fine Arts most preferred:** Only in Dang (22.3%), Fine Arts has the highest proportion of male students with a single interest among all other interest areas in that district.
- **Second most preferred field of interest:** In Ahmedabad City and Surat, the proportion of male students with a clear interest in Fine Arts is lower compared to two other interest fields. In the remaining 31 districts, Fine Arts is the second most popular field of interest in the district among male students.

Gender-wise Trends : Comparative

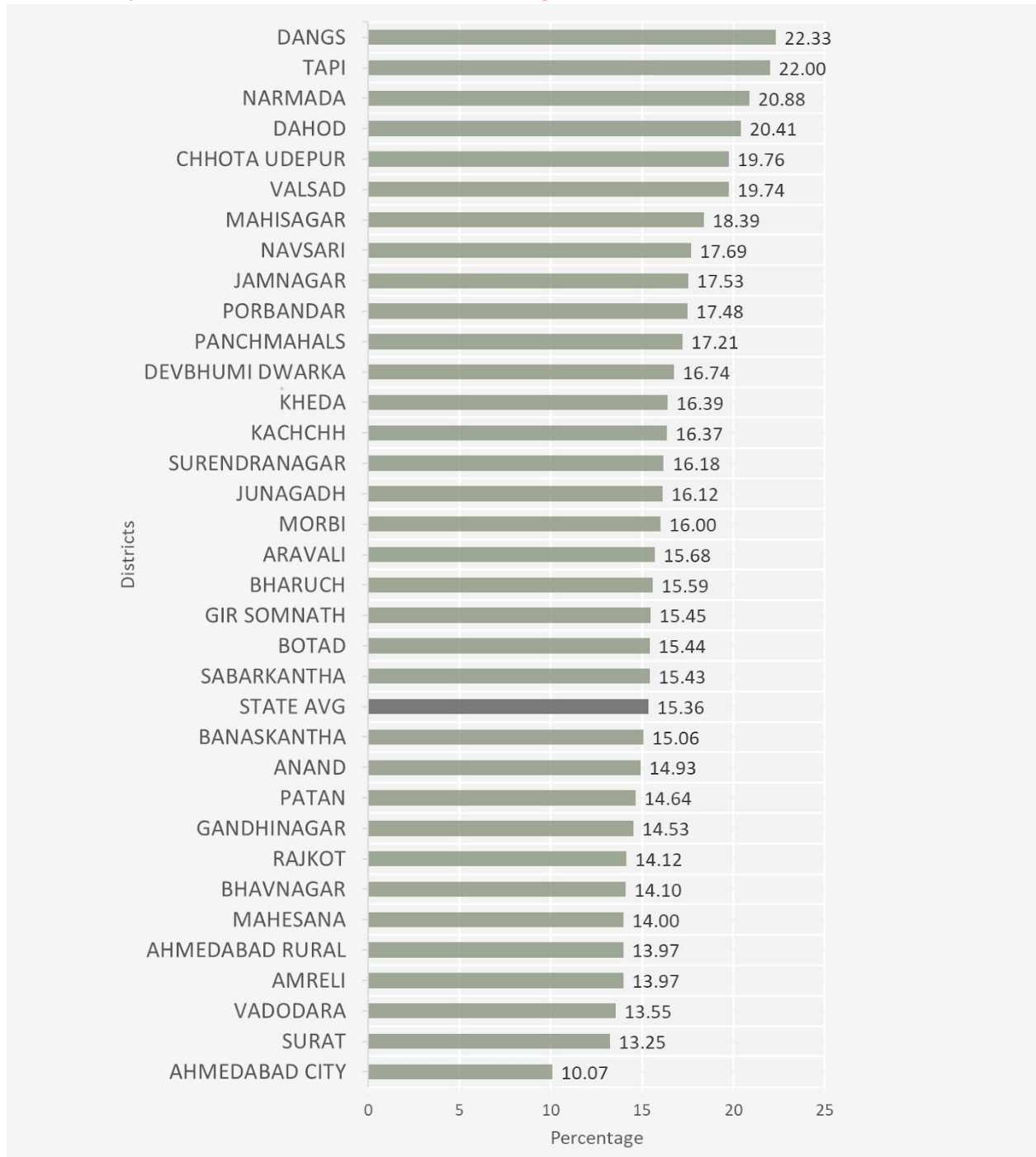
- **Male students are more interested overall:** A higher proportion of male students show interest in Fine Arts over female students in the state.
- **Male students are more interested in 31 district:** This is true in 31 of the 34 districts. For instance, in districts of Mahisagar and Narmada, this difference is seen to be as high as 16.6 and 16.3 percentage points respectively.
- **Female students are more interested in 3 district:** While in districts of Ahmedabad City, Kutch and Surat, proportion of female students with a clear interest in Fine Arts exceeds that of male students by 4.2, 1.4 and 5.2 percentage points respectively.

Agriculture

Overall Trends

- 15.4 percent of all students in the state show a single clear interest in Agriculture.
- **Highest:** Dang district (22.33 %)
- **Lowest:** Ahmedabad City district (10.07 %)

Chart 32: Gujarat district-wise students interested in Agriculture



The chart above shows the share of the total district population interested in Agriculture.

Gender-wise Trends: Female

- **Highest:** Dang district (29.8%)
- **Lowest:** Ahmedabad City district (12.7%)
- **Agriculture highest in six district:** In as many as six districts in Gujarat, Agriculture has the highest proportion of female students compared to other interest fields while in almost all other remaining districts, it is second more preferred field of interest.

Gender-wise Trends: Male

- 11.5% show a clear single interest in the field of Agriculture
- **Highest:** Tapi district(16.2%)
- **Lowest:** Ahmedabad City district (7.8 %)
- **Few male students are interested in Agriculture:** While in most districts, proportion of male students interested is quite low, in Ahmedabad City district Agriculture has the least proportion of male students compared to all other interest fields.

Gender-wise Trends: Comparative

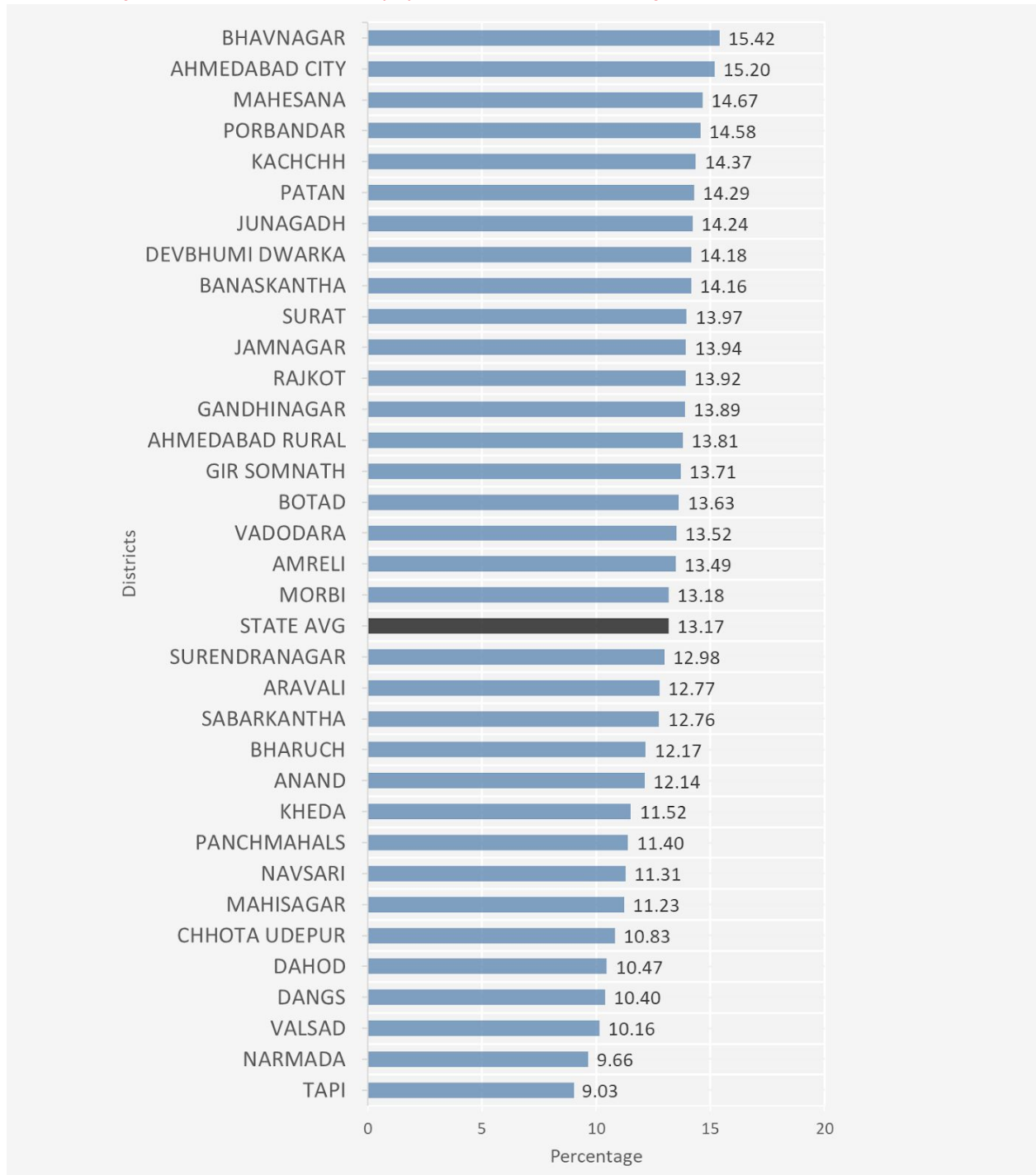
- **Female students are more interested in Agriculture:** Interest among female students are 8.6 percentage points higher than male students. The difference is the highest in Dang (by 16.6 percentage points) and the least in districts of Ahmedabad city and Jamnagar (where the difference is of 4.9 percentage point in both districts).

Uniformed Services

Overall Trends

- 13.2% students show a clear single interest in Uniformed Services
- **Highest:** Bhavnagar district (15.42%)
- **Lowest:** Tapi district (9.03%)

Chart 33: Gujarat district-wise student population interested in Uniformed Services



The chart above shows the share of the total district population interested in Uniformed Services

Gender-wise Trends: Female

- 12.3 % show a single interest in Uniformed Services
- **Highest:** Devbhumi Dwarka district (14.4%)
- **Lowest:** Tapi district (8.7 %)
- **Low percentage of female students interested:** In most districts percentage of female students interested in Uniformed Services is low as compared to other interest fields. For instance, in Tapi district a very low proportion of female students show interest in Uniformed Services among all seven interests fields.
- **Students in Banaskantha, Devbhumi dwarka, Jamnagar and Porbandar show a high** proportion of students with a clear single interest in Uniformed Services compared to other interests within their respective districts.

Gender-wise Trends: Male

- Only 13.8 % show interest in Uniformed Services
- **Highest:** Ahmedabad City district (17.1 %)
- **Lowest:** Narmada district (9.1%)
- Male students in districts of **Chhota Udepur (9.3%), Mahisagar (10.1%), Narmada (9.1%) and Tapi (9.4%),** show very low proportion of students interested in Uniformed Services compared to all other interest fields.
- **Second most preferred in Ahmedabad City and Surat:** Male students in districts of Ahmedabad City and Surat show a very high interest in the field of Uniformed Services compared to all other interest fields in their districts. In these districts Uniformed Services has the second highest proportion of male students with a single clear interest in it.

Gender-wise Trends: Comparative

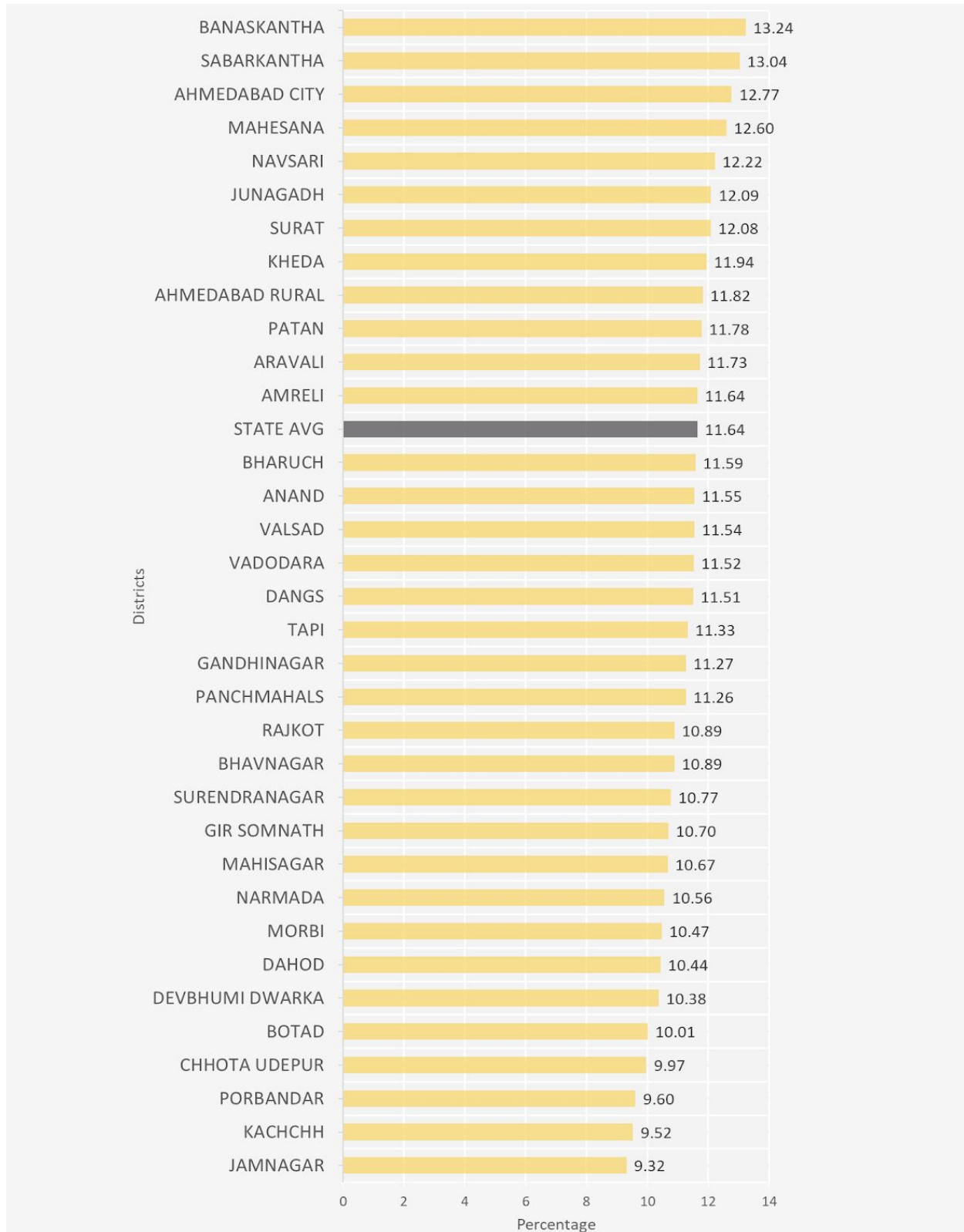
- **More female students show interest:** The proportion of male and female students showing a clear single interest in Uniformed Services is similar, with that of male students being slightly higher at 13.8 percent as compared to female students at 12.3 percent.
- **Gender difference:** Of the 35 districts, only in 12 districts a higher proportion of female students show a single clear interest in Uniformed Services compared to male students. This difference is the most in Surat, where a higher proportion of male students show interest by 4.8 percentage points and the least in Bota district where the proportion of male and female students interested in Uniformed Services is the same.

Health & Life Sciences

Overall Trends

- 11.6 % students in the state show a clear single interest in Health & Life Sciences
- **Highest:** Banaskantha district (13.24 %)
- **Lowest:** Jamnagar district (9.32%)

Chart 34: District-wise student population interested in Health Science



The chart above shows the share of the total district population interested in Commerce

Gender-wise Trends: Female

- 8% female students in the state show a clear single interest in Health & Life Sciences, least among Female students.
- **Highest:** Ahmedabad city (10.5%)
- **Lowest:** Tapi (18.3%)
- **Female students least interested in Health & Life Sciences:** in districts very few female students show a clear single interests in Health & Life Sciences compared to all other interest fields. In 28 districts of 35 districts in Gujarat state, least proportion of female students showing interest in Health & Life Sciences.

Gender-wise Trends: Male

- 14.6% male students are interested Health & Life Sciences.
- **Highest:** Dang district (17.3%)
- **Lowest:** Kutch district (12.2 %)
- **Interest among male students is high:** Overall, a high proportion of male students across all districts show a clear single interest in Health & Life Sciences, compared to all other interest fields.
However, proportion of male students in **Jamnagar (13.2%), Kutch (12.2%) and Porbandar (12.7%)** with a clear single interest in Health & Life Sciences is much lower against other interests fields.

Gender-wise Trends: Comparative

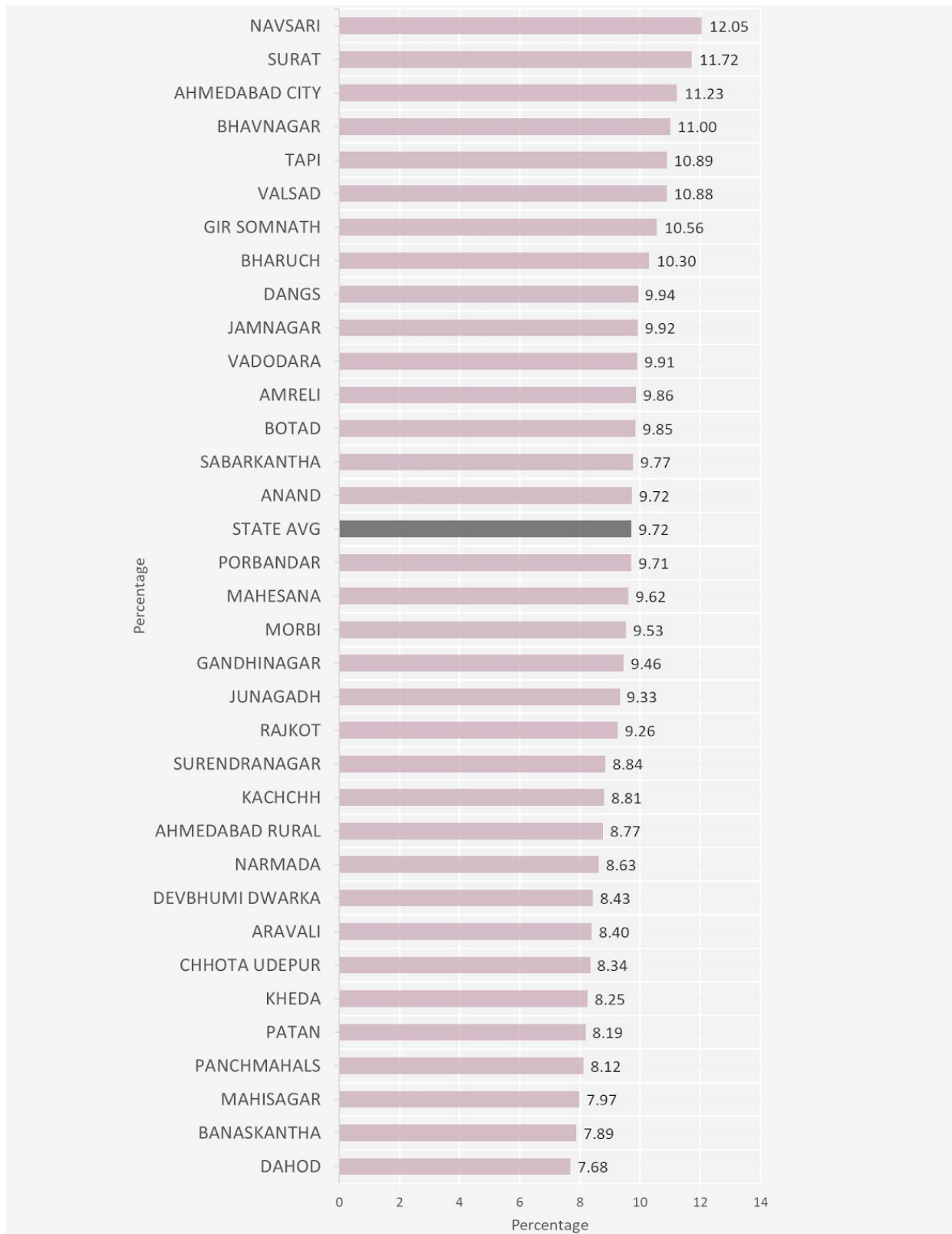
- **Male students more interested:** More number of male students (14.6 %) show interest in Health & Life Sciences over female students (8 %). This is the case in all districts, where male students with an interests is on average seven percentage points higher than that of female students. The difference is the most stark in Dang district and the least in Ahmedabad city district by 10.5 and 4.1 percentage points, respectively.

Technical

Overall Trends

- 9.7 % students show a clear single interest in Technical field compared to all other interest fields, second to the last.
- **Highest:** Navsari district (12.05%)
- **Lowest:** Dahod district (7.68%)

Chart 35 :District-wise student population in Technical



The chart above shows the share of the total district population interested in Technical

Gender-wise Trends: Female

- 13.7% show a clear interest in Technical
- **Highest:** Gir Somnath (16.5%)
- **Least:** Kutch (11.4%)
- **Uneven distribution among Female Students:** a high proportion of female students show a clear single interest in Technical compared to all other interests fields in each district. However, in some districts - Ahmedabad Rural (12.7%), Kutch (11.4 %), Porbandar (13.1%), Rajkot (13%) and Vadodara (12.5%) - proportion of female students with a clear single interest in Technical compared to all other interest fields is much lower.

Gender-wise Trends: Male

- Only 6.5% indicate an interest in Technical, the least among male students
- **Highest:** Surat (10%)
- **Lowest:** Mahisagar (3.6 %).
- Technical field has the **least proportion of male students with a interest** amongst all fields in 32 of 34 districts.
- Only in **Ahmedabad City and Surat**, the proportion of male students with a clear single interests is low but not the lowest among all interest fields.

Gender-wise Trends: Comparative

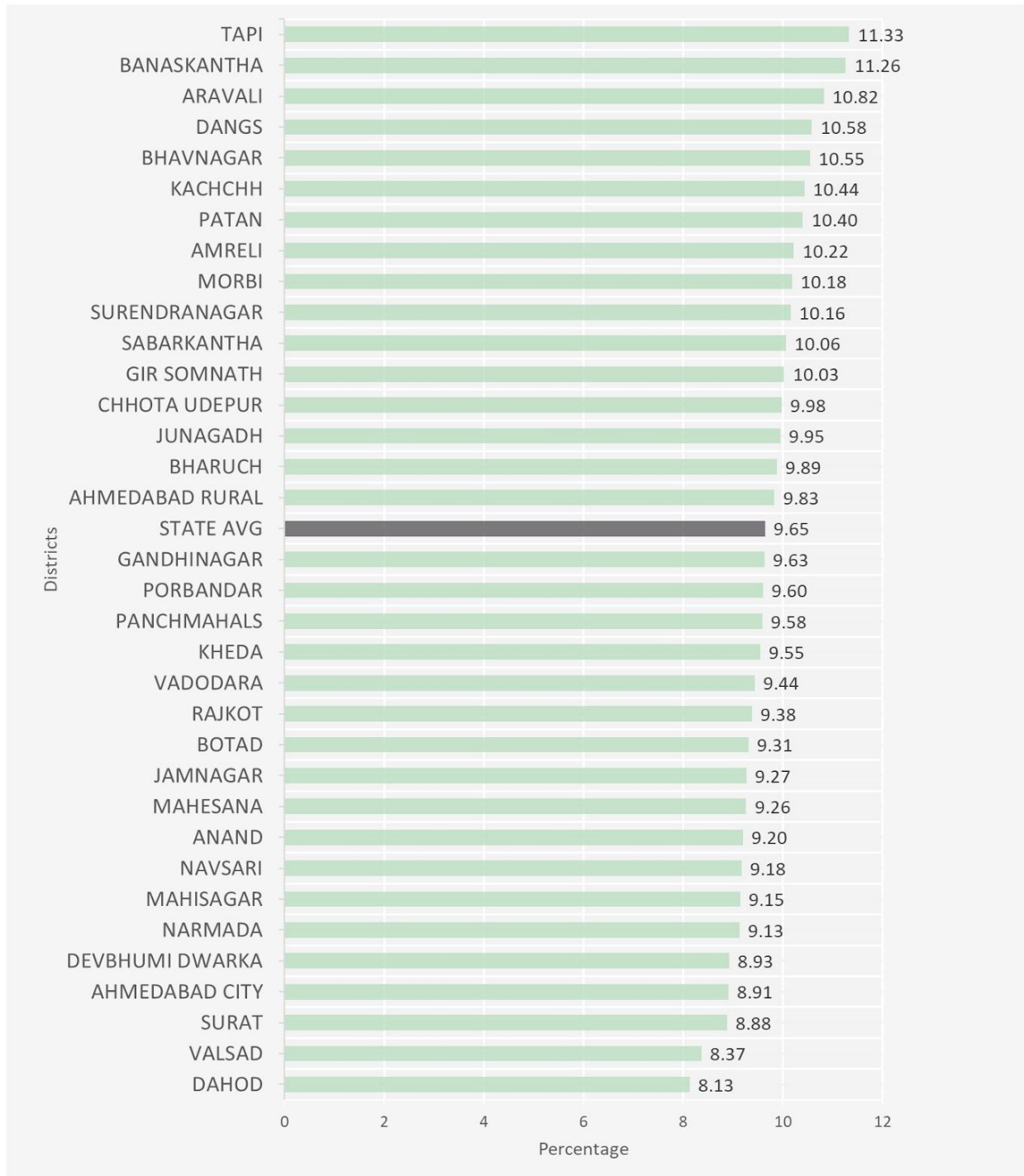
- **Female students are more interested:** a higher proportion of female students are interested in Technical compared to male students. This difference of 6.9 percentage points is reflected among all districts, where proportion of female students in each district is on an average of eight percentage points more than male students. This difference is the most in **Gir Somnath district**, at 11.5 percentage points, and the least in **Surat and Ahmedabad**, at 3.5 percentage points and 4 percentage points respectively.

Arts and Humanities

Overall Trends

- Only 9.6 percentage students show a clear single interests in Arts and Humanities, least among all interest fields.
- **Highest:** Tapi (11.33%)
- **Least:** Dahod (8.13%)

Chart 36: Gujarat District-wise students interested in Arts and Humanities



The chart above shows the share of the total district population interested in Commerce

Gender-wise Trends: Female

- Only 8.9 percent of the female students are interested, second only the field of least interest.
- **Highest:** Tapi (11.2%)
- **Least:** Dahod (6.7%)
- **Interest among female students low:** Proportion of female students with a clear single interests in Arts and Humanities is low compared to other interests fields in all districts. However, it is the least among female students of Valsad (7.1%), Surat (8.4%), Navsari (8.2%), Anand (7.8%) and Ahmedabad city (8%) districts. Conversely, it is higher in Tapi (11.2%) and Dang (11%).

Gender-wise Trends: Male

- Only 10.3 percent of male students in the state are interested in Arts and Humanities, second to the field of least interest.
- **Highest:** Banaskantha (11.6%)
- **Least:** Devbhumi Dwarka (9%)
- **Interest among male students is low:** In all districts in Gujarat state, the proportion of male students with a clear single interest in Arts and Humanities is low, but is the least in Surat (9.3%). While in all other districts it is almost second to the last.

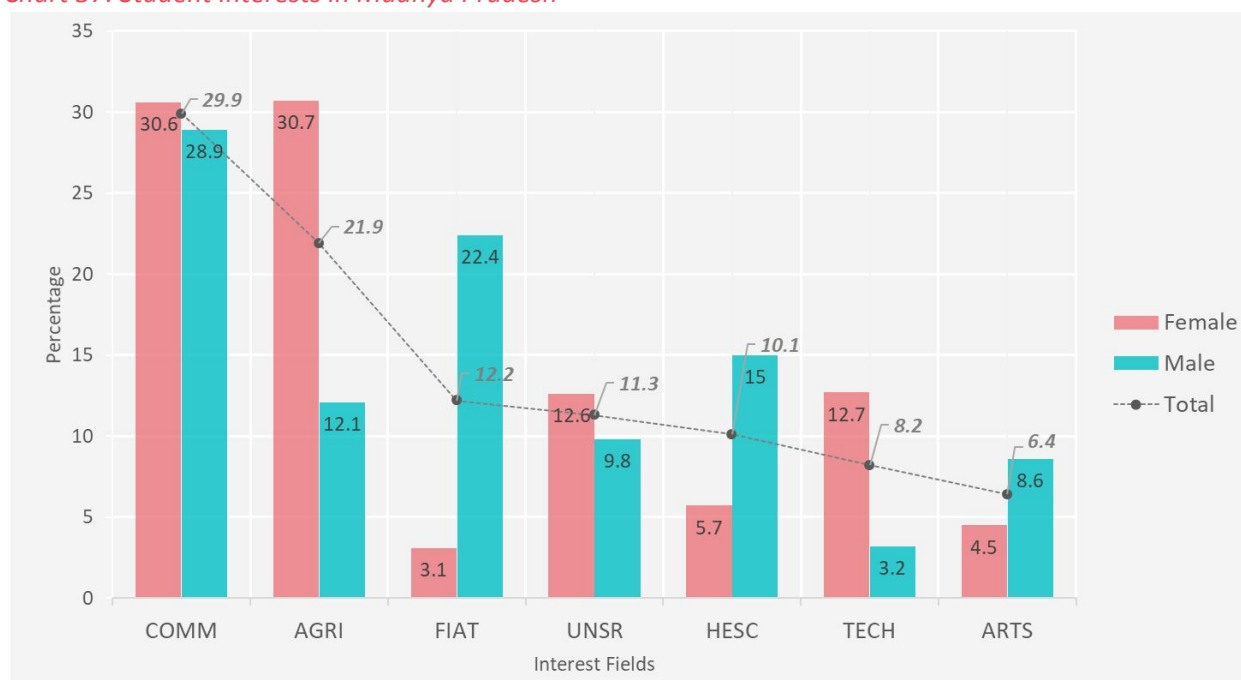
Gender-wise Trends: Comparative

- **Male students are more interested:** In most of the districts, proportion of male students with a interest in Arts and Humanities, exceeds that of female students, but only by an average of 1.5 percentage points. The difference is most in Chhota Udepur district at 3.8 percentage points and least in Vadodara and Surendranagar with only 0.1 percentage points where proportion of female students interested in Arts and Humanities exceeds that of male students.

5.3 Madhya Pradesh

In the state of Madhya Pradesh a total of 5,41,219 students were tested for interested though Kal Chachani for the academic year 2017-18, that covers 65.1 % of students registered for SSC exam in that year¹⁶. This included 51.9% female students and 48.0 percent male students across 51 districts. Of the total students tested, 67.88 % or 369,921 students show a clear interest. The sections below discuss the findings from the interest and aptitude scores of students at the state and district level. Note, data on student aptitude test conducted in Madhya Pradesh has been discussed in section 6 below.

Chart 37: Student Interests in Madhya Pradesh



The chart above shows the share of female student population, male student population and total student population split by interest areas.

- **Overall Trend:** Highest interest in Commerce (29.9%) and lowest in Arts and Humanities (6.4%).
- **Female Students:** Highest in Commerce (30.8 %) and Agriculture (30.7%) and least in Fine Arts (31.1%).
- **Male Students:** Highest in Commerce(28.9%), lowest in Technical (5.4%).
- **Gender based similarities:** Most number of students, among both female and male students, show highest interest in **Commerce**, 30.8% and 28.9% respectively. Percentage of female students and male students showing interest in **Uniformed Services** (12.6% and 9.8%, respectively) and **Arts and Humanities** (4.5 % and 8.6%, respectively) are also similar.
- **Gender based difference:** However, more number of female students are interested in Agriculture and Technical as compared to male students. The gap is the widest in **Agriculture** at 18.6 percentage points, against 9.5 percentage points in the case of **Technical**. While male

¹⁶ Source: <http://mpresults.nic.in/mpbse/Xhsc-2018/others/MP-STAT-HS.pdf>

students show more interest than female students in **Fine Arts** by 19.1 percentage points and in **Health & Life Sciences** by 9.8 percentage points.

Similarity between male students interested in Uniformed Services and Arts and Humanities:

- The difference between the proportion male students interested Uniformed Services and those interested in Arts is very low at 1.2 percentage points.
- This can be seen even among the districts, where in most cases the difference between the percentage of male students interested in Uniformed Services and those interested in arts is negligible and at most is at 3.9 percentage points in Anuppur district.
- Very few male students are interested in Uniformed Services or Arts and Humanities.

Similarity between students interested in Commerce and Agriculture

- Of all the 51 districts, in 38 districts students show the most interest in Commerce but in 13 remaining districts students show the most interest in Agriculture.
- Among female students difference between those showing interest in Commerce and Agriculture is negligible at the state level and even among districts.
- While female students in MP show high interest in both Agriculture and Commerce fields. Where as male students show high interests in Commerce and very low interest in Agriculture.

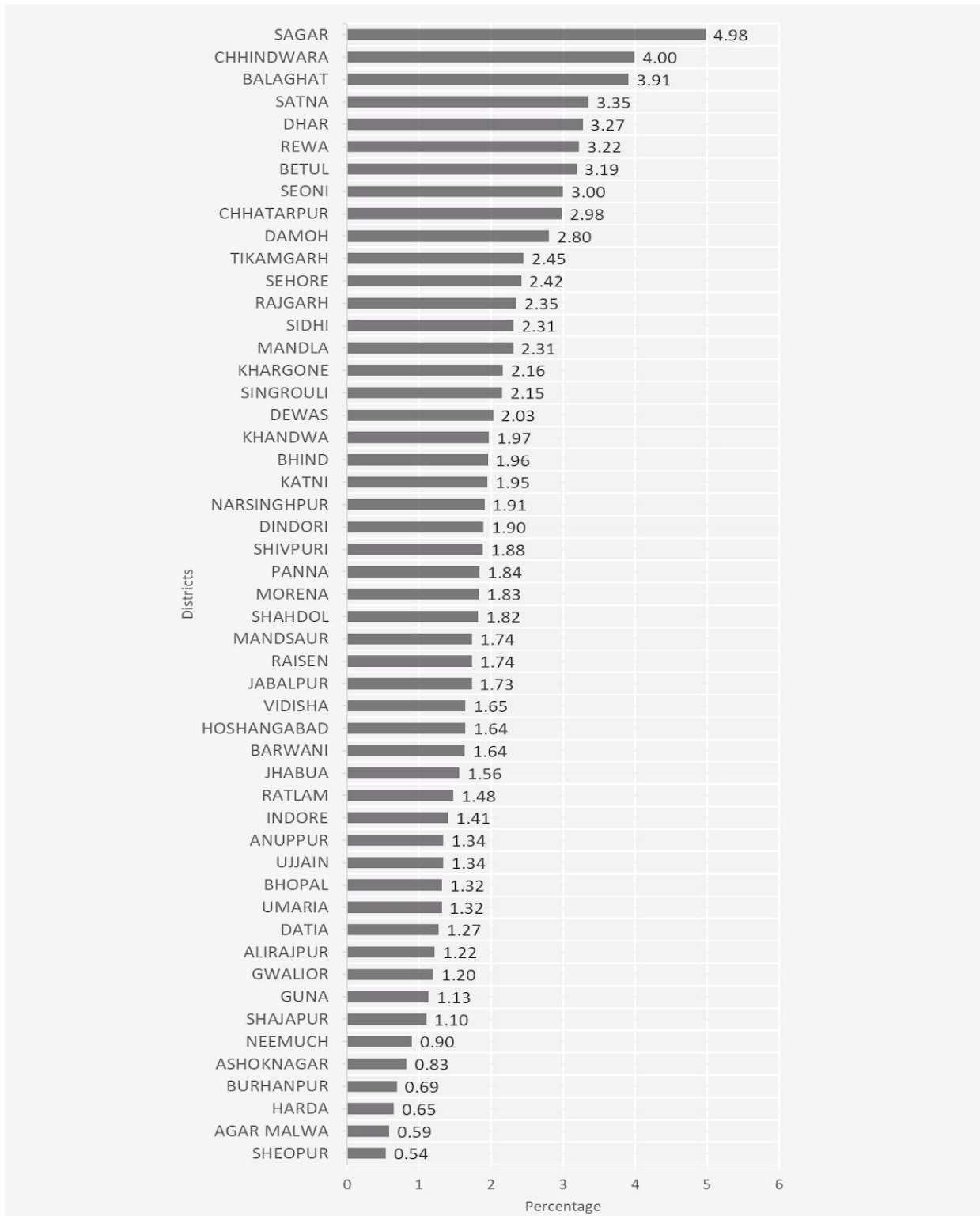
Similarity between students interested in Uniformed Services and Technical

- Proportion of students interested in Uniformed Services (11.3%) and Technical (8.2%) are close in MP.
- While the same proportion of female students are interested in Uniformed Services and Technical, much fewer male students show interest in the same. 12.6 % and 12.7 % of female students in the state show interest in Uniformed Services and Technical respectively.
- This is explained by the fact that, female students in 29 of 51 districts show more interest in Technical over Uniformed Services and in 22 districts they show more interest in Uniformed Services over Technical.
- While, 9.8% and 3.2% male students show interest in Uniformed Services and Technical respectively.
- In all of the districts, Technical is the least popular among male students. Thus, while female students in MP are as interested in Uniformed Services or in Technical fields, male students are much more interested in Uniformed Services than Technical.

5.3.1 District Trends

In the following sections interests scores for all seven fields are discussed across all of MP state's 51 districts. Interests fields are arranged in descending order of proportion of students with a clear single interests in the field. Beginning with the field with the highest proportion of students with a single interest and progressing in descending order. Further within each, differences between female and male students in districts are discussed.

Chart 38: Distribution of student population across MP districts



The chart above shows the all 51 districts in MP state along with student populations with unique scores in each arranged in descending order. As can be seen the chart above Sagar district has the highest

concentration of the student population, as opposed to which Sheopur district has the least share of the student population.

Commerce

Overall Trends

- Commerce sees the with highest proportion of students (29.9%) at the overall level.
- **Highest:** Shivpuri (33.75%), Barwani (32.53%) and Sagar (33.75%) districts show the highest proportion of students interested in Commerce among all districts.
- **Lowest:** Jabalpur (26.88 %) and Indore (26.98 %) show the least proportion of students interested in Commerce compared to the state average.

Gender-wise Trends: Female

- Overall,30.8 percent of female students in the state show interest in the field of Commerce.
- **Highest:** Districts like Shivpuri (35.5%), Monera (34.9%) and Chhatrapur (34.2%) show the highest ratio of female students interested in the field of Commerce.
- **Lowest:** While districts of Bhopal (26.7%), Indore (26.3%) and Jabalpur (25.9%) show the least.
- As mentioned in the section above, in 28 districts, interest field of Commerce sees the highest proportion of female students. In the remaining 23 districts it is the second highest among all interest fields.

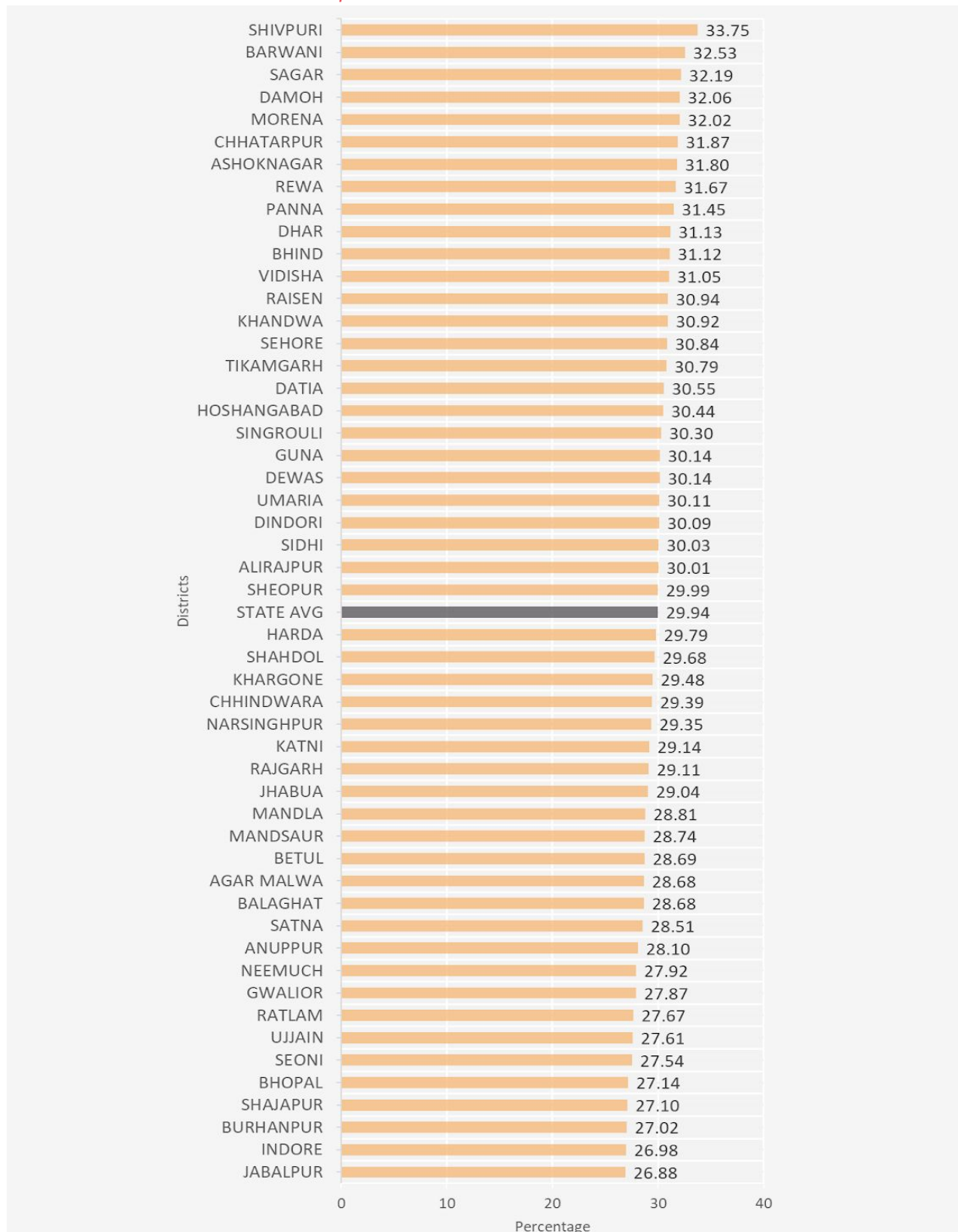
Gender-wise Trends: Male

- Overall, 28.9% of the male students in the state show interest in Commerce.
- **Highest :** Male students from the districts of Shivpuri (32.4 %), Parbhani (31.6%), and Raisin (30.7%) show the highest interest in Commerce amongst all the districts.
- **Lowest:** Where as those from Gwalior (25.6 %), Satna (26.4%), Burhanpur (26.7%) show the least proportion of students with a clear single interest in Commerce.
- In all districts of MP, proportion of male students with a clear interest in Commerce is the highest of all interest fields.

Gender-wise Trends: Comparative

- Overall, more number of female students are showing interest in Commerce over male students in the state, except in 11 of the 51 districts.
- In Singrauli, Monera and Tikamgarh number of female students interested in Commerce over male students is 5.2, 5 and 4.7 percentage points higher, respectively.
- Of the eleven districts where more number of male students show interest in Commerce, the maximum is observed in districts of Jabalpur, Ujjain and Seoni male students show more interest over female students by 2.3, 1.8 and 1.7 percentage points respectively.

Chart 39: MP district-wise Student Population interested in Commerce



The chart shows district wise percentage of student population interested in Commerce.

Agriculture

Overall Trends

- 21.9 percent of students in the state show single clear interest in Agriculture.
- **Highest** : Districts of Neemuch (30.50 %), Ujjain (27.79%), Jabalpur(27.18%), Bhopal (27.60%) and Indore (26.79%) have the highest percentage of students interested in Agriculture.
- **Lowest**: Students from Shivpuri (17.47 %), Sidhi (18.25 %) and Singrauli (18.42 %) have the lowest percentage of students interested in agriculture among all districts.

Gender-wise Trends: Female

- As many as 30.8 percent of the female student population in the state show a clear interest in Agriculture.
- **Highest** :Neemuch (42.6%) district records the highest
- **Lowest** : Sidhi (24.7%) district records the lowest among the proportion of female students interested in Agriculture across districts.
- As mentioned in the sections above, Agriculture sees the highest percentage of female students over all other interest fields in 23 districts. In the remaining districts, it has the second highest proportion of female students with a clear single interest among all interests fields.

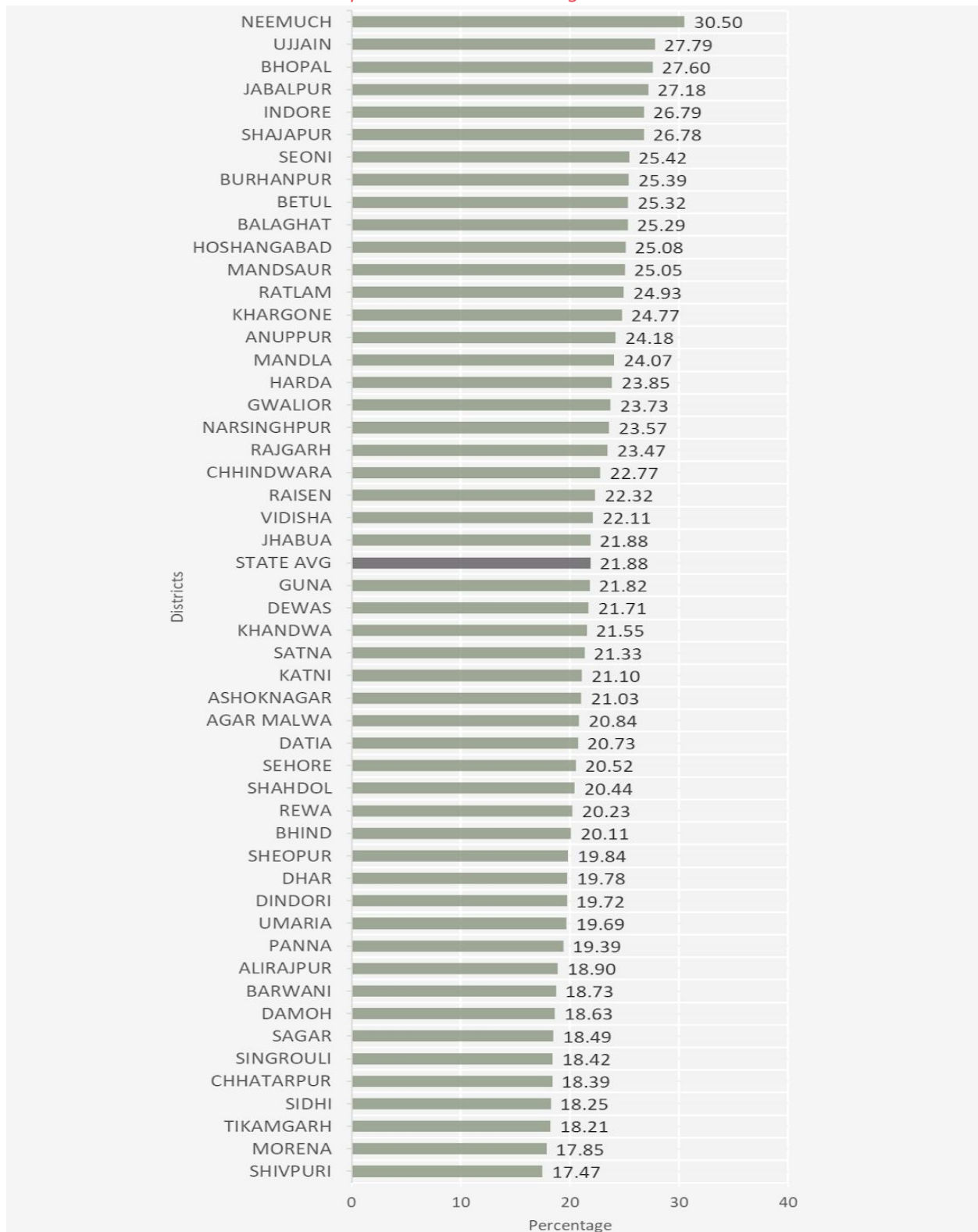
Gender-wise Trends: Male

- Overall proportion of those with a single clear interest in Agriculture across the state is at 12.1 percent.
- **Highest**: Students from Neemuch (16.1%), Shajapur (15.6%), and Ujjain (14.8%) are show a high proportion of students interested in agriculture.
- **Lowest**: On the other hand male students from Satna (12.1%), Alirajpur (9.9%) and Panna (10.1%) show the lower proportion of students interested in agriculture.
- In most districts proportion of male students with a single interests in Agriculture compared to other interests fields is low.

Gender-wise Trends : Comparative

- Compared to percentage of male students a higher proportion of female students are showing a interest in Agriculture, by as much as 18.7 percentage points.
- This is the case in all 51 districts, where a higher proportion of female students show a clear interests in agriculture over male students.
- However, this gap is as wide as 26.5 percentage points in Neemuch district and as narrow as 13.9 percentage points in Sidhi district.

Chart 40: MP District-wise Student Population Interested in Agriculture



The chart shows district wise percentage of student population interested in Agriculture.

Fine Arts

Overall Trends

- As with other fields, while the state average of proportion of students showing interest is at 12.2 per cent in Fine arts.
- In Monera district, as many as 16 percent of the students show a high interests in Fine Arts and
- in Neemuch district as low as 7.92 percent students show a clear interest in Fine Arts.

Gender-wise Trends: Female

- In MP state, only 3.1 percent female students show interest in Fine Arts, the least among all interest fields.
- **Highest:** This does not exceed 4.1 percent in Dindori district(where it is the highest)
- **Lowest:** is observed to be the lowest in Neemuch district with only one percent of female students with a single interest in Fine Arts.
- In all MP districts, except Dindori district, proportion of female students interested in Fine Arts is the least of all interest fields. In Dindori district, it is second to the last.

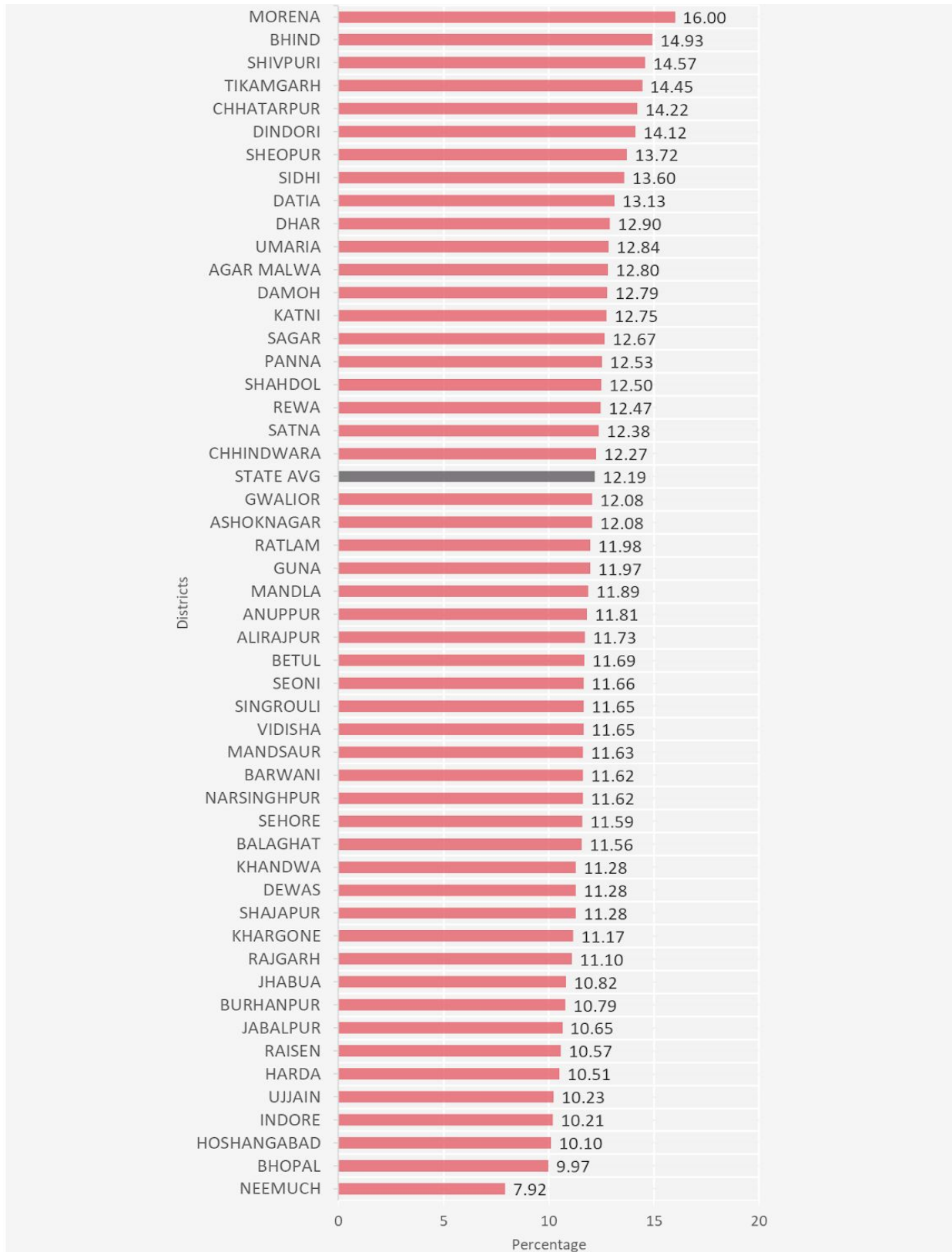
Gender-wise Trends: Male

- About 22.4 percent male student in the MP show a clear interest in Fine Arts.
- **Highest :** This is observed to be maximum in Morena district (25.2%)
- **Lowest :** Jhabua district (18.3%).
- Except in two of the 51 MP districts, the proportion of male students interested in th Fine Arts is the second highest in comparison to all other interests fields. In the remaining two districts - Jhabua and Neemuch - it is comparatively lower.

Gender-wise Trends: Comparative

- Female students (3.1%) show much lower interest as compared to male students (22.4 %). As is seen in all districts where the proportion of male students with a clear in Fine Arts is higher than female students.
- The difference is the maximum in Bhind district, with 22 percentage points and the least in Neemuch district with 15.1 percentage point difference.

Chart 41:MP District-wise student population interested in Fine Arts



Uniformed Services

Overall Trends

- Only 11.3 percent students in the state show a clear interest in Uniformed Services.
- This is the highest in Singrauli district (13.82 %) and the least in Harda district (8.89 %).

Gender-wise Trends :Female

- In the state, 12.6 percent of female students show an interest in Uniformed Services.
- **Highest** : Singrauli (15.3%)
- **Lowest** : Harda (9.6%)
- As mentioned in the section above, share of female students with a clear interests in Uniformed Services is the third highest among 22 districts and the fourth highest in the remaining districts.

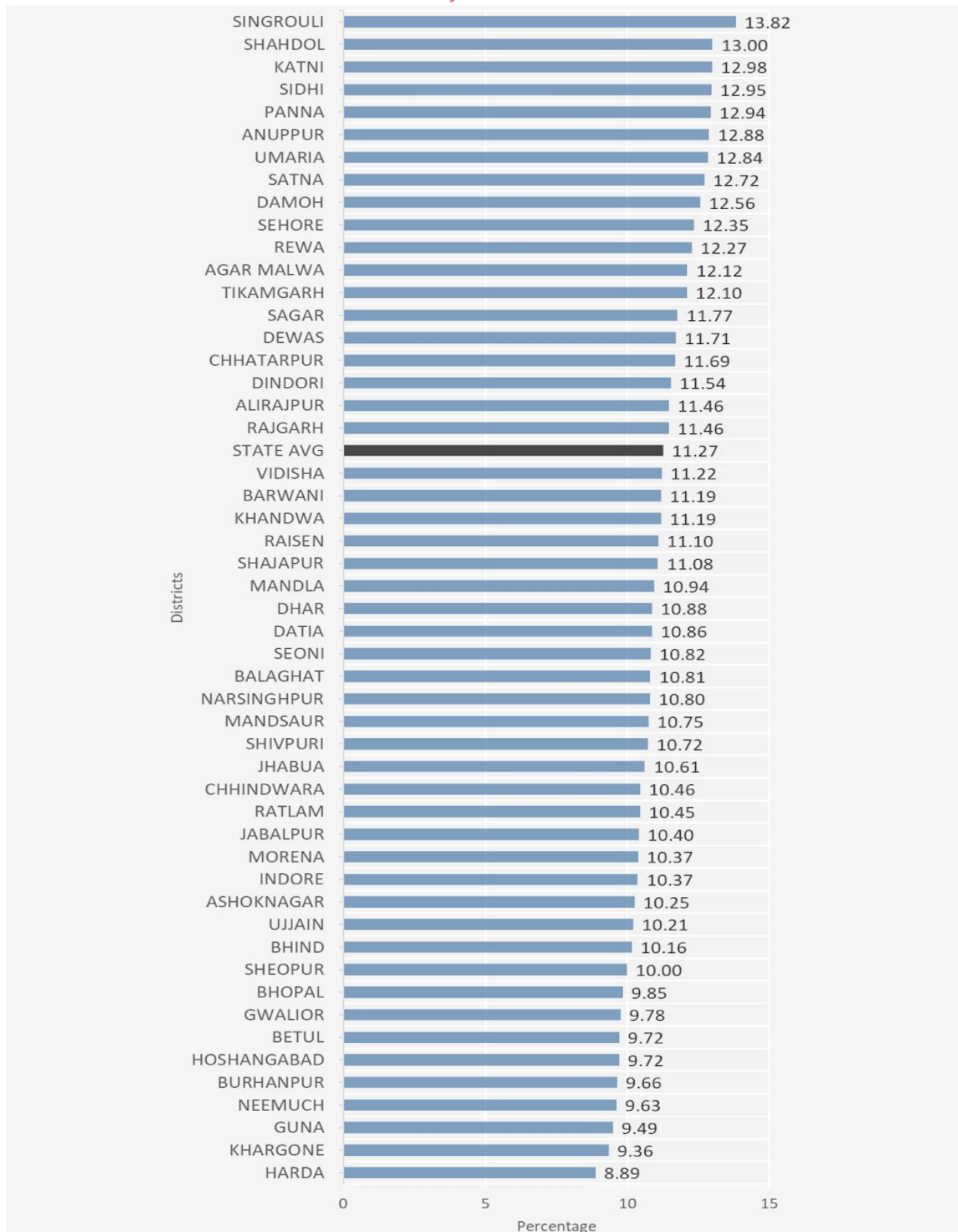
Gender-wise Trends: Male

- Among male students in the state, 9.8 percent show a clear interest in Uniformed Services.
- Within districts, Singrauli (12.1 %) and Betul (7.8%) observe the the highest and lowest percentage of male students interested in Uniformed Services among all the districts.

Gender-wise Trends: Comparative

- A higher proportion of female students have a clear interest in Uniformed Services compared to male students, in the state this is as much as 2.8 percentage points.
- In all districts, except Neemuch, percentage of female students with a clear interest in Uniformed Services exceed that of male students.
- In Neemuch district proportion of male students with a interest in Uniformed Services exceeds female students in the district but only by 0.2 percentage points.
- The difference is a maximum of 4.9 percentage points in Sidhi district.

Chart 42:MP District-wise students interest in Uniformed Services



Health & Life Sciences

Overall Trends

- 10.1 percent students in the state show clear interest
- Jhabua (13.55 %) has the highest percentage of students interested while Panna (8.91 %) has the least

Gender-wise Trends: Female

- Among female students only 5.7percent in the state show a single interest
- **Highest:** Guna and Jhabua (7.2%)
- **Lowest :** Tikamgarh (4.4 %)
- In almost all districts, proportion of female students with a single interest in Health & Life Sciences compared to all other interest fields remains uniform.

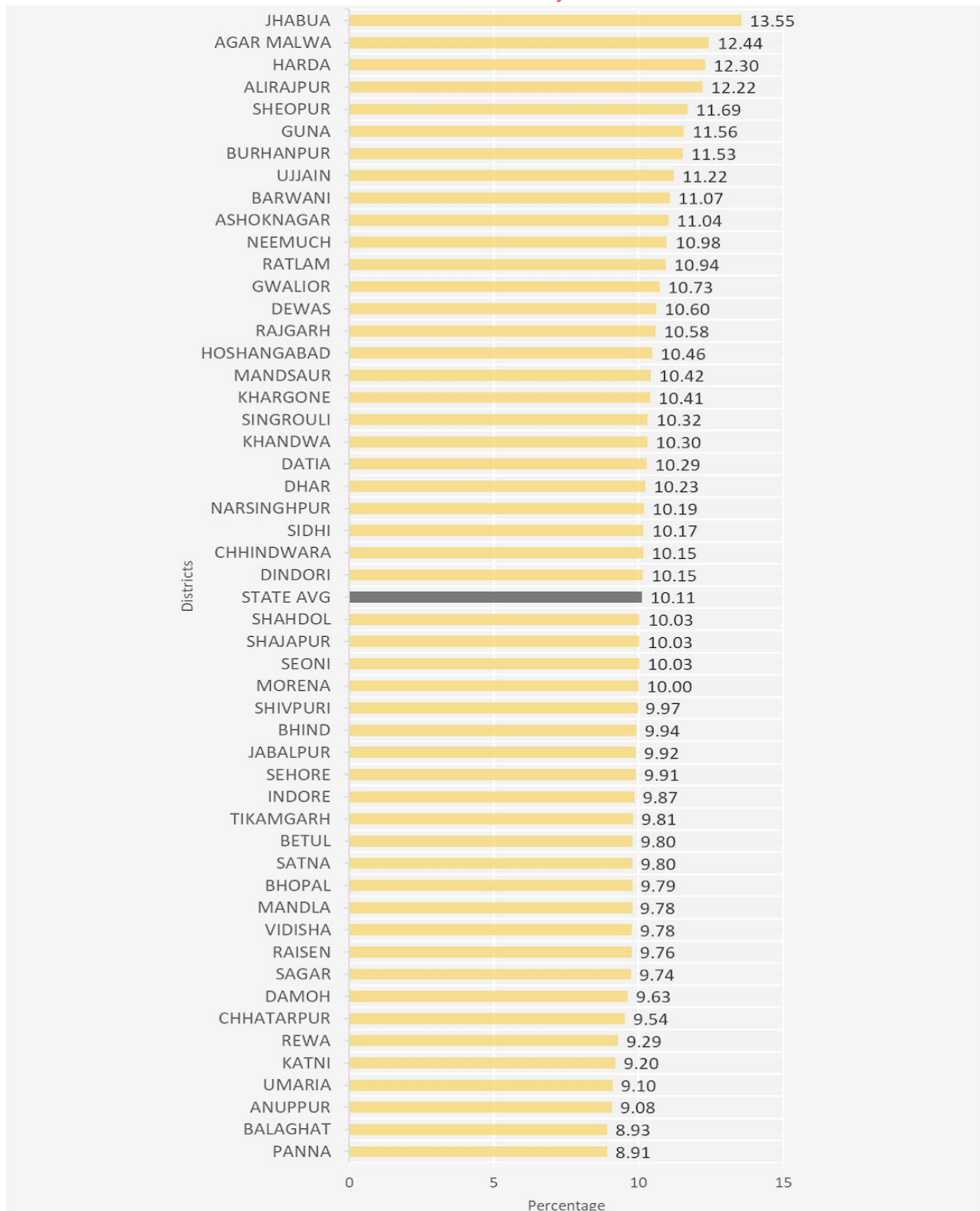
Gender-wise Trends: Male

- Overall, 15 % of male students show a clear interest in Health & Life Sciences.
- **Highest:** Jhabua (19.3%)
- **Lowest :** Monena (13 %.)
- In 48 of the 51 districts, Health & Life Sciences is highly preferred among among male students compared to all other interests areas. In theses districts it is the third highest in the proportion of male students with a single clear interest as compared to all other interest areas.
- In Neemuch and Jhabua districts it is the second most preferred among all interest areas. While in Shajapur district it is only the fourth most preferred.

Gender-wise Trends: Comparative

- With 9.3 percentage points difference in the proportion of female and male students with a interest in Health & Life Sciences, male students show much more interest as compared to female students.
- Among districts this percentage is observed to be as low 7.1 percentage points in Neemuch district and as high as 12.1 percentage points in Jhabua district.
- In all districts in the state percentage of male students with a single interest in Health & Life Sciences exceed that of female students in the district.

Chart 43: MP district-wise students interested in Health & Life Sciences



Technical

Overall Trends

- The state average is (8.2%), as many as 9.86 percent students in Umaria district and as few as 6.42 percent in Agar Malwa district have a clear single interests in Technical.

+Gender-wise Trends: Female

- 12.7 percent of female students in the state show a clear interest in Technical in MP state.
- This is the third highest amongst all interests fields in the proportion of female students with a clear single interests.
- **Highest:** Umaria (15.5 %)
- **Lowest:** Neemuch (9.2%) make up the highest and lowest percentage of female students with a clear single interest in Technical among all the districts.
- In as many as 29 districts Technical is the third highest field of interest for female students of all interest fields.

Gender-wise Trends:Male

- Only 3.2 percent of male students have a clear single interest in Technical, the least among all interests fields for male students in the state.
- **Highest:** Gwalior (4.2%)
- **Lowest:** Panna (2.5 %) In all districts proportion of male students with a single interest in Technical is the least amongst all interest fields.

Gender-wise Trend: Comparative

- A much higher proportion of female students (12.7%) show interest as compared to male students (3.2%), as much as by 9.5 percentage points.
- In all districts, the proportion of female students with a single interest in Technical is much more than male students.
- This is seen to be the highest in Umaria district and the least in Neemuch district, where the proportion of female students interested in Technical exceeds male student by 12 percentage points and 5.4 percentage points respectively.

Chart 44: MP district-wise Students Interested Technical



Arts and Humanities

Overall Trends

- Only 6.4% students show an interest in Arts and Humanities, the least among all interest fields.
- **Highest:** Sheopur district (7.71%)
- **Lowest:** Urmari district (5.55%).

Gender-wise Trends: Female

- Only 4.5% of female students show a clear single interest in Arts and Humanities. Second to last in the percentage of female students across interests fields.
- **Highest:** Agar Malwa district (5.5%)
- **Least:** Morena district (3.6%)
- **Low interest in Arts and Humanities:** As seen at the state level in 48 districts, Arts and Humanities is second to the last in the percentage of female students across all interest fields. Only in **Dindori district**, it is the least in the proportion of female students across all interests fields.

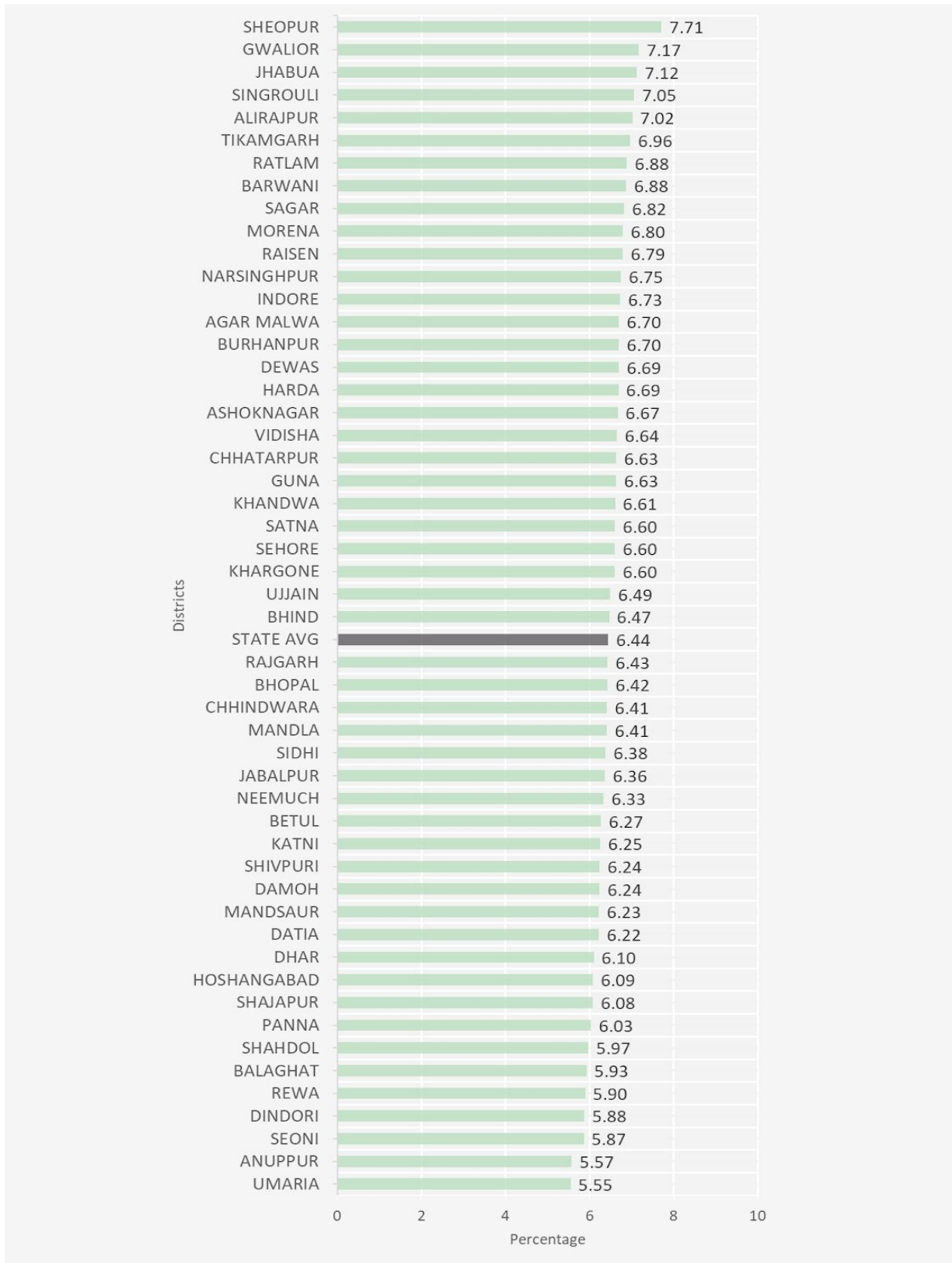
Gender-wise Trends: Male

- 8.6% male students in the state have a clear single interest in Arts and Humanities, second to the last among all interest fields.
- **Highest:** Sheopur (10.2%)
- **Least:** Umari (7.5%)
- **Mixed distribution among districts:** Only in 37 districts however, proportion of male students with a clear single interest in Arts and Humanities is second to last.

Gender-wise Trends: Comparative

- **Male students are more interested:** More number of male students (8.6%) are interested in Arts and Humanities as compared to female students (4.5%), however only by 4.1 percentage points. This is the case with all districts, where proportion of male students interested in Arts and Humanities exceeds proportion of female students with an interests in Arts and Humanities. In MP districts, the difference is maximum of 5.7 percentage points in Sheopur district, and a minimum of 2.2 percentage points in Agar Malwa.

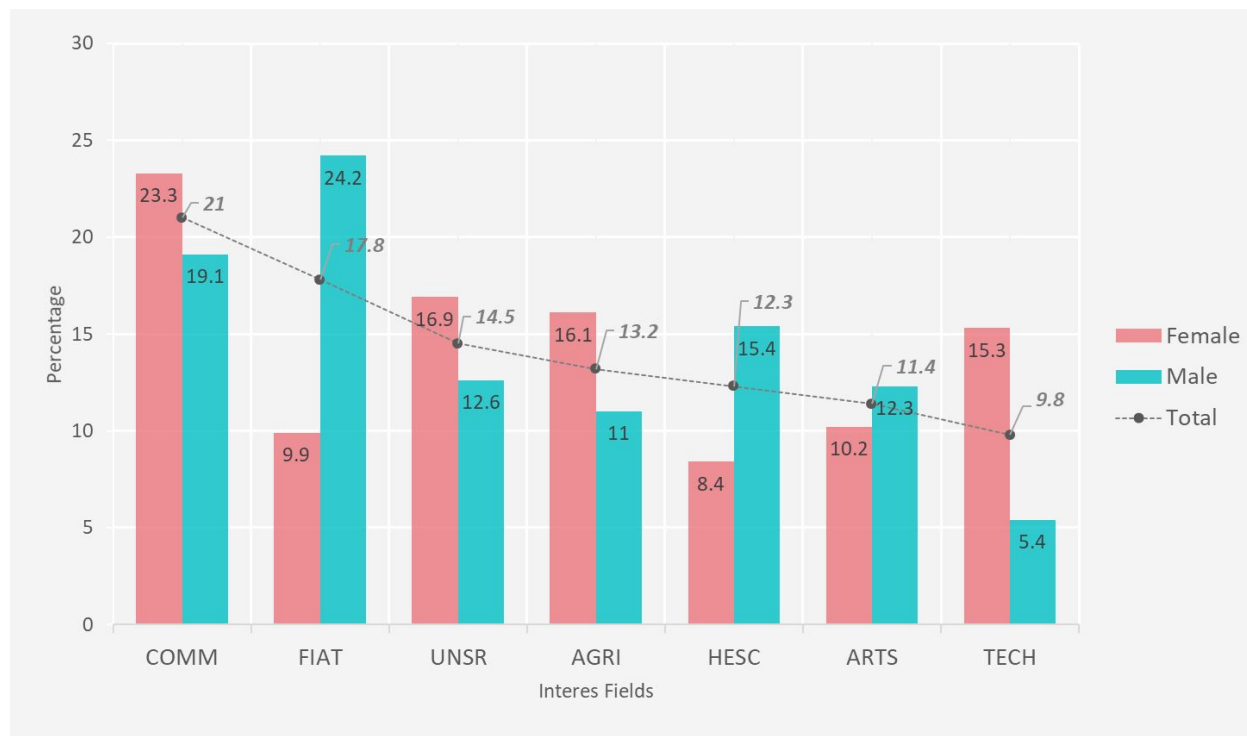
Chart 45: MP district-wise Student Interested in Arts and Humanities



5.4 Maharashtra

In the academic year 2017-18, 17.50 lakh students appeared for the interest test, this covered almost all students in the state of Maharashtra¹⁷. Among the test takers female to male students were in the ratio of 44:56, reflecting the sex ratio captured in the census 2011. Among students in Maharashtra 71.64% or 1,256,567 students show a clear single interests in any field. The sections below discuss findings among these students.

Chart 46: Student interests in Maharashtra



The chart above shows the share of female student population, male student population and total student population split by interest areas.

- **Overall: Highest:** Commerce (21 %), **Lowest:** Technical (9.8 %)
- **Female Students:**
 - Highest is Commerce (23.3 %) and lowest is Health & Life Sciences (8.4%).
 - Higher percentage show interest in Commerce (4.2% gap), Uniformed Services (3.5% gap), Agriculture(5.1% gap) and Technical (9.9% gap)
- **Male students:**
 - Fine Arts (24.2%) as highest , and lowest in Technical (5.4%)
 - Higher percentage show interest in Fine Arts (14.3% gap) and Health (7% gap) Arts & Humanities (2.1% gap)

¹⁷ According to Maharashtra SSC Board, 1,764,536 students were registered for the SSC exam in 2017. The interest test therefore covered 99.2 percent of the student population that year. (source: https://mahahsscboard.maharashtra.gov.in/static_ssc/ssc17/SS-OVALL.HTM)

Student Interest Against U-DISE Data

Table 3: Student population as per location and school management type

Sr. No	Location/ School Management Type	Student Population (%)
I	Urban	47.04%
	Rural	52.96%
	Total	100%
II	Government schools	5.93%
	Private Aided Schools	77.18%
	Private Unaided	16.89%
	Total	100%
III	Government Aided	71.58 %
	Local body ¹⁸	2.24 %
	Partially Aided	3.02 %
	Self Finance	12.35 %
	Social Welfare School ¹⁹	1.39 %
	Tribal Welfare Schools ²⁰	2.43 %
	Unaided	4.34 %
	Other ²¹	0.23 %
	Z.P.	2.42 %
	Total	100 %

The table above presents the distribution of student population (including students with with single and multiple interests) across various categories. We see that **a higher percentage of students study in Rural areas and study in private aided schools**. Overall the **population of students studying in Social Welfare schools and Tribal Welfare Schools are less than four percent** of the entire students population in Maharashtra.

¹⁸ This Includes Municipal Corporation (MNC), Nagar Palika (NP) and Cantonment Board schools

¹⁹ This category includes Social welfare schools, Social welfare unaided schools and Social welfare aided schools

²⁰ This includes Tribal welfare schools and Tribal Welfare unaided schools

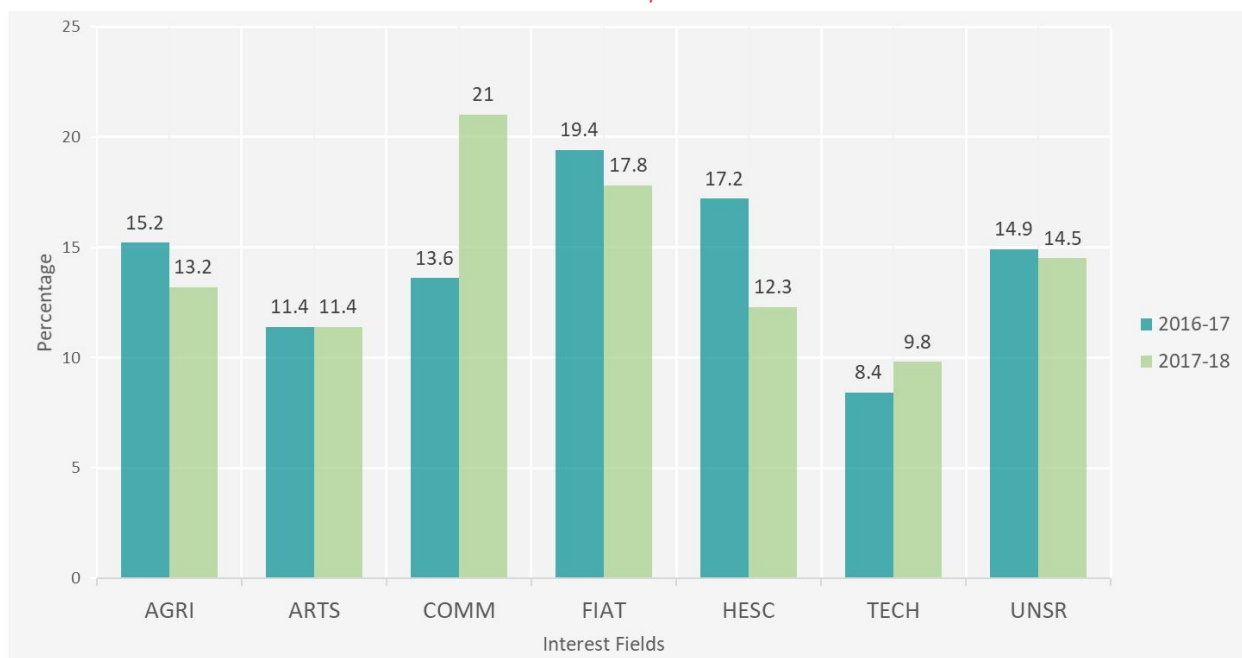
²¹ This includes Central Schools, Dept of Education schools, Private military schools, Railway schools, Unrecognised schools and Vedic/dharmic/sankrut Schools

Across categories we see that students with a single interest follow patterns very similar to the state patterns. If there is any differences at all, it lies within a difference of 2 percentage points at best. These patterns are further discussed in detail in the section below on interest in the state.

5.4.1 Trends: 2017 vs 2018

The following section compares student interest across two academic years, i.e. 2016-17 and 2017-18, at the Maharashtra state level as well as across nine academic divisions. In academic year 2016-17, 16.67 lakh students gave the interest test, of which 76 percent showed a single interest, higher than 71.64 percent in 2017-18. Student interests are compared for these students with a single interest.

Chart 47: Maharashtra 2016-2017 and 2017-2018 comparison



The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields.

Drastic Shift in Commerce

- Shift of 7.4 percentage points between two years, is the highest
- Commerce had the highest share in 2017-18, but only fifth highest in 2016-17.
- Can probably be explained by a similar increase in the proportion of female students with an interest in Commerce. Share among male students increased by 4.5 percentage points only, share among female students on the other hand has increased by 10.9 percentage points.

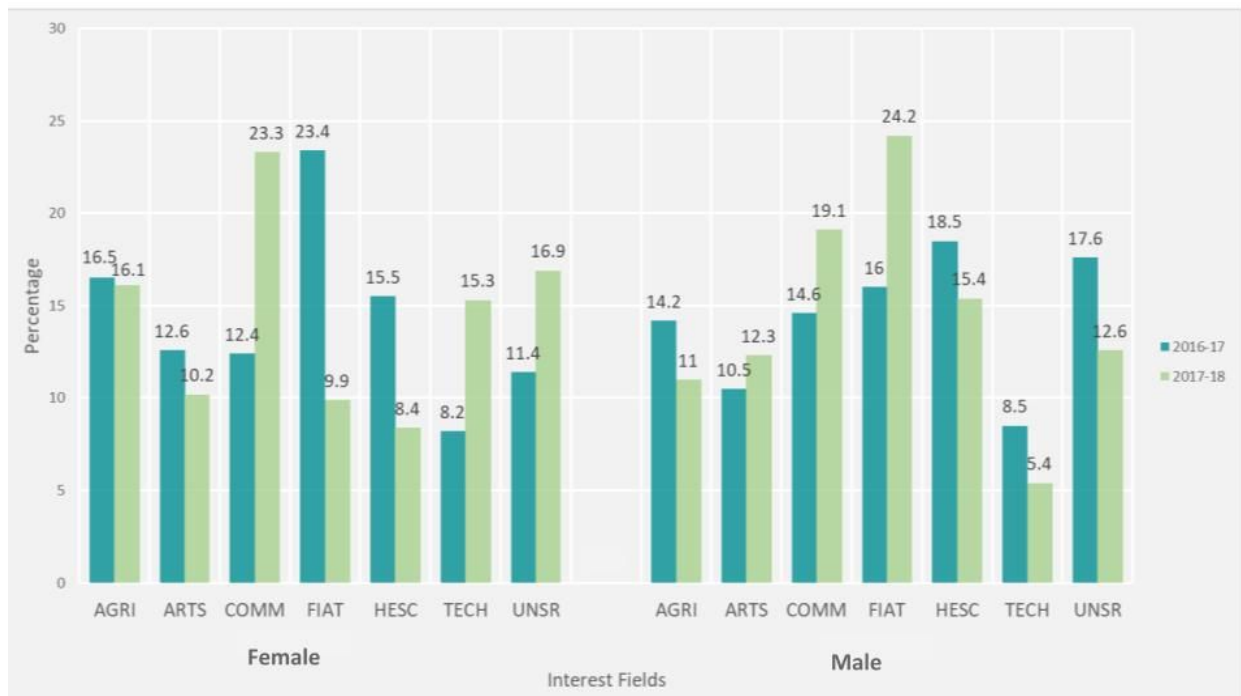
Increase in Technical

- Technical has increased by 1.4 percentage points.

Decline in Health & Life Sciences, Agriculture, Fine Arts, and Uniformed services

- Health & Life Sciences declined by 4.9 percentage points while Agriculture declined by 2 percentage points in 2017-18.
- Agriculture has declined by 2 percentage points in 2017-18.
- Fine arts has declined by 1.6 percentage points.
- Uniformed services has declined by 0.4 percentage points.

Chart 48: Maharashtra 2016-17 and 2017-18 comparison split by gender



The chart above compares data on female and male students for two consecutive years.

Shift in Fine Arts Gender Composition

- Highest in 2016-17 (19.4%), largely due to a high proportion of female students.
- In 2017-18, this pattern is reversed as proportion of male students with an interest in Fine Arts, drastically increases over female students from 2016-17, by 8.2 percentage points.
- Simultaneously, proportion of female students with an interest in Fine Arts in 2017-18 declined by 13.4 percentage points
- The high share of students at the state level in 2016-17 is caused by a high proportion of female students, while in 2017-18 it is caused by a high proportion of male students with an interest in the field.

Shifts in Gender Trends: Female Students

- Most Preferred: Fine Arts in 2016-17 and Commerce in 2017-18

- Least Preferred: Technical in 2016-17 and Health & Life Sciences in 2017-18
- Increase in Commerce, Uniform, Services and
- Decline in Health & Life Sciences, Fine Arts and Arts and Humanities.
- Same levels in Agriculture

Shifts in Gender Trends: Male Students

- Most Preferred: Health & Life Sciences in 2016-17 and Fine Arts in 2017-18
- Least Preferred: Technical across both years
- Decline in Agriculture, Health & Life Sciences, Technical and Uniformed Services
- Increase in Arts and Humanities, Commerce and Fine Arts

Conclusions

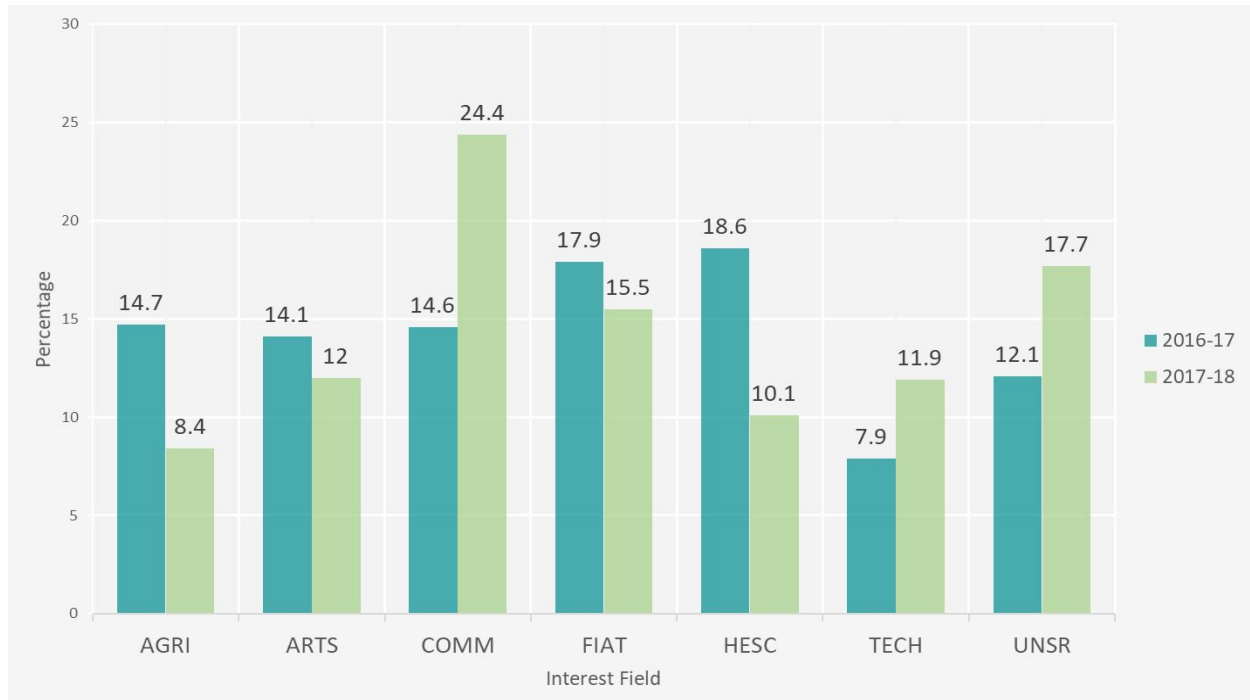
- Arts and Humanities and Technical remain the least preferred between the two years.
- The numbers for Uniformed Services and Arts and Humanities have remained stable.
- Overall, **female and male students patterns seem extremely varied between the two years.** Whether these trends are to continue can only be understood when compared with data gathered in the future over a longer period of time.

5.4.2 Division- wise Trends

Apart from statewide trends division level trends also gives us interesting insights into student interests. The following section compares division-level data for the academic year 2016-17 and 2017-18, across all of Maharashtra's nine divisions. Detailed division level data among female and male students can be found in the Annexure, Section 8.2.

Amravati Division

Chart 49: Amravati Division: Comparison of student interests 2016-17 and 2017-18

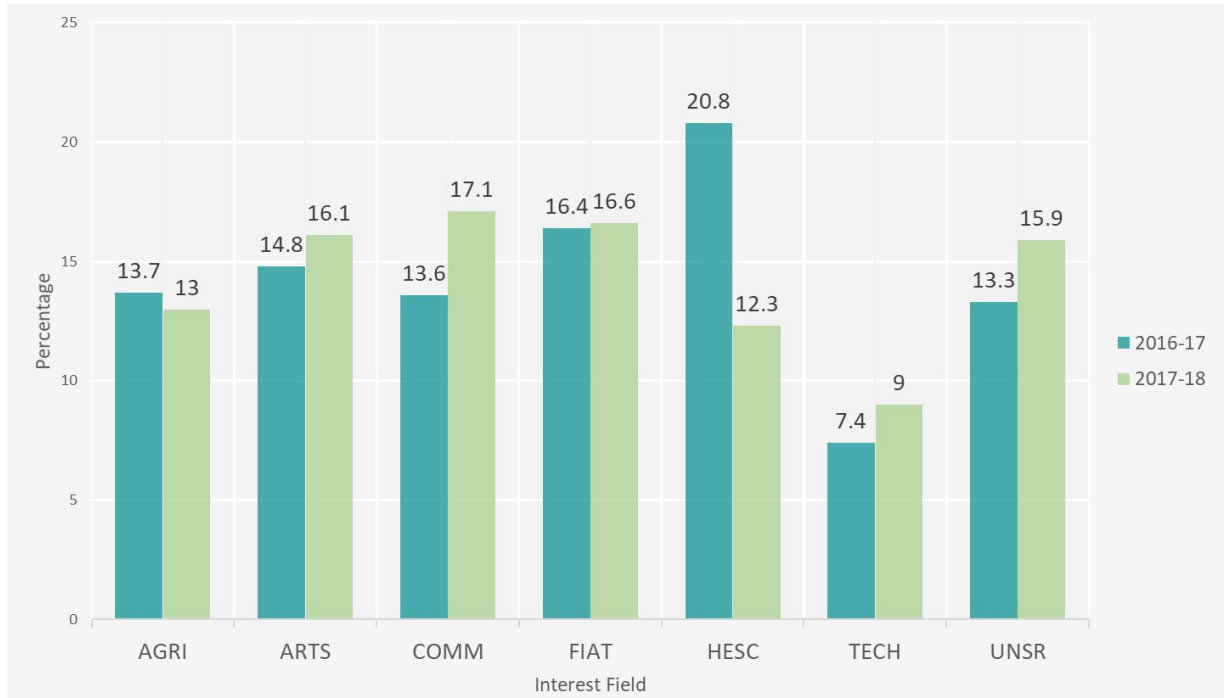


The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Amravati Division.

- In comparison to 2016-17, we see that the students with an interest in Health & Life Sciences, the field with highest proportion of students, declined by 8.7 percentage points.
- Where as in 2017-18 Commerce emerges as the field of highest interest, having increased over the previous year by 9.8 percentage points.
- Further in 2016-17 we see that Fine Arts has the second highest proportion of students, similar to patterns in 2017-18, however the proportion of students with an interest having declined by 2.4 percentage points.
- The proportion of students with an interest in Arts and Humanities and Agriculture has declined by 2.1 percentage points and 6.3 percentage points.
- While proportion of students interested in Technical and Uniformed Services has increased by 4 percentage points and 5.6 percentage points respectively.

Aurangabad

Chart 50: Aurangabad Division: comparison of student interests 2016-17 and 2017-18

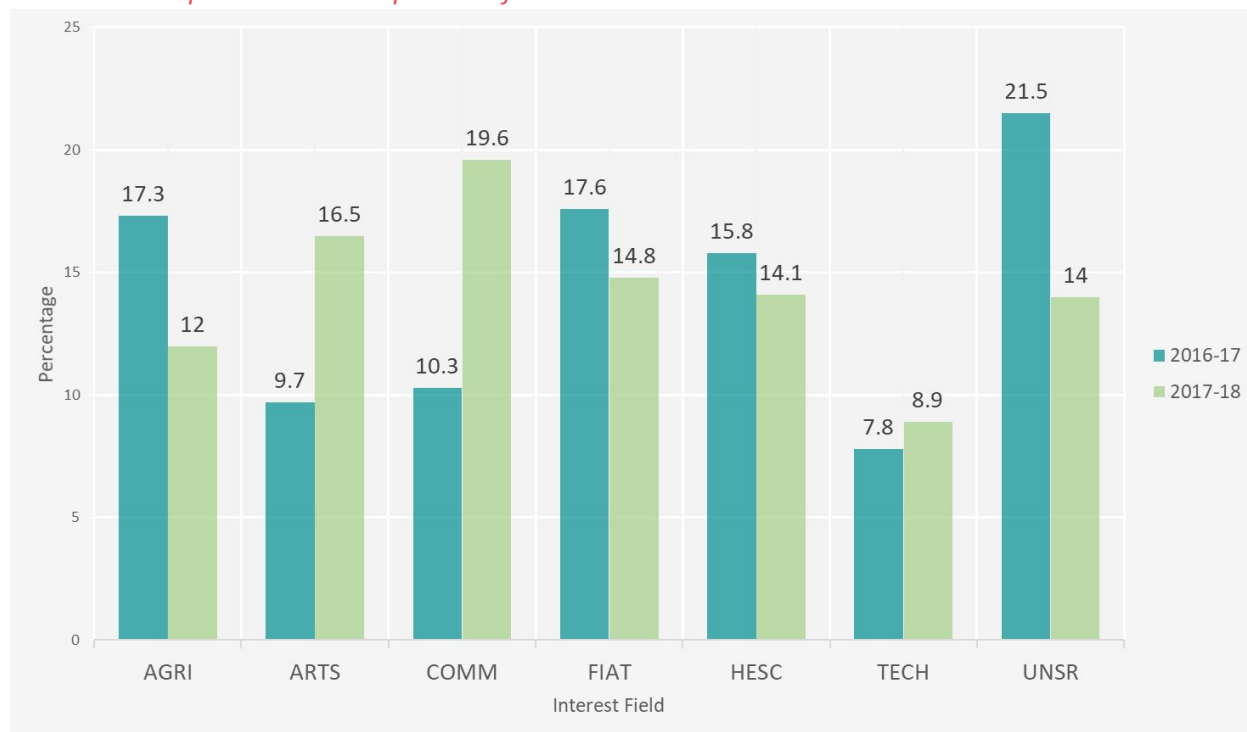


The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Amravati Division.

- In 2016-17 Health & Life Sciences had the highest proportion of students with an interest in the field. This however declined by 6.5 percentage points in the following year.
- In Aurangabad division in 2017-18, Commerce emerges as the field with the highest proportion of students instead, having increased by 4.5 percentage points.
- Proportion of students interested in Fine Arts as well as Agriculture seems to have remained constant in the over the the two years.
- On the other hand the proportion of students interested in Arts and Humanities increased by 1.3 percentage points, Technical increased by 1.6 percentage points and Uniformed Services by 2.6 percentage points.

Kolhapur

Chart 51: Kolhapur Division: comparison of student interests 2016-17 and 2017-18

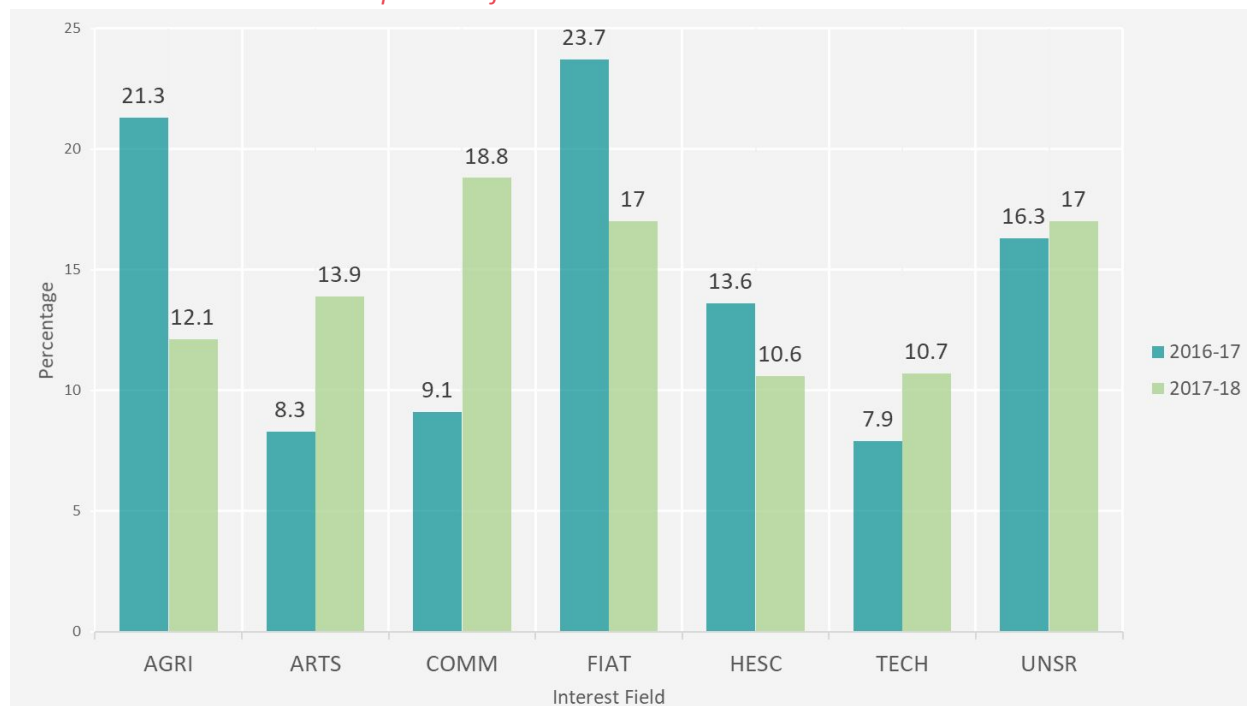


The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Kolhapur Division.

- In 2016-17, Uniformed Services emerges as the field with the highest proportion of students in Kolhapur division. This however declined by 7.5 percentage points in the subsequent year.
- In 2018-17, similar to the state pattern, Commerce is the field with highest interest, having increased by 9.3 percentage points from the previous year.
- However, differing from the state pattern in 2017-18, Arts and Humanities is seen as the second highest field of interest in Kolhapur district, much higher than the state. In comparison to 2016-17, this increased by 6.8 percentage points.
- Share of students with an interest in Fine Arts, Health & Life Sciences and Uniformed Services in 2017-18, are evenly distributed in Kolhapur division. However this was not the case in 2016-17, where the proportion of students interested in Fine Arts was 3.5 percentage points higher, in Health Science was 1.7 percentage points higher, and 7.5 percentage points higher in the case of Uniformed Services.
- While in 2017-18, Agriculture and Technical seem to be the least preferred in the division. However in among students from the previous year, Agriculture was more preferred by 5.3 percentage points compared.
- While Technical still remained the field of least interest among students in the previous year also.

Konkan

Chart 52 : Konkan Division: comparison of student interests 2016-17 and 2017-18

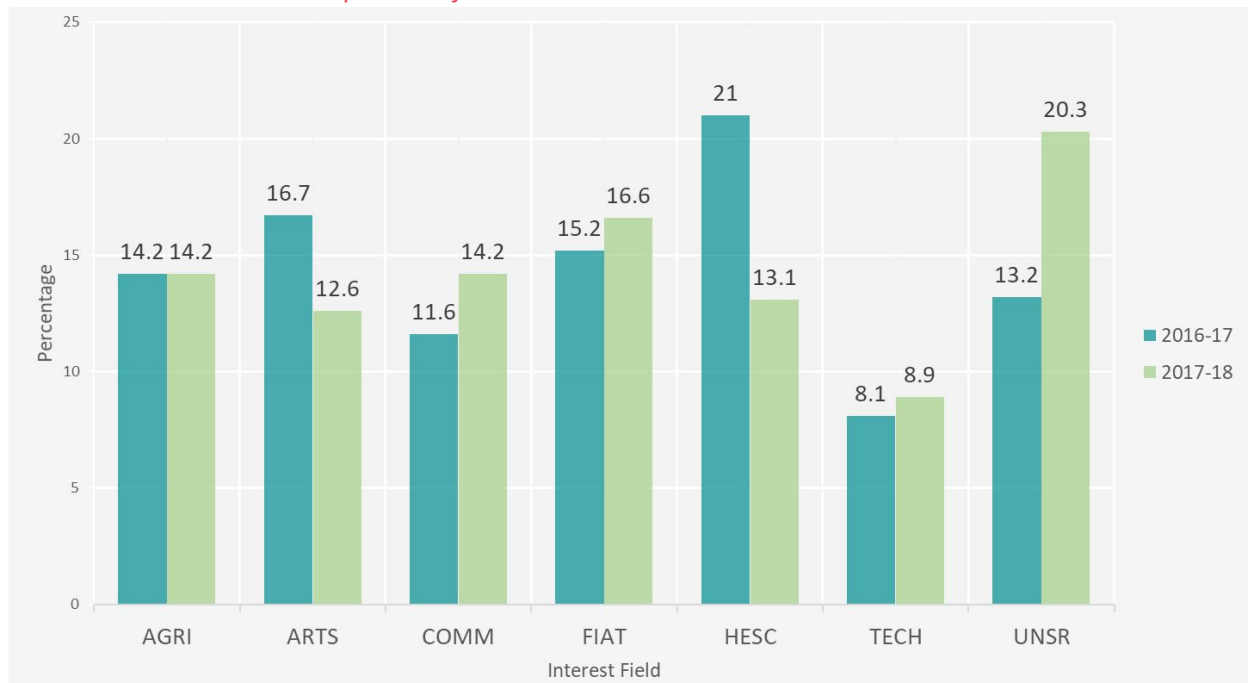


The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Konkan Division.

- In comparison to the previous year Fine Arts was the field of most interest among students, this however declined by 6.7 percentage points in the following year.
- Agriculture the second most preferred field among students in 2016-17 also saw a decline in the proportion of students with an interest, as much as by 9.2 percentage points.
- While proportion of students in all other interest fields increased over 2017-18, in Arts and Humanities by 5.6 percentage points, by 9.7 percentage points in the field of Commerce, by 2.8 percentage points in the case of Health & Life Sciences, by 2.8 percentage point in Technical.
- On the other hand in the field of Health & Life Sciences we see an decrease in proportion of students by 3 percentage points.

Latur

Chart 53: Latur Division: comparison of student interests 2016-17 and 2017-18

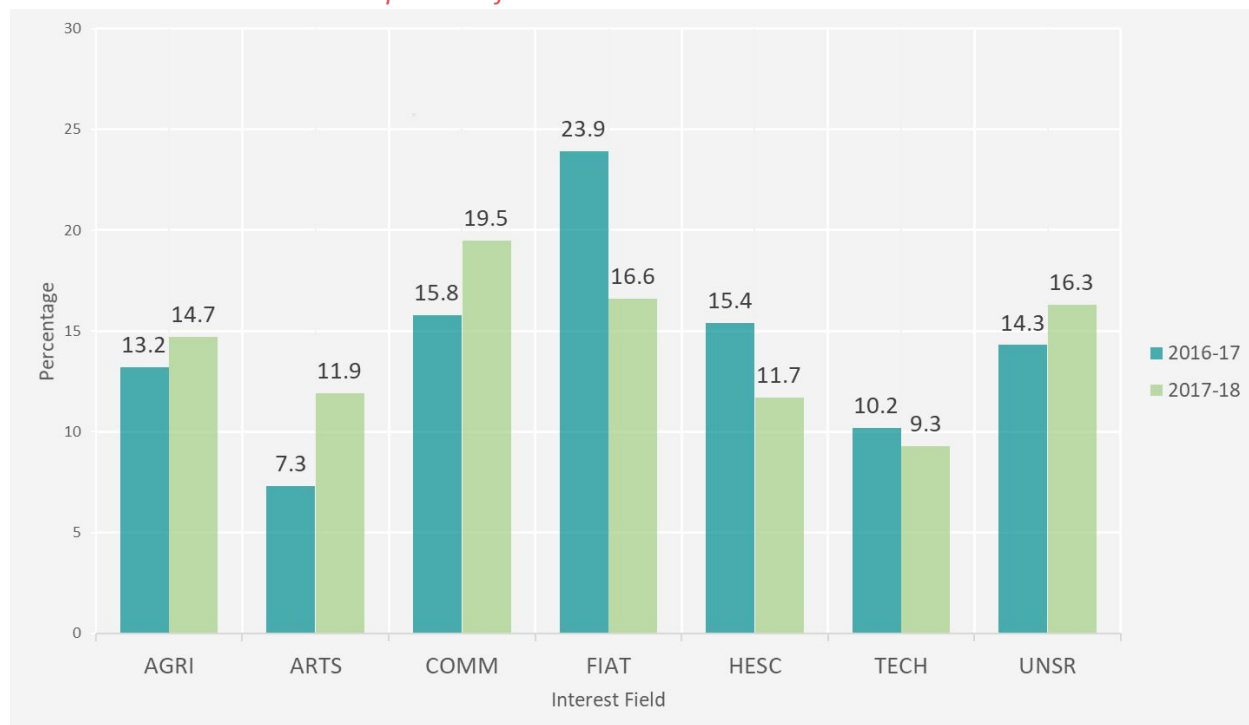


The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Latur Division.

- In Latur Division, we find that Health & Life Sciences had the highest percentage of student amongst all interest fields in 2016-17. This however declined by 6.9 percentage points in the following year.
- In the same year, Arts and Humanities had the second highest proportion of students with an interest in the field. This however declined 4.1 percentage points among students in the following year.
- The field of Commerce on the other hand had the highest percentage of students in 2017-18, having increased by 2.6 percentage points over the previous year.
- Fine Arts the field of second highest interest among students in 2017-18 increased by 1.4 percentage points over the previous year.
- Proportion of students interested in Agriculture and technical, however do not seem to have changed in Latur Division.
- Uniformed Services on the other hand increased by 7.1 percentage points over the previous year, and in Latur division has the highest percentage of student amongst all interest fields in 2017-18.

Mumbai

Chart 54: Mumbai Division: comparison of student interests 2016-17 and 2017-18

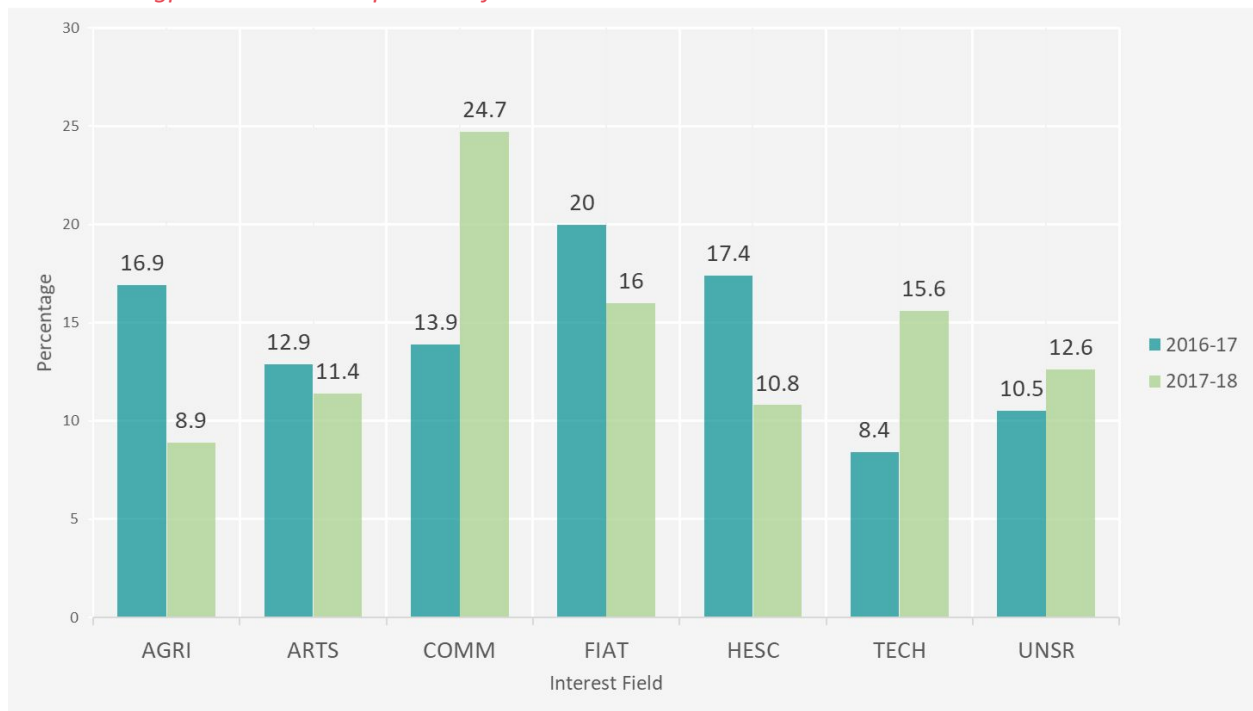


The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Mumbai Division.

- In Mumbai division, Fine Arts had the highest proportion of students in 2016-17, this however declined by 7.3 percentage points in the following year.
- In 2017-18 we find Commerce has the highest proportion of students, having increased by 3.7 percentage points over the previous year.
- On the other hand proportion of students in the fields of Agriculture, Arts and Humanities, Technical and Uniformed Services increased by 1.5 percentage points, 4.6 percentage points, 0.9 percentage points and 2 percentage points.
- While proportion of students interested in Uniformed Services declined by 3.7 percentage points.

Nagpur

Chart 55: Nagpur Division: comparison of student interests 2016-17 and 2017-18

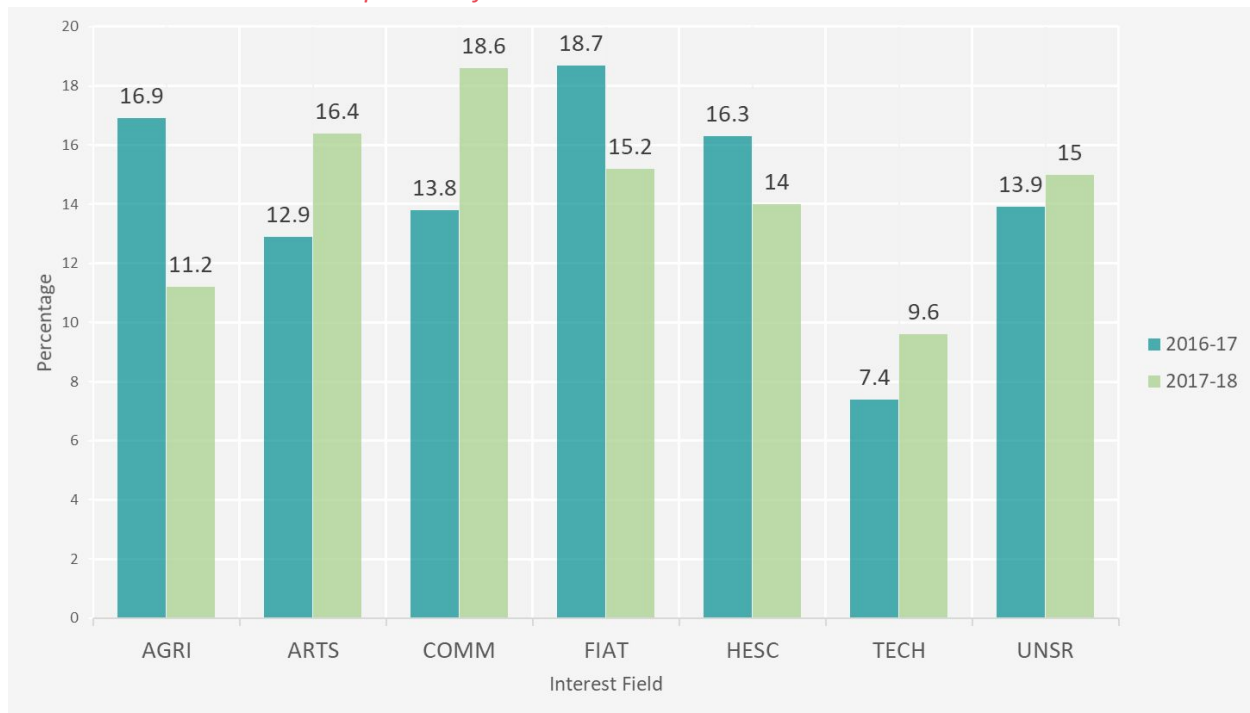


The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Nagpur Division.

- As with other divisions, Fine Arts emerges as the field with highest proportion of students in 2016-17. This however declined by 4 percentage points the following year.
- Among students from the same year, Health & Life Sciences emerges as the field with the second highest proportion of students, this also declined by 6.6 percentage points in the following year.
- We see the proportion of students interested in Agriculture and Arts and Humanities, decline by 8 percentage points and 1.5 percentage points respectively.
- While proportion of students in the fields of Commerce, Technical and Uniformed Services increased by 10.8 percentage points, 7.2 percentage points and 2.1 percentage points respectively.

Nashik

Chart 56: Nashik Division: comparison of student interests 2016-17 and 2017-18



The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Nashik Division.

- In Nashik division, proportion of students interested in Fine arts in 2016-17, the field with the highest proportion of students, declined by 3.5 percentage points over the subsequent year.
- Health & Life Sciences, the second highest, also declined by 2.3 percentage points as well.
- Apart from these, we see proportion of students having declined by 5.7 percentage points in Agriculture.
- In all other field proportion of students increases, by 4 percentage points in Arts and Humanities, 5.2 percentage points in Commerce, 2.2 percentage points in Technical and 1.1 percentage points in Uniformed Services.

Pune

Chart 57: Pune Division: comparison of student interests 2016-17 and 2017-18



The chart above shows the student population of 2016-17 and 2017-18 academic year, split by interest fields in Pune Division.

- In Pune Division, Uniformed Services emerged as the field with most interest among students in 2016-17, this however declined 0.8 percentage points.
- Proportion of students interested in Agriculture, Arts and Humanities, Health & Life Sciences also declined by 5 percentage points, 3.9 percentage points, and 3.9 percentage points respectively.
- On the other hand proportion of students interested in Commerce, Fine Arts and Technical increased by 7.8 percentage points, 3.9 percentage points, and 2.1 percentage points respectively.

5.4.3 Interest-wise Trends

Overall, proportion of students with a single interests in districts, proportion of students are more evenly distributed in districts like Hingoli, Sindhudurg and Aurangabad²² across the seven interest areas. As opposed to districts like Washim, Bhandara and Chandrapur²³ where percentage of students with a clear interest in a single field are disproportionately higher in a particular field over all others. For instance, in Washim district 54.5 percent male students show a single interest in Fine Arts, much higher than proportion of females and males with a clear interest in any other field.

These trends are interesting to note as they require us to examine what they mean for the exposure a student gets throughout her or his schooling years. What remains to be seen if these district trends are influenced by environmental factors unique to a particular district or are due to the influence of the schooling environment in her/his lifetime. Detailed district wise data for Maharashtra is presented in Annexure, section 8.1. In the following sections interests scores for all seven fields are discussed across all of Maharashtra state's 35 districts²⁴.

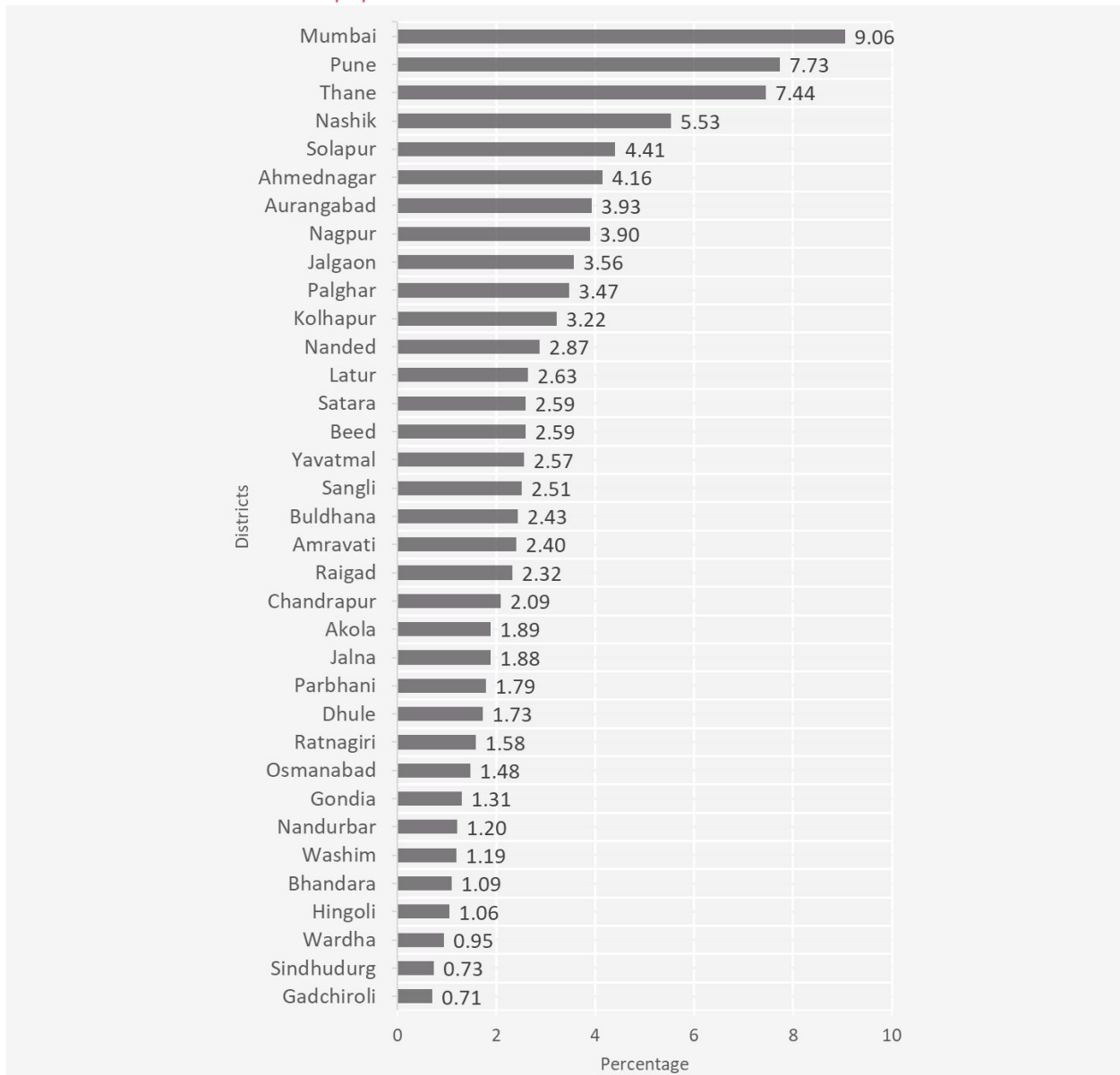
The following sections discusses district wide trends with regards to each interest field, beginning with the field with the highest proportion of students with a single interest and progressing in descending order.

²² Here the difference between the highest and lowest in proportion of students with a single interest across all seven interest fields is less than ten percentage points.

²³ Here the difference between the highest and lowest proportion of students with a single interest across all seven interest fields is maximum among all districts.

²⁴ The data captured as part of the Kalchachani project combines data for districts of Mumbai city and Mumbai suburban. Thus presenting data for 35 districts instead of 36 districts of Maharashtra.

Chart 58 : District-wise student population in Maharashtra



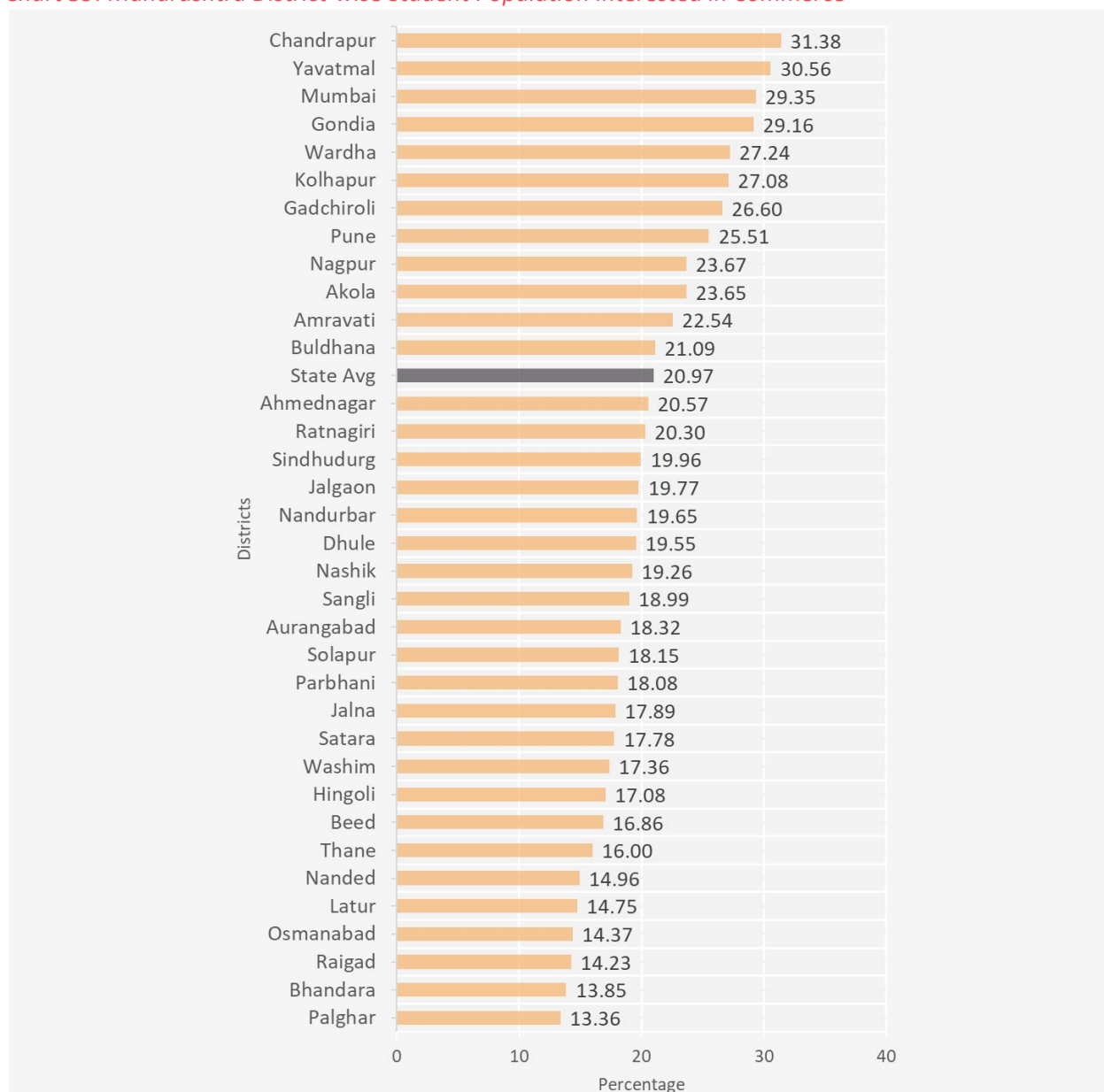
The Chart above shows the all 35 Districts along with student populations (with unique scores only) arranged in descending order. As we see, Thane, Pune and Mumbai districts have the highest proportion of population while Wardha, Gadchiroli and Sindhudurg have the least proportion of population in the state.

Commerce

Overall

- Highest preference in state (21%)
- District with highest preference: Chandrapur (31.3%)
- District with lowest preference: Palghar (13.36%)
- Higher number of students are concentrated in districts of Mumbai, Pune, Thane and Nashik.

Chart 59: Maharashtra District-wise Student Population Interested in Commerce



The chart shows district wise percentage of student population interested in Commerce.

Gender-wise Trends : Female

- Commerce is also the field interest among the largest proportion of female students in Maharashtra, i.e. 23.3 percent.
- Compared to the state average this is the lowest in Palghar(13.8%) district and the highest in Kolhapur (35.7 %) district for female students.
- Within the state, Commerce as an interest area has the highest proportion of female students with a clear single interest, but this is not the case within all the districts. Of 35 districts in Maharashtra, only in 20 districts Commerce emerge as the field with the highest proportion of

female students with a single clear interest. In the districts of Palghar (13.8%), Osmanabad (15 %) and Buldana (17.7 %), for instance, proportion of female students interested in Commerce is much lower compared to all other interest areas within their respective interest fields.

Gender-wise Trends: Male

- Proportion of male students interested in Commerce in Maharashtra is high (19.1%), second to Fine Arts.
- Within districts the highest proportion of male students interested in Commerce is seen in Wardha (37.8 %), whereas only 10.4 percent of students in Bhandara show a single clear interest in Commerce, the least among all districts.
- Proportion of male students interested in the field of Commerce in Wardha, the highest among all districts, is 8.1 percentage points higher than Yavatmal district, the second highest among all districts. This difference is the most drastic amongst all districts, and would require a deeper enquiry into understanding why Wardha has a much higher proportion of male students interested in Commerce compared to the state trend for male students.
- Within districts the proportion of male students with a clear single interest in Commerce compared to other interest fields considerably varies. Only in 5 of the 35 districts Commerce has the highest proportion of male students interested among all interest areas, i.e. in districts of Akola, Chandrapur, Gadchiroli, Wardha and Yavatmal. While for a majority of district it is the field with the second highest percentage of students showing interest in it. While in districts like Raigad, Palghar and Nanded, proportion of male students interested in Commerce compared to other interests fields is very low.

Gender-wise Trends: Female

- At the state level, a higher proportion of female students show interest in Commerce as compared to male students.
- This gap is the widest in Kolhapur district by 16.1 percentage points and the least in Solapur district (0.1 percentage points).

Gender-wise Trends: Comparison

- However, in five of the 35 districts, a higher proportion of male students show a clear interest in Commerce compared to female students, i.e. in districts of Akola, Amravati, Buldhana, Gadchiroli and Washim.
- **In Washim however, the difference is stark, where proportion of males interested in Commerce exceeds female by 19.1 percentage points.**

Rural- Urban Distribution

Table 4: Distribution of students interested in Commerce across urban and rural areas

	Rural	Urban
Distribution of students across rural and urban areas	49.97	50.03
Proportion of students with an interest in Commerce	19.92	22.17
Female students interested in Commerce	21.56	25.15
Male students interested in Commerce	18.65	19.64

The share of students interested in Commerce is almost equally distributed among those living in Rural and Urban areas in the state. A higher proportion of students in Urban areas are interested in Commerce than in rural areas, as much as by 2.25 percentage points. Whereas both in urban and rural areas a higher percentage of female students show interest in Commerce. This difference is higher in urban areas as compared to rural areas.

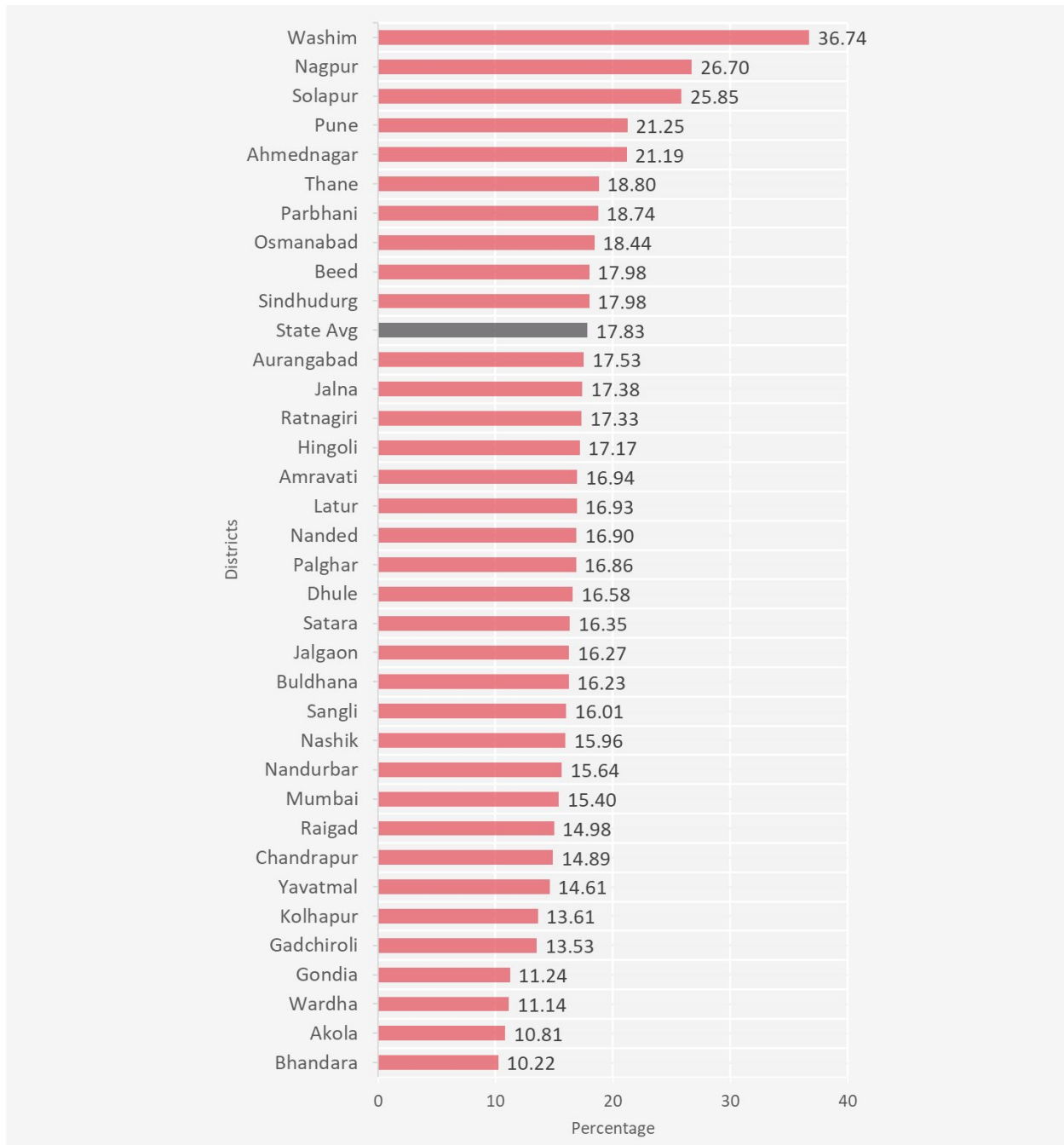
Among students in tribal welfare schools Commerce is the field with most number of students. While in social welfare schools Commerce is second after the field with the highest number of students, however it is behind Fine Arts by 0.91 percentage points only. In both cases students with an interest in Commerce amounts to approximately 20% of the student population in these schools.

However, looking at the opportunities to pursue Commerce in the state, we find that student to programme ratio is at 23.01 in the state. While, in absolute number terms, there are more institutes in urban areas like Thane, Mumbai and Pune catering to the large population of students with an interest in these districts. Thus these districts see a student to programme ratio of 11.65 in Thane, 21.66 in Mumbai and 17.50 in Pune. On the other hand, districts of Sindigurg (8.85), Ratnagiri (10.44) and Raigad (11.48) have the lowest ratio and district of Yavatmal (70.41), Palghar (68.64) and Gondia (66.50) have the highest ratio. Indicating that districts with low ratio have more students with an interest in the field, whereas the number of Commerce programmes offered in these districts are very low. While **opportunities for those wishing to pursue Commerce remain concentrated in Urban district.**

Fine Arts

- 2nd Highest proportion of students (17.8%)
- Highest in Nagpur (26.70%) and lowest in Bhandara (10.22%)
- Pune (9.20%), Thane (7.84%), Mumbai (7.84%) and Solapur (6.38%) have a higher concentration of students interested in Fine Arts

Chart 60: Maharashtra District-wise Student Population Interested in Fine Arts



The chart shows district wise percentage of student population interested in Fine Arts.

Gender-wise Trends: Male

- Most preferred among male students (24.2%).
- Highest in Washim (54.5 %) lowest in Chandrapur (13.7%)
- Among the top three districts with the most proportion of male students, the percentage drastically drops between Washim (54.5%), Nagpur (41.1%), Ahmednagar (32.5%) and Pune (32%) as compared to other districts where the shift is more gradual when placed in descending order.
- As seen at the state level, the proportion of male students with a clear interest in Fine Arts in 26 of 35 district in Maharashtra is the highest among all interest fields. Only in ten districts like Chandrapur (13.7%), Akola (16.6%), Gondia (20.7%) and Raigad (16.7%) district do male students show a much lower interest in Fine Arts among all other interest fields.

Gender-wise Trends: Female

- There is high variation in preference for Fine Arts among female students in districts. In 12 of the 35 districts, Fine Arts remains the least preferred field among female students, while in five districts- Solapur, Palghar, Osmanabad, Thane and Chandrapur -it is among the most preferred fields of interest among female students. In the remaining 18 districts proportion of female students with a clear interest in Fine Arts compared to other interest fields is very low.
- However in **Solapur district as many as 25.5 percent of female students show a clear single interest in Fine Arts**, while in Wardha district as less as 2.2 percent of female students show interest in Fine Arts.
- After Solapur District, proportion of female students with a single interest in Fine Arts drops 8 percentage points to 17.5 percent in Thane District, the second highest, indicating a disproportionately higher percentage female students interested in Fine Arts in Solapur compared to the state average.

Gender-wise: Comparison

- This is the case in all districts except two - Akola and Washim.
- The gap is the widest in Gondia, where proportion of male students interested in Fine Arts exceeds female students by 22.1 percentage points.
- **Only in Akola proportion of female students with a clear interest in Fine Arts exceed male students by 14 percentage points.**
- In Washim the difference between the two is negligible.

Rural- Urban Distribution

Table 5: Distribution of students interested in Fine Arts across urban and rural areas

Fine Arts	Rural	Urban
Distribution of students across rural and urban	53.24 %	46.75%
Students Interested	18.50 %	17.63 %
Female students interested	10.27%	9.60 %

Male students interested	24.50 %	24.43 %
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School-wise split

In social welfare schools we see 20.45% of the students show an interest in Fine Arts, while 16.52% of the students in Tribal welfare schools show an interest in Fine Arts. In social welfare schools Fine Arts sees the highest proportion of students with an interest in the field, while in Tribal school the proportion is second highest compared to all other interest fields.

Opportunities

Looking at the density of Fine Arts programmes in the state, we find that the **student to programme ratio is highly skewed at 147.19**. For every Fine Arts programme in the state we see that there are approximately 147 students with an interest in Fine Arts according to the data. Thus each programme must cater to approximately 147 students. There are more number of institutes in districts of Mumbai, Pune and Nagpur, however even in these districts, the student to program ratio is very high. 198.38 in Pune, 181.90 in Nashik, and 148.48 in Mumbai. Overall the highest ratio is seen in districts of Palghar (2453.57), Washim (424.31) and Parbhani (301.21). Further, the lowest is seen in districts of Akola (37.75), Gadchiroli (37.81) and Wardha (39.00). However, beyond these three districts, the ratio exceeds 50 in all others. **Overall, for all the students interested in Fine Arts to pursue the field, there seem to be very few opportunities in the state.**

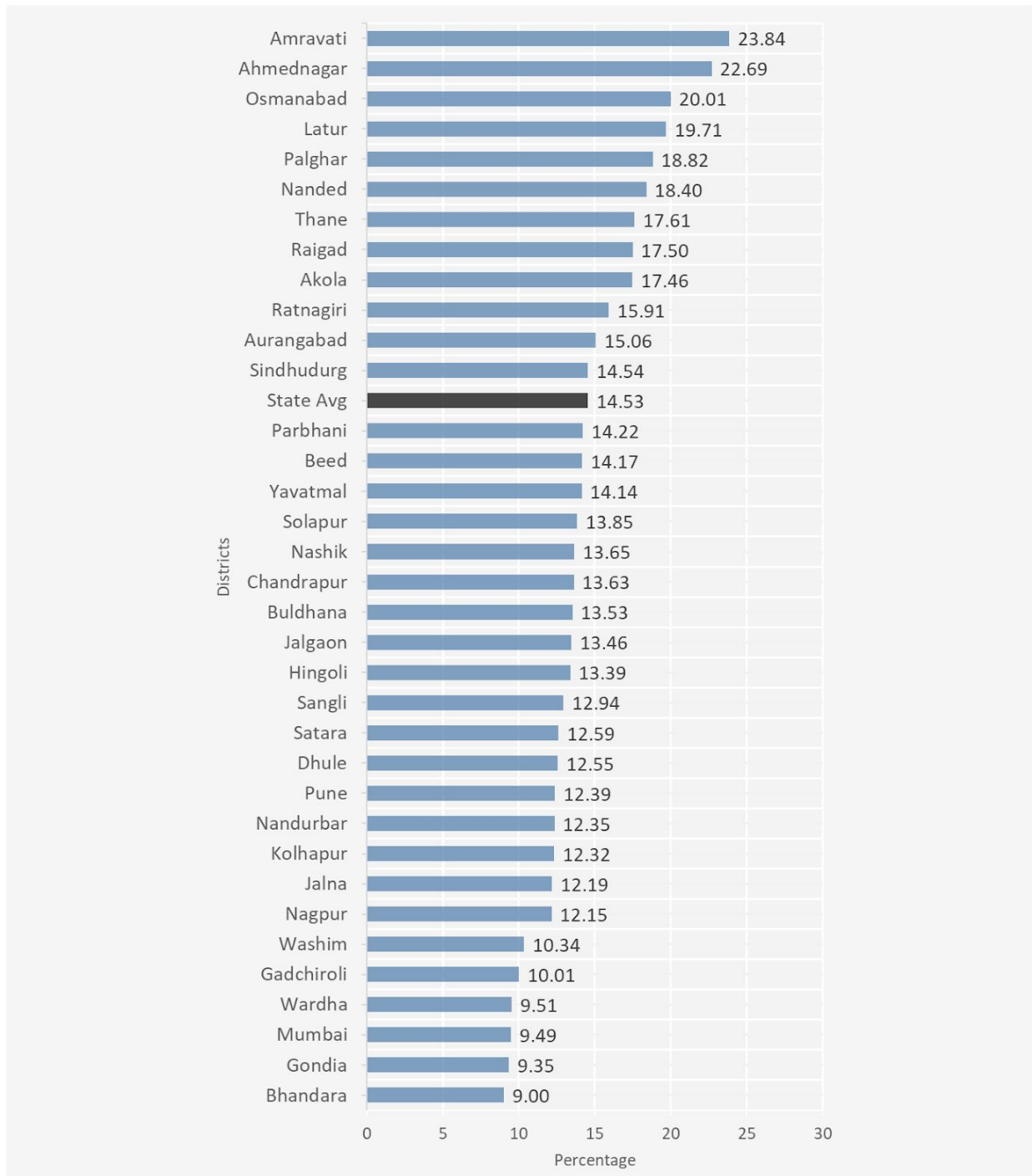
Uniformed Services

- Average of 14.5 percent of students identified Uniformed Services as their single interest area
- Highest from Amravati (23.84%) and the least among students Bhandara (9%).
- Districts of Thane (9.02%), Pune (6.58%), Ahmednagar (6.48%) and Mumbai (5.93%) have the highest share of students

Gender-wise Trends: Female

- On an average 16.9 percent of female students show a clear interest in Uniformed Services, the highest is seen in Amravati district (31.5%) and lowest is seen in Chandrapur district (9.3%).
- The highest gap between districts is observed between Amravati (31.5%) and Ahmednagar (25.4%), also the highest and the second highest districts
- **Among female students, Uniformed Services is the second highest in the proportion of females students with a clear interest compared to other interest fields.**
- However within districts there is considerable variation as only in 8 districts do the highest proportion of female students show a clear interest in the field. In the remaining districts the proportion of female students with a clear interest in Uniformed Services is lower compared to other fields.

Chart 61: Maharashtra district-wise student population interested in Uniformed Services



The chart shows district wise percentage of student population interested in Uniformed Services.

Gender-wise Trends: Male

- Only 12.6 percent students in the state identified Uniformed Services as their area of interest.
- The highest proportion is seen among male students in Akola (21.1%) and lowest is seen in male students from Bhandara (5.9 %)
- Only in Palghar district (18.8%) most number of male students show interest in Uniformed Services compared to all other interest fields
- Apart from Palghar, students from ten other districts show a relatively high interest in Uniformed Services among all other interest fields. While in seven districts, proportion of male students with a clear interest in Uniformed Services is the least of all interest fields

Gender-wise Trends: Comparison

- Overall, a higher proportion of female students (16.9 %) show a clear interest in Uniformed Services over male students (12.6%).
- This is the case in all of Maharashtra's districts except two, i.e. Akola and Chandrapur where proportion of male students with a clear interest in Uniformed Services exceeds that of female students by 8 and 8.2 percentage points
- The gap, where a higher proportion female students show a clear interests in Uniformed Services, can be observed to be the widest in Yavatmal by 19.4 percentage points and the least in Palghar and Solapur districts where the gap is almost negligible.

Rural-Urban Distribution

Table 6: Distribution of students interested in Uniformed Services across urban and rural areas

Uniformed Services	Rural	Urban
Distribution of students across rural and urban areas	55.20 %	44.79%
Students Interested	15.25 %	13.76 %
Female students interested	18.23 %	15.52 %
Male students interested	12.95 %	12.26 %

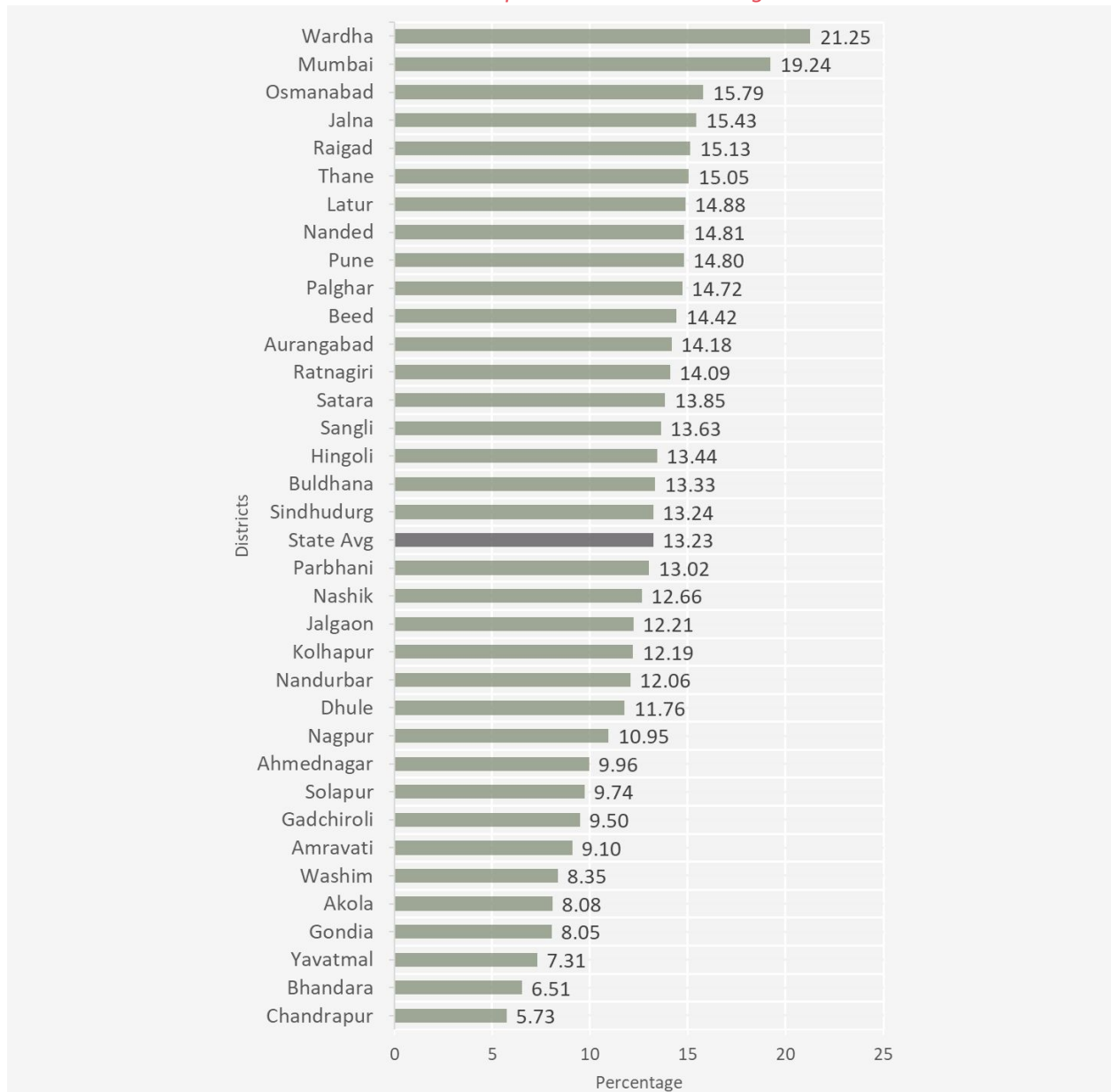
Opportunities

Given the high percentage of students with an interest in the field the opportunities present in the state are quite low. **For every program present in the state, 2,853 students show interest in the field.** The highest number of programmes are present in Nagpur (10) and Aurangabad (8) district in a state with only 64 programmes for Uniformed Services. Looking across districts, Nagpur district (595.7) has the least ratio and Mumbai district (10798) has the highest ratio.

Agriculture

- An average of 13.2 percent of students show a clear interest
- Highest in Wardha (21.25%) and lowest in Chandrapur (5.73%)
- Of all the students interested in Agriculture in Maharashtra, Mumbai (13.16 %), Pune (8.64 %), Thane (8.46%) and Nashik (5.29 %) districts have the highest share of students.

Chart 62: Maharashtra District-wise Student Population Interested in Agriculture



The chart shows district wise percentage of student population interested in Agriculture.

Gender-wise Trends: Female

- As many as, **16.1 percent female students in the state show a clear interest in Agriculture.**
- Highest from Wardha (33.4%) and the least among Solapur (10%).
- Proportion of female students with a single interest in Agriculture, from districts of Wardha (33.4%), Mumbai (24.8%) and Pune (22%) is much higher.

Gender-wise Trends: Male

- Only 11% show a single clear interest
- Highest from Buldhana (15.3%) Lowest in Bhandara (3.5 %)
- In 22 of 35 districts in Maharashtra, proportion of male students interested in agriculture compared to other interest fields is very low.

Gender-wise Trends: Comparison

- In the state a higher percentage of female students show interest in Agriculture compared to Male students.
- This is true for all districts except two - Buldhana and Nagpur, with a difference of 4.7 and 1 percentage points, respectively.
- However, **in Wardha district, proportion of female students with a clear interest in Agriculture far exceeds that of male students by 27.2 percentage points.**

Rural- Urban Distribution

Table 7: Distribution of students interested in Agriculture across urban and rural areas

Agriculture	Rural	Urban
Distribution of students across rural and urban	48.78 %	51.21 %
Students Interested	12.27 %	14.32 %
Female students interested	14.70 %	17.52 %
Male students interested	10.39 %	11.61 %

Of all the students interested in Agriculture in the state, a higher percentage live in Urban areas. This may be driven by a higher percentage of students showing interest in Agriculture in Urban areas compared to rural areas. In both urban and rural areas, a higher percentage of female students show an interest in the field compared to male students. This difference between male and female students is higher in urban areas. Thus the higher percentage of urban students showing interest in Agriculture could be due to the female students living in urban areas interested in Agriculture.

School Split

In comparison to the state average, the percentage of students interested in agriculture in Social Welfare and Tribal welfare schools is slightly lower. In Maharashtra we see, 10.97 percent of students from Social Welfare School and 11.81 percent students from Tribal Welfare Schools show an interest in Agriculture.

Opportunities

In the state, for every programme linked to Agriculture there are 150.71 students interested in the field. Unlike other interest fields, districts of Ahmednagar, Solapur and Latur have a higher concentration of Agriculture programmes. However, Chandrapur (41.78), Akola (44.63) and Bhandara (47.11) sees the least student to programme ratio. On the other hand, we find that **districts of Mumbai (21890.0), Thane (1408.0) and Palghar (1070.83) severely lack programmes** for the number of students with an interest in the field.

Health & Life Sciences

- 12.3 percent students demonstrate a clear interest in Health & Life Sciences.
- Highest from Bhandara (35.01%) lowest from Nagpur (5.22%) with a single interest in Health
- As can be seen from the chart below, the proportion of students interested Health & Life Sciences in Bhandara District is especially higher than the state average and disproportionately skewed compared to all other districts.
- Thane (8.38 %), Pune (6.97 %), Nashik (5.20 %) and Solapur (5.43%), have the highest share of students interested in Health & Life Sciences in the state.

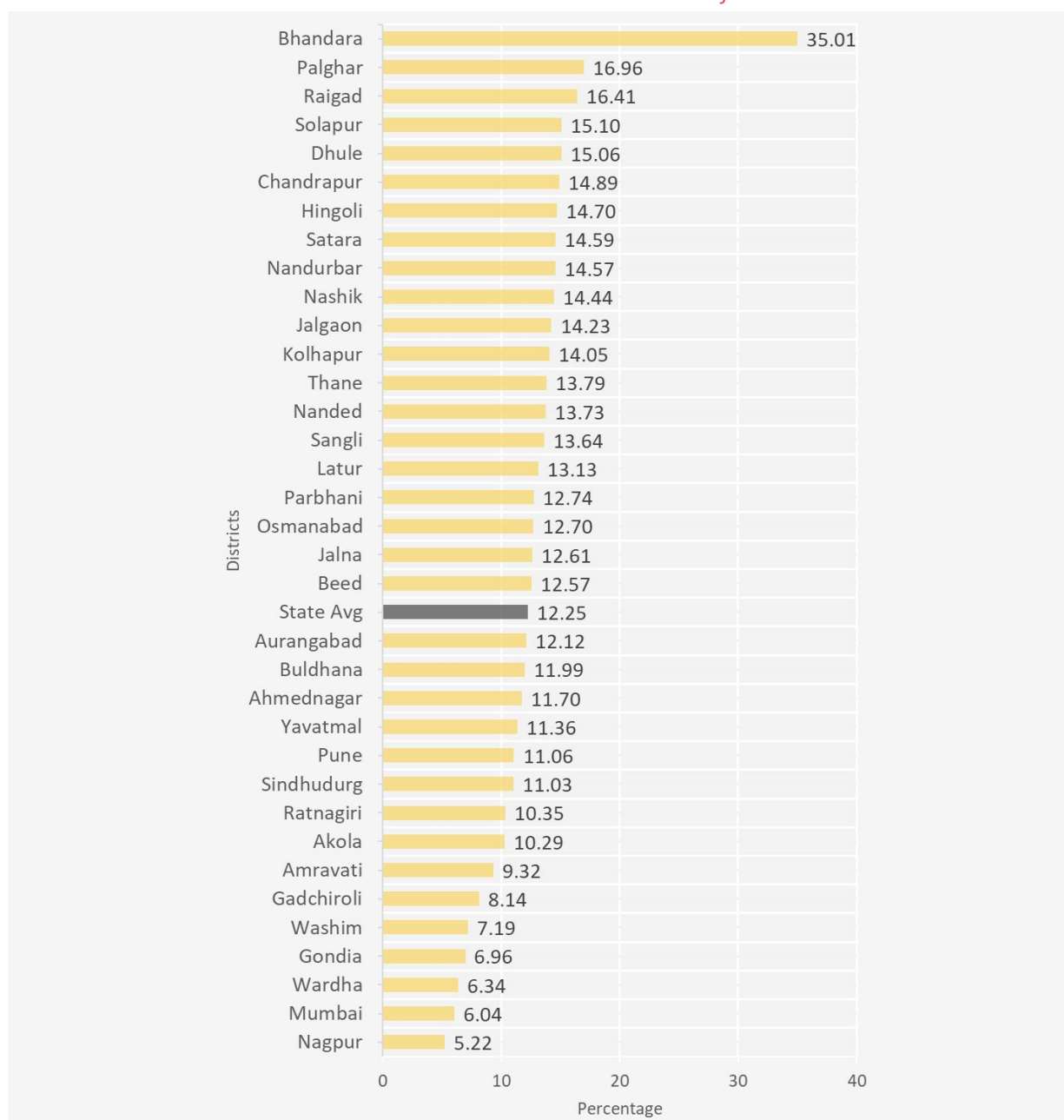
Gender-wise Trends: Female

- 8.4 % show a clear interest in Health & Life Sciences, the least among all interest fields.
- This is observed to be the maximum in Palghar district (16.9%) and the least in Chandrapur district (2.2%)
- Among 15 of the 35 districts, proportion of female students with a clear interest in Health & Life Sciences is the least among all interest fields. Only in Palghar district it is the second highest in the proportion of students with a clear interest among all fields.

Gender-wise Trends: Male

- In most districts, 11 to 20 percent of male students have a single clear interest in Health & Life Sciences.
- The exception here is in the case of districts - **Bhandara (55.9%) and Chandrapur (26.3 %) with high proportion of students with a clear single interest.**
- Districts of Nagpur (7.7 %) and Washim (9 %) see a low proportion of male students with a single clear interest in Health & Life Sciences.
- Apart from these districts, Raigad (17.3%), Hingoli (17.3 %) and Bhandara (55.9%) districts have the highest proportion of male students with a single clear interest among all the interest fields. Here we see a clear skew in the proportion of male students interested in the field from Bhandara as compared to all other districts.

Chart 63: Maharashtra District-wise Students Interested in Health & Life Sciences



The chart shows district wise percentage of student population interested in Life & Health Sciences.

Gender-wise Trends : Comparison

- At the state level while the average is 12.3 percent, a higher percentage of male students (15.4 %) have a single clear interest in Health & Life Sciences as compared to Female students (8.4%).
- This is the case in all districts except in Ahmednagar district, where proportion of female students with an clear interest in Health & Life Sciences exceeds male student but by 1.2 percentage points only.

- **The gap however is the widest in Bhandara district, where proportion of male students with a clear interest in Health & Life Sciences exceeds female students by 52.8 percentage points.** This probably also explains the the increase in the overall percentage of students interested in Health & Life Sciences in the district.

Rural-Urban Distribution

Table 8: Distribution of students interested in Health & Life Sciences across urban and rural areas

Health & Life Sciences	Rural	Urban
Distribution of students across rural and urban	55.39 %	44.60 %
Students Interested	12.86 %	11.51 %
Female students interested	9.09 %	7.50 %
Male students interested	15.76 %	14.90 %

Of all the students interested in the field, a higher proportion live in rural areas. While the proportion of students with an interest in the field is higher in rural area but only by 1.35 percentage points compared to urban areas. This is also the case among female and male students in urban and rural areas. Where both female and male students in rural areas exceed urban areas in proportion of students with an interest in Health & Life Sciences. However, in both instances, proportion of male students interested in the field exceeds female students. In keeping with the state average, we see that 14 percent and 13.64 percent students in social welfare and tribal welfare schools respectively, indicate an interest in Health & Life Sciences.

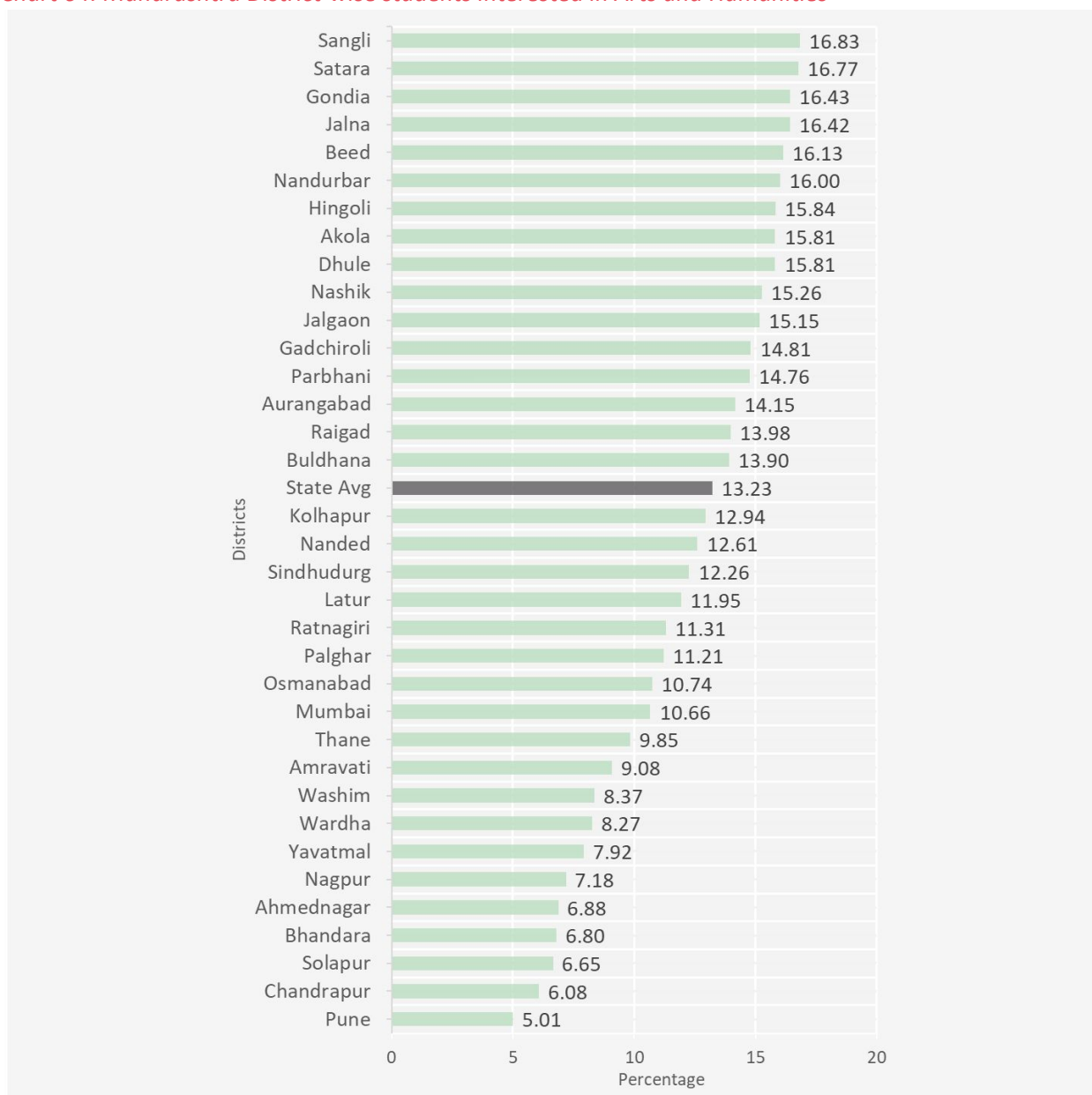
Opportunities

In looking at the opportunities available, each programme in the state is required to cater to 11.51 students interested in the field. While **most number of institutes are concentrated in urban districts of Pune, Thane and Mumbai**, the ratio is seen to be the least in Gondia (2.99), Nagpur (3.95) and Wardha (3.59). This implies that in these districts with a low ratio, the number of programs available for these students is sufficient. This is also the case in districts of Bhandara (22.50), Raigad (19.56) and Nashik (19.30) where the ratio higher compared to all other districts. However in Palghar district at 176.33 the ratio of students interested per programme is the highest, as Palghar has the least number of Health & Life Sciences programmes compared to all districts.

Arts and Humanities

- Only 11.4 percent average among all the students in the state.
- Here the maximum proportion of students interested in Arts and Humanities are observed in Sangli district (16.83%), and the least in Pune district (5.01%).
- Of all the students interested in Arts and Humanities in the state, districts of Mumbai (8.50 %), Nashik (7.43%), Thane (6.45 %) and Aurangabad (4.89 %) have the highest share of students.

Chart 64: Maharashtra District-wise students interested in Arts and Humanities



The chart shows district wise percentage of student population interested in Arts and Humanities.

Gender-wise Trends: Female Students

- Only 10.2% female students in the state show interest in Arts and Humanities,
- Highest in Akola (23.5 %) and lowest in Ahmednagar district (3.3 %)
- Akola (23.5 %) and Buldhana (22%) districts, show a disproportionately higher percentage of female students In these district this is their second most preferred field of interest
- On the other hand four districts - Ahmednagar (3.3 %), Solapur (6.2 %), Thane (9.5%) and Latur (11 %) - see the least proportion. In these, districts Arts and Humanities is least preferred field of interest among female students.

- While at the state level Arts and Humanities is the second least preferred field of interests, among female students we see this is the case only in eight districts.

Gender-wise Trends: Male Students

- **Only 12.3 percent male students have a single interest in Arts and Humanities.**
- However a much higher proportion of male students from Gondia (28.2%) show interest in arts and humanities compared to male students from other districts.
- Pune (5.7%) and Solapur (7 %) see the least in the proportion of male students interested in the field.
- Gondia has much higher proportion of male students interested in Arts and Humanities than the district with the second highest. Here the difference is of 8.4 percentage points. In Gondia, the highest proportion of male students show interest in Arts and Humanities over all other interest fields.
- In Pune and Solapur, least proportion of male students show a single interest in this field compared to all other fields in their respective districts.

Gender-wise Trends: Comparison

- Further, with 10.2 percent average among female students and 12.3 percent average among male students, **a higher proportion of male students show interest in this field but only by a small number.**
- The difference between the proportion of female students and male students interested in arts and humanities is the most stark in districts of Gondia and Gadchiroli, where proportion of male students showing interests is higher than that of female by 22.3 and 12.3 percentage points.
- On the other hand in Buldhana District a proportion of female students showing interests is 13.3 percentage points over that of proportion of male students showing interest.

Rural-Urban Distribution

Table 9: Distribution of students interested in Arts and Humanities across urban and rural areas

Arts and Humanities	Rural	Urban
Distribution of students across rural and urban	55.43 %	44.56 %
Students Interested	11.93 %	10.67 %
Female students interested	10.71 %	9.54 %
Male students interested	12.88 %	11.62 %

As with Uniformed Services and Health & Life Sciences, a higher proportion of students interested in Arts and Humanities live in Rural areas. However, in both rural and urban areas, proportion of students interested are similar to the state average. **Further, in both rural and urban areas, a higher proportion of male students show interest in the field as compared to female students.** Among students in social

welfare schools and tribal welfare schools also we see 11.69 percent and 12.22 percent show an interest in the field.

Opportunities

In the state of Maharashtra, Arts and Humanities programs are most in number. However, given that only 11.4 percent show an interest in the field, for every programme in the state there are only 5.47 students interested. We see that in districts of Aurangabad, Yavatmal and Pune the number of programmes offered are the highest. Given the number of students interested in the field, the student to program ratio is the least in Chandrapur (1.78), Bhandara (1.91) and Wardha (1.96) and is seen to be the maximum in Palghar (119.37), Sangli (11.73) and Nashik (11.52) districts. **Thus we see that except in Palghar district, the number of programmes available to students interested in the field are more than sufficient.** In palghar district there are very few programmes offered for students interested in the field.

Technical

- Least preferred in the state (9.9%)
- Highest from Gondia district (18.81%) and the least in Ahmednagar district (7.02 %). Of all the students interested in the field of Technical, districts of Mumbai (9.50 %), Pune (7.83 %), Thane (6.73 %) and Nagpur (5.60 %), have the highest share of students amongst all districts.

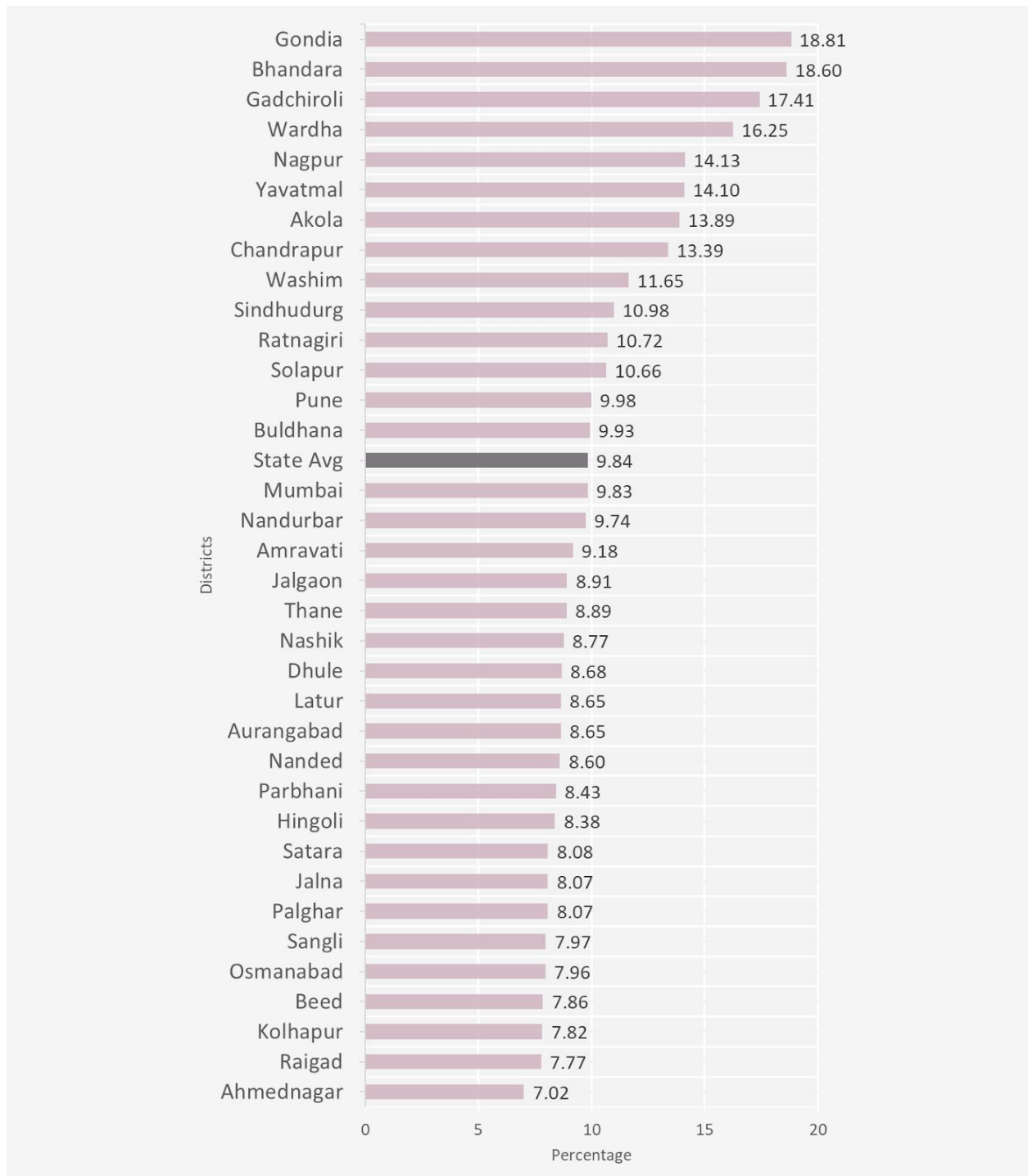
Gender-wise Trends: Female

- 15.3 % show clear interest
- Highest in Bhandara (43.9%) & lowest in Raigad (9.1%)
- As is the case with other interest fields, the difference between the top two districts is wider than any other districts. Here it is a difference of 10.4 percentage points between Bhandara and Gadchiroli
- In five of the 35 district - Bhandara (43.9 %), Gadchiroli (33.5%), Washim (28.4%), Nagpur (27.4%) and Akola (26.3%) - the highest proportion of female students show a clear single interest in Technical.
- In four of the 35 districts -Palghar (8.6 %), Raigad (9.1%), Osmanabad (9.7%) and Nanded (11.2%) - the least proportion of female students show a clear single interest in Technical

Gender-wise Trends: Male

- Among male students, while the least proportion of male students are interested in Technical among all interest areas, in the state, on **an average 5.4 % of the male student population show an interest.**
- This can also be seen at the district level where in 32 of the 35 districts, male students show the least interest in technical of all the interest fields in their respective districts.
- The highest proportion of male students with a single clear interest is seen in Yavatmal (11.7 %), and the lowest is seen in Chandrapur (1.9%), among all the districts.

Chart 65: Maharashtra district-wise students interested in Technical



Gender-wise Trends: Comparison

- However, with 15.3 percent of female students showing a clear single interest against 5.4 percent of male students, female students are showing much more interest in Technical.

- While this difference is stark at the state level by 9.9 percentage points, it is the highest in Bhandara where a higher proportion of female students show interest by 41.9 percentage points, this is followed by Gadchiroli and Gondia where the difference is of 30 percentage points.
- This difference is at its minimum in Palghar district where proportion of female students with a clear interest in technical exceed male students by one percentage point, followed by Satara and Aurangabad districts where the difference is of six percentage points.
- In all the districts however, proportion of female students showing interest in the Technical exceed that of proportion of male students with a single clear interest in Technical.

Table 10: Distribution of students interested in Technical across urban and rural areas

Technical	Rural	Urban
Distribution of students across rural and urban	52.06 %	47.93 %
Students Interested	9.72 %	9.92 %
Female students interested	15.43 %	15.17 %
Male students interested	5.32 %	5.53 %

With respect to Technical field, a higher proportion of students come from rural areas. However, the ratio found here is similar to the urban-rural ratio in the state. Overall, the proportion of rural and urban students interested in the field, are equal among female as well as male students as can be seen in the table above. Even among students from Social welfare and Tribal welfare schools we see only 9.20 percent and 10.45 percent students respectively, show interest in the field.

Opportunities

The field of technical also sees sufficient number of programmes offered as for ever programme there are 9.78 students with an interest in the field. Districts of Pune, Mumbai and Thane see the highest concentration of these programmes. Amraviti (5.10), Kolhapur (5.52) and Ahmednagar (5.56) districts, see the least in number of students per programme offered. While districts of Palghar (38.29), Gondia (21.75) and Hingoli (18.52), has the highest number of students per programme offered.

5.4.4 Opportunities

Looking at the the institute data presented in the sections above we find that overall urban districts of Mumbai, Thane and Pune have a higher concentration of institutes across all interests areas. While Palghar district has the least concentration of Institutes across all interest areas. The table below presents a state level summary, while detailed district level data can be found in the Annexure, section 8.3.

Table 11: Student to Program Ratio across Interest Fields

	STATE	AGRI	ARTS	COMM	FINAT	HESC	TECH	UNISR
Programme to student ratio	18.96	150.17	5.74	23.01	147.19	11.51	9.78	2853.0

While it is not strictly applicable to the students who appeared for SSC exams in 2017-18, the general trend in the country according to AISHE 2017-18 report²⁵ is that 'At an undergraduate level the highest number (36.4%) of student are enrolled in Arts/Humanities/Social Sciences courses followed by Science (17.1%), Engineering and Technology (14.1%) and Commerce (14.1%).' Further the highest number of degrees are awarded students in Arts streams with 23.89 Lakh B.A. degrees awarded followed by 11.52 Lakhs B.Sc. followed by B.Com 9.39 Lakhs for that year. Maximum number of students are enrolled in B.A. programme followed by B.Sc. and B.Com. programmes. This is also reflected in the data on the number of programmes offered in Maharashtra, where we see that the Arts and humanities has the maximum number of programmes offered amongst all interests fields. This is followed by Technical, Health & Life Sciences, Commerce, Fine Arts, Agriculture and and lastly by Uniformed Services. The information presented is clearly reflective of the opportunities present within the state. Many of which are concentrated in the field of Arts and Humanities and Technical, while students in Maharashtra show more interest in the fields of Commerce and Fine Arts, where we see a lack of opportunities for students.

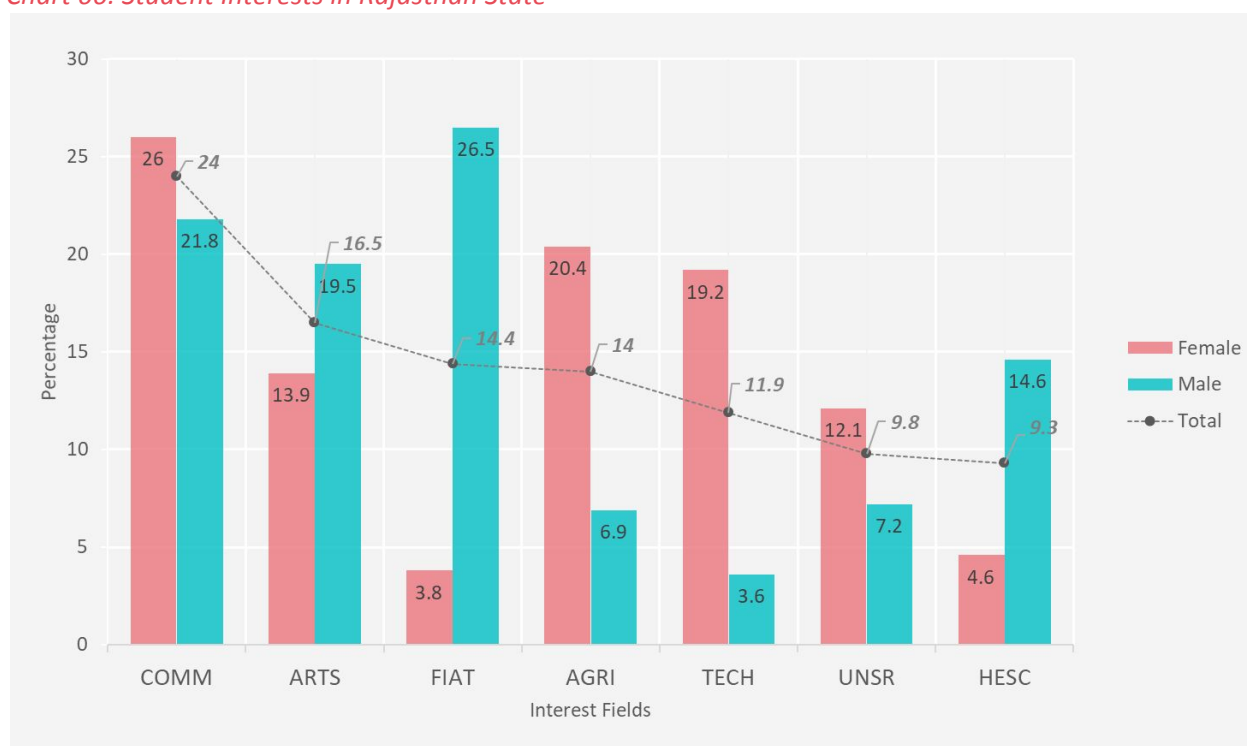
However it appears that the year on year trend for student's interests in Maharashtra can considerably change. Any district level inferences presented here regarding the lack of or adequacy of programmes for students will have to be studied over students interests collected across multiple years. A study of student interest over a longer period will conclusively be able to give more evidence of the gap in the number of institutes for a predicted trend of student interest.

²⁵ Source: <http://aishe.nic.in/aishe/viewDocument.action?documentId=245>

5.5 Rajasthan

A total of 9,811 students wrote the interest tests in 2018 in the state of Rajasthan, of which 5172 female and 4,639 male students appeared for the test. This covered less than one percent of the student population who wrote the 10th std exam in 2018 in Rajasthan²⁶. Of these, the following section describes 68.81 percent of students with a clear single interest in seven fields. The key patterns across the state, and compares patterns among proportion of male and female students with a clear single interests.

Chart 66: Student Interests in Rajasthan State



The chart above shows proportion of female students, male students and total student population split by interest arranged in descending order.

- **Overall:** Highest proportion of students, i.e. 24% show a clear interest in Commerce, while the least show an interest in Health & Life Sciences (9.3%).
- **Female:** Commerce is the field of interests amongst the highest proportion of students i.e 26 % students while the least proportion show an interest in Fine Arts (3.8 %).
- **Male:** Show the most interest in Fine Arts (26.5%) and the least in Technical (3.6%).

²⁶ In the academic year 2017-18, 10,82,972 students wrote the SSC exam with the State Board of Rajasthan. Source: <https://www.hindustantimes.com/education/rajasthan-board-result-2018-rbse-10th-result-today-at-rajresults-nic-in/story-G3TdfdmBpAAZQDfsTnBVhO.html>

- **A higher proportion of female students show interests in Commerce, Agriculture, Technical and Uniformed Services** over male students by 4.2 percentage points, 13.5 percentage points, 15.6 percentage points and 4.9 percentage points respectively.

Note, given the small size of the student population, here district level patterns have not been discussed for the state of Rajasthan. Nonetheless, in the given student population we see that district of Hanumangarh has the highest concentration of the student population and the district of Bikaner has the least. Split of student populations across the districts of Rajasthan can be found in the Annexure,section 8.4.

6. Perspectives on Data

Beyond the descriptive aspects presented in the section above, the section below attempts to dissect the data from different vantage points to further analyse it by comparing data on student interests and aptitudes, aggregating the data along categories of high, medium and low scores and understand the relationship between student interests through correlations. The analysis presented below forms much of the basis of the key critical conclusions and recommendations presented at the end of the report.

6.1 Interests and Aptitude

As part of the Career Mitra Project initiated in Madhya Pradesh state, aptitude tests were also conducted alongside interest tests for the first time. About 4.09 Lakh students took the aptitude test for the academic year 2017-18. The aptitude test measures a student's numerical, logical, spatial and verbal aptitudes and the raw scores in percentile are then interpreted as a student's aptitude level being 'needs improvement', 'below average', 'above average' and 'excellent' based on her/his corresponding percentile score. The table below shows percentage of students by aptitude levels split according to aptitude areas. Detailed gender-wise table for female and male students are presented in the Annexure, section 8.5. However when comparing the two groups we see that the patterns among them are similar and at most differ by three percentage points.

Table 12: Percentage of students according to Aptitude Levels

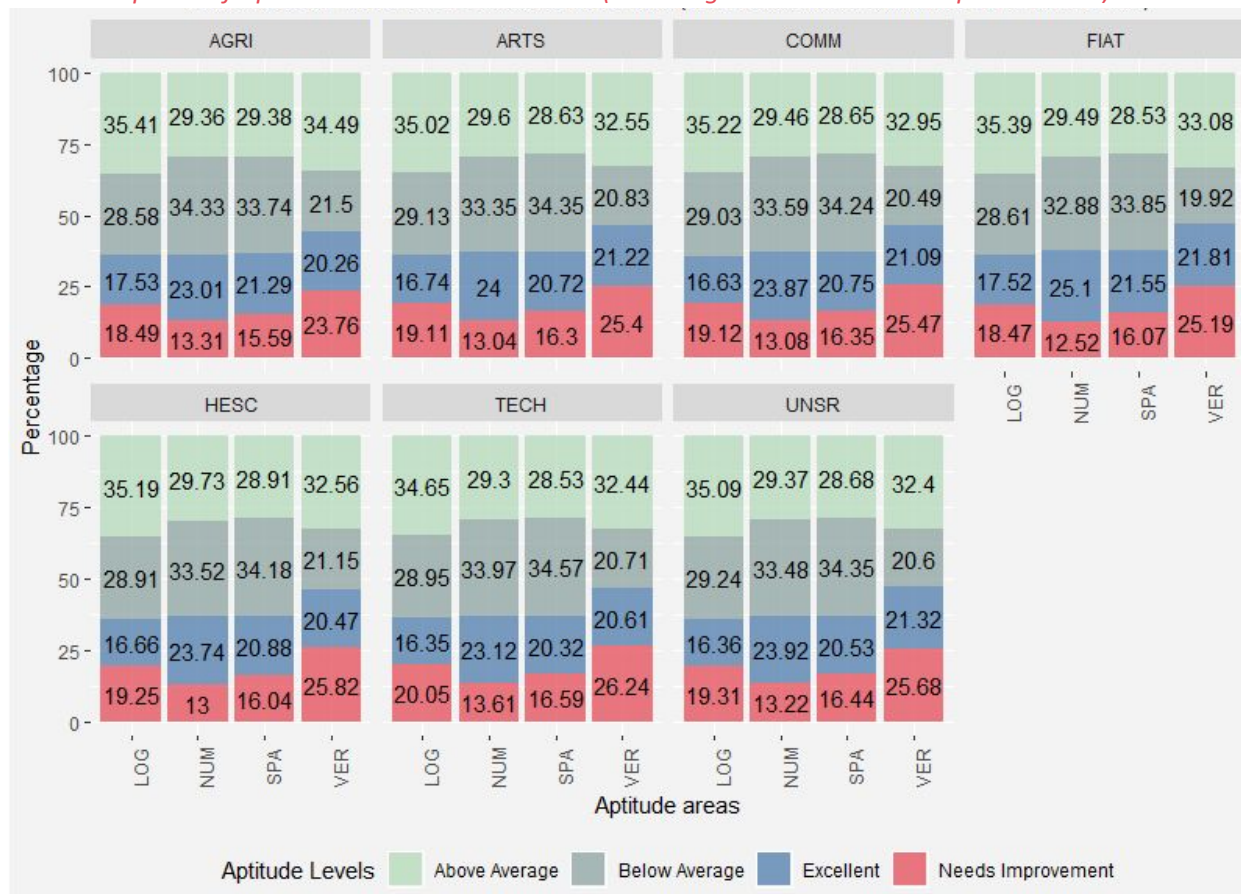
	Above Average	Below Average	Excellent	Needs Improvement
Logical Ability	35.18%	28.89%	16.87%	19.06%
Numerical Ability	29.39%	33.81%	23.65%	13.15%
Spatial Ability	28.95%	34.07%	20.92%	16.06%
Verbal Ability	33.23%	20.86%	20.73%	25.19%

In Madhya Pradesh, of all students who took the interest test, about 3.89 Lakh students took both the interest and aptitude tests. According to the 'career magic framework', for a student to excel in one's career, s/he would require an interest as well as an aptitude in a given field. For any given field of interest the career magic framework then assumes that a student is required to have a given pattern of aptitudes. For instance, perhaps being interested in the Technical fields might imply that the students tend to have high logical and numerical aptitudes.

Thus for further analysis of the data student aptitudes and interests were mapped for each student who took both tests. The initial line of enquiry was to note the percentage of students who have an interest

as well as an aptitude in a given field. To understand how the two data sets were related, i.e., what having an interest in a particular field meant to the distribution of aptitudes, the spread of aptitude levels for each interest area was examined (see chart 56 given below).

Chart 67: Spread of Aptitude Levels in All Students (Including students with Multiple Interests)



The chart above shows the spread of student aptitudes, for each aptitude area, against all seven interest fields.²⁷ The above chart can be read as 35.41 % of students with an interests in Agriculture have an above average ability in logical aptitude.

As can be seen in the chart above, **there appears to be no clear distinction with regards to the distribution of aptitude levels across the different interest fields.** For instance, it can be seen that approximately 32 percent of students with an interest in any field have an above average verbal aptitude. It is worth noting that the spread within Aptitude levels amongst those with different interests remains the same, and at most show an insignificant difference of less than 2 percentage points.

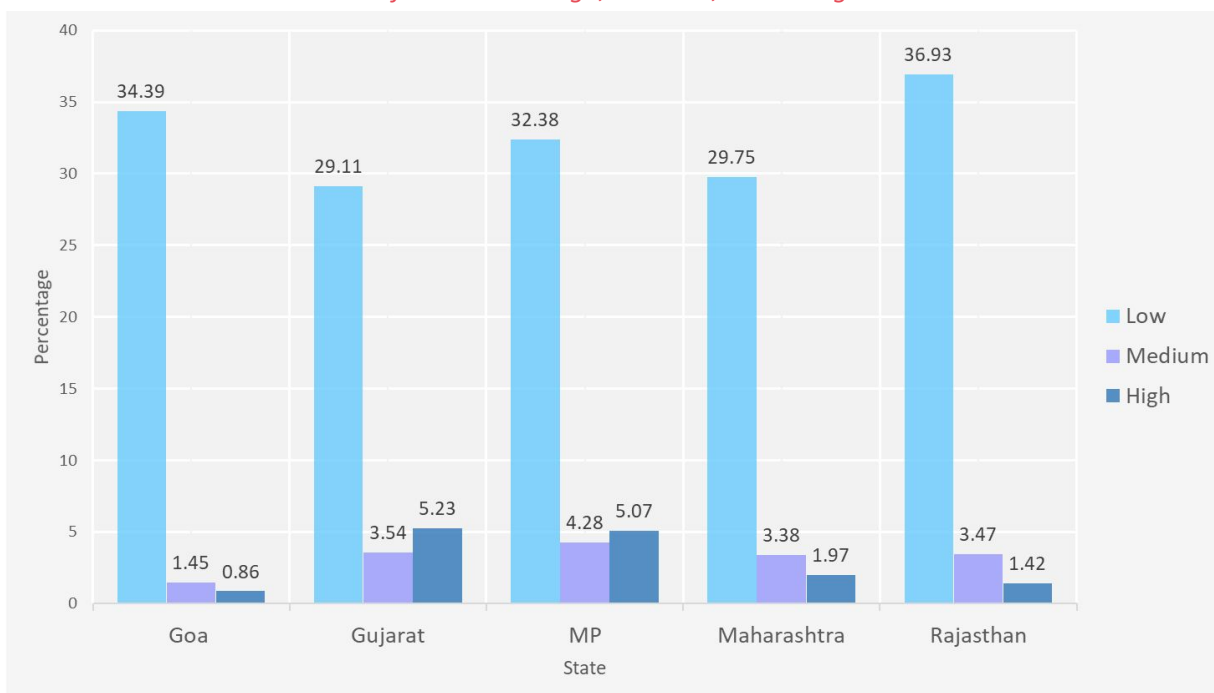
²⁷ A similar chart for students with a single interest only has been included in the Annexure, section 8.5. Since the figures in the charts show no difference, the chart with single and multiple interests has been showcased here, one with single interests only has been included in the Annexure.

6.2 Dissecting the Data: High, Medium, Low

The current interest test used in the Career Mitra Project, interprets the student's highest percentile score in an interest field as the student's field of interest. However during the analysis of the data we noted that some students have a very high percentile score across all interest fields and some have a very low percentile scores across all interest fields.

In an attempt to understand this pattern better, we dissected the student population according to their percentile scores into three arbitrary categories - high, medium and low. The 'High' performing category is defined as the set of students who fall in the 80th percentile or above across all interest areas. Likewise, 'Medium' encompasses students who fall between the 50th and the 79th percentile for all interest areas and 'Low' category includes students who fall at 49th percentile or below the all the interest areas.

Chart 68: State-wise distribution of students in High, Medium, Low categories



The figures in the chart above, represent the percentage share of students in the categories of high, medium and low for each state. For example, out of the total population of students in Goa, 34.39% of them fall at the 49th percentile or below it in all the interest fields, and is therefore in the Low category.

Looking at the data in this manner we see that of the 28,22,000 students across all the five states who took the interest test, 3.16 % of the student population have scores in all interest field in the high category, 3.57 % of the student population have scores across all interest field in the medium category and as much as **30% of the student population fall in the low category.**

This trend could be explained by factors such as students not understanding the questions in the test, not being informed about the various fields, arbitrarily picking a response that scored high across all questions etc.

Further, It is observed that only 32% of the participants score above the 75th percentile in at least one interest area, whereas the report suggests that 70% children overall have a clear single interest. This is discussed further in the conclusion section.

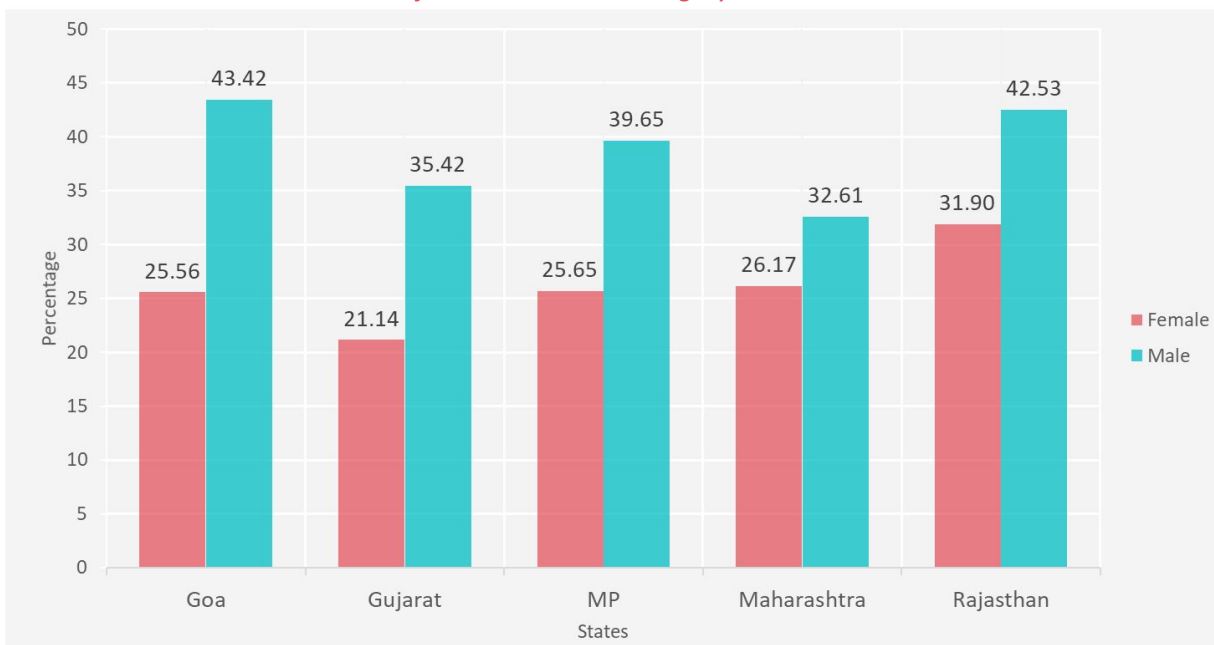
The sections below describe the student populations in these three categories across states and gender. Details can be accessed in charts provided in the Annexure, section 8.7.

6.2.1 Trends in Low Category

Overall Trends

- Out of the three categories of high, medium and low, the highest share of students fall in the low category (49th percentile and below) in all the five states, as shown in chart 68.
- The highest of such share across the five states is seen in Rajasthan (36.93%).
- Maharashtra and Gujarat have the lowest shares of students in the low category at 29.75% and 29.11% respectively.

Chart 69: Gender-wise distribution of students in Low Category



The figures in the chart above represent the gender-wise division of share of students in the Low category for each state. For example, out of the total population of female students in Goa, 25.56% of them fall at the 49th percentile or below it in all the interest fields.

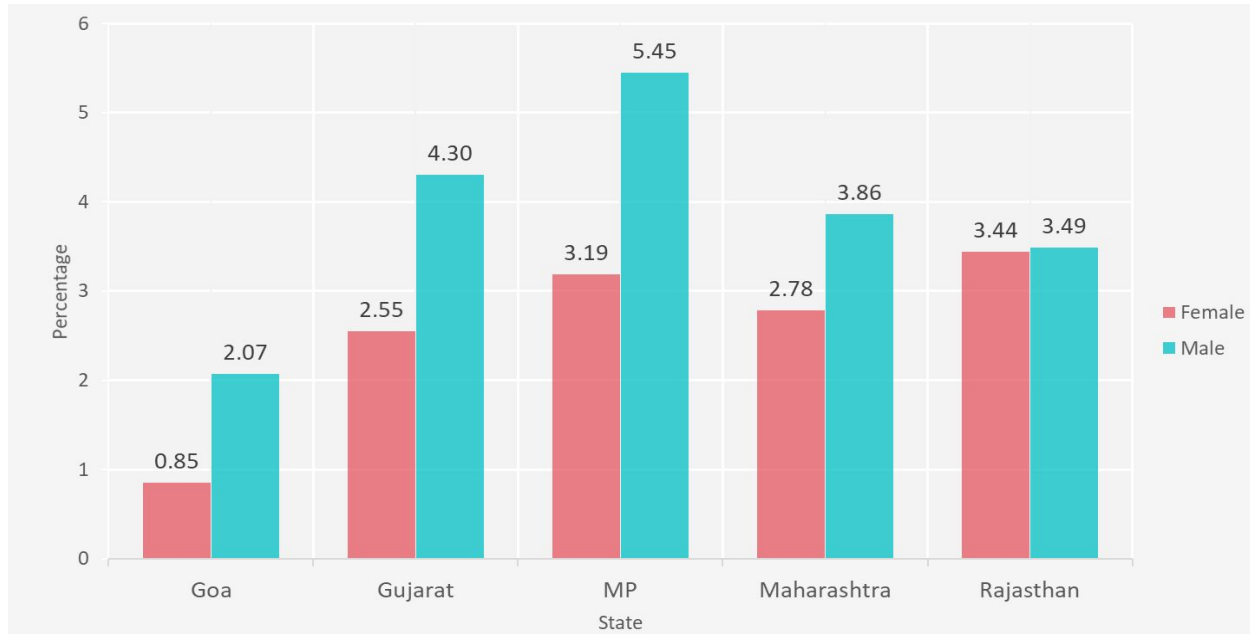
- There is a higher share of male students in the low category than female students across all the states.
- The highest share of male students is found in Goa (43.42%), closely followed by Rajasthan (42.53%)

- The highest share of female students is found in Rajasthan (31.9%) followed by Maharashtra (26.1%).

6.2.2 Trends in Medium Category

- The percentage share of students in the medium category (between 50th and 79th percentile) is the higher than those in high category for three states, namely Maharashtra, Rajasthan and Goa.
- For the remaining states, medium category has the lowest share of students.

Chart 70 : Gender Distribution of Students in Medium Category



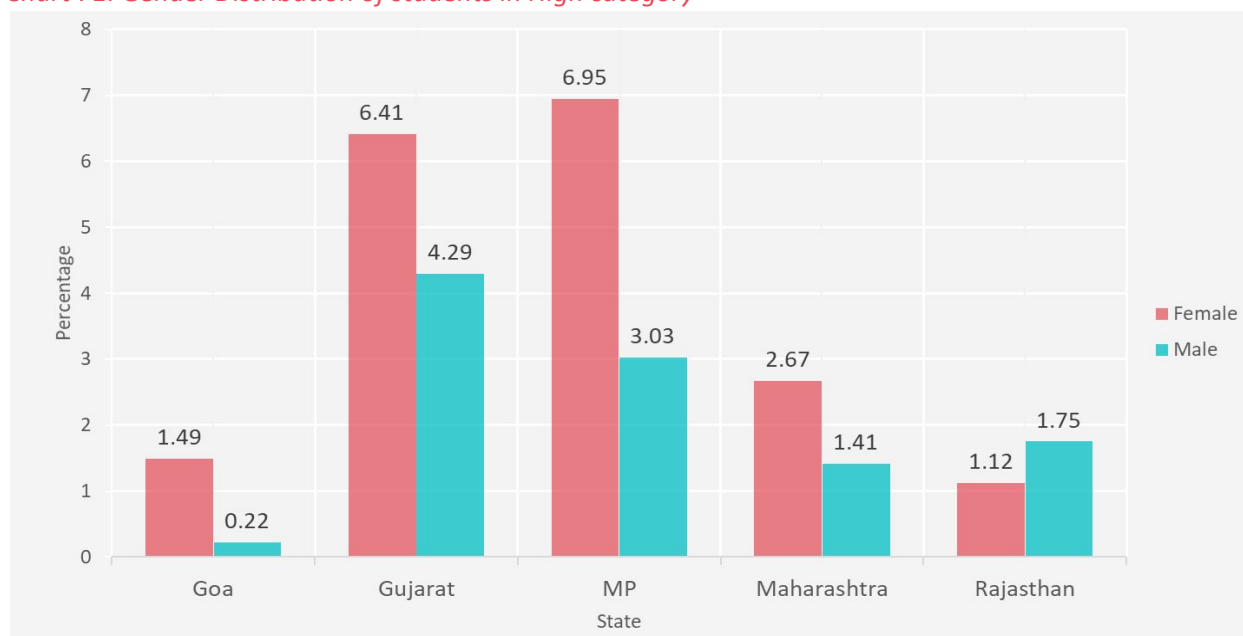
The figures in the chart above represent the gender-wise division of share of students in the Medium category for each state. For example, out of the total population of female students in Goa, 0.85% of them fall between 50th and 79th percentiles in all the interest fields.

- In the medium category, the male population is higher than that of females in all the five states except Rajasthan where they are almost similar at 3.4%.
- The highest share of male students in Medium category is found in MP (5.45%)
- The highest share of female students in Medium category is found in Rajasthan (3.44%)

6.2.3 Trends in High Category

The percentage share of students in the high category (80th percentile and above) is the lowest across all the three categories (high, medium, low) in the states of Maharashtra, Rajasthan and Goa. The highest share of students across the five states in the high category is found in Gujarat (5.23%), the least of such percentage share is found in Goa at 0.86% of its student population.

Chart 71: Gender Distribution of students in High category



The figures in the chart above represent the gender-wise division of share of students in the High category for each state. For example, out of the total population of female students in Goa, 1.49% of them fall at the 80th percentile or above in all the interest fields.

- In this category unlike the previous two, there is a higher share of female students who fall above the 80th percentile in all the areas than their male counterparts in four states namely Gujarat, Maharashtra, MP and Goa.
- Only in the state of Rajasthan is the percentage share of male population higher than that of females. The gender gap here, however is negligible at only about 0.6% points.

6.3 Correlations between Interest Areas

In this study we attempted to explore the presence, if any, of recurring patterns of student interests within the seven areas across the entire student population. This in turn was done in order to check if there was any relationship between any two interest areas, that is if they occurred in similar intensities across given set of students. In order to examine this, Kendall's correlation coefficient²⁸ was calculated for each interest area against all the others across the entire population for each state. The correlation only attempts to find how scores of a particular field affect those in other fields, or in other words, how increase in scores in a particular field relates to the change in scores in other fields. Therefore a high correlation coefficient between any two interests fields implies that for any given student population with a positive coefficient an interest in a given interest field will also mean a likely interest in the other interest field.

²⁸ A rank correlation coefficient, the Kendall's rank correlation coefficient (τ) in our case, measures the extent to which, as one variable increases, the other variable tends to increase, irrespective of the relationship of this increase, i.e., the relationship is not expected to be linear. For further details refer to: https://www.jstor.org/stable/2332226?seq=1#page_scan_tab_contents

Here Kendall's correlation was applied over Pearson's correlation since the data is not normally distributed and the analysis requires only a measure of the increase or decrease in a single variable as another variable increases. A sample of the overall raw data is used to determine correlation between the interest fields drawn from the entire dataset for each state. For the state of Goa and Rajasthan, the entire dataset is used, whereas a sample size of 5000 is considered for the rest of the states. This sample size assures a confidence level of 95% and a margin of error of under 3% over the entire population. The sample is randomized using the function *sample* in RStudio. Apart from the correlation on the entire dataset - irrespective of students' interests, two other correlations are run - one for the student population with a single interest, and another for students with multiple interests. A sample size of 5000 is used except for when the population is smaller than 5000, where the entire population is used. Having run three different correlations for each state allows us to better conclude on the relationships between interests areas. Findings from these across states are discussed below. Each section only elaborates on the correlation results for the complete student populations, further details of correlations tests as well correlation coefficients for students with single only interests and multiple only interests are given in Annexure, Section 8.8.

Correlation between interest areas for all students

Overall, there is a positive correlation between all interest fields and ranges between 0.38 and 0.72. Looking at the correlation coefficients for the entire students population across states the following observations can be made:

- In Goa the correlation coefficient ranges between 0.61 and 0.39. Indicating that among students from the state, Health & Life Sciences and Technical have the highest positive correlations and Fine Arts and Health & Life Sciences have the lowest correlation coefficient.
- In Gujarat the correlation coefficient ranges between 0.64 for Arts and Commerce and 0.56 for Agriculture and Uniformed Services.
- In Maharashtra, we see that, the correlation coefficient ranges between 0.62 and 0.51. Indicating that among students from the state, Technical and Uniformed Services have the highest positive correlations and Fine Arts and Technical have the lowest correlation.
- In Madhya Pradesh, we find that the correlation coefficient between Technical and Uniformed Services is the most (0.72) and the least between Agriculture and Fine Arts (0.64).
- Lastly, in the case of Rajasthan we see that the correlation coefficient is the least between Agriculture and Arts (0.57) and the most between Commerce and Agriculture (0.72).

Correlation between interests areas for students with Multiple interests

Here also we see that the correlation between all interests fields in all states is positive above a coefficient of 0.6. Base on the correlation coefficients the following observations can be made:

- Among students from Goa, the highest correlation coefficient of 0.73 can be seen between Health & Life Sciences and Technical.
- In Gujarat, students with multiple interests see the highest correlation coefficient of 0.77 between Arts and Commerce, and lowest between Fine Arts and Technical (0.71).

- In Maharashtra, the highest correlation coefficient is between Agriculture and Commerce (0.74) and Agriculture and Arts (0.64).
- In Madhya Pradesh, the correlation coefficient varies between a maximum of 0.82 in the case of Agriculture and Commerce and a minimum of 0.74 between Fine Arts and Technical.
- In Rajasthan the the correlation coefficient between Fine Arts and Health & Life Sciences is the the highest at 0.79 and the lowest between Technical and Arts at 0.66.

Correlation between interest areas for students with a Single Interests.

As was the case in the above two student populations the correlation coefficients between interest fields here also is positive in all cases and ranges between 0.30 and 0.69. Based on the table above the following observations can be made:

- In Goa we see the coefficient is the highest between Health Science and Technical (0.58) and the lowest between Fine Arts and Uniformed Services (0.31).
- In Gujarat also we find that the coefficient is the highest between Health & Life Sciences and Technical and the lowest between Fine Arts and Uniformed Services.
- This is also the case in Maharashtra, where the correlation coefficient between Health Science and Technical is the highest (0.57) and lowest between Fine Arts and Uniformed Services (0.43).
- In Madhya Pradesh, we find that the correlation coefficient is the highest between Agriculture and Technical (0.68) and the least between (0.51).
- Lastly we see that in Rajasthan, the correlation coefficient is the maximum between Technical and Agriculture (0.68) and the minimum between Arts and Technical (0.51).

The analysis above considers fifteen different student populations and attempts to understand correlations between the seven interests field. Overall, we can see that there are no clear patterns emerging within states or within population groups as the correlations coefficients in most cases is very high. The description here, only presents the absolute minimum and maximum scores, however there are other scores that come close to the scores written here, which should also be considered when trying to understand larger patterns across the entire student population in this study.

Through closer examination of high correlation coefficients within each population group we see that a high correlation between Health & Life Sciences and Technical, Technical and Uniformed Services, Technical and Agriculture and Agriculture and Commerce are the most recurring. On the other hand low correlation coefficients within population groups are most often observed between Fine Arts and Technical, Fine Arts and Uniformed Services, Fine Arts and Agriculture, and Arts & Humanities and Technical.

The correlation coefficients may best describe relationship true for the given student population, however, no conclusive pattern emerges that allows us to infer the likelihood of a student's interest in any given field also resulting in the students next to high interests in any other field.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Depth of Analysis and Variables Captured

The data can be split in multiple ways and discussed in many permutation and combinations of variables, however, the data does not allow for causal relations to be attributed between student interests and factors that may be linked to it, viz., environmental conditions and socioeconomic status amongst others, through any of the variables currently captured. To elaborate, against each student, data on gender and district along with interest scores are captured. While the analysis of this data is valuable, future analysis stands to gain much more from the data that also captures student's socio-economic background. For instance information along variables like urban-rural, student category, household income etc., will help us better understand factors that influence student interests and allow us to establish causal linkages against student interests. However, at this stage, the analysis remains largely descriptive rather than inferential.

Recommendation: Future tests to capture more variables like socio-economic status and household income, to enable inferential analysis and causal linkages

7.2 Sensitivity of the interest testing tool

In the analysis presented above, we observe a high positive correlation across interests fields. This could hint that the tool needs to be more sensitive to be able to clearly differentiate between clear interests in a single area.

Taking ahead the notion, as per our analysis of 'High Medium Low', that a higher score in one area is linked to a single interest as opposed to highest individual score (however low it may be), we see as much as 30 percent of the student population does not score above the 50th percentile in any single field and 32% of the participants score above the 75th percentile in at least one interest area. How valid then is it to state that a particular student has a clear single interest in a particular field when their score is relatively low in eliciting that interest through the test? There is no fixed point in the test itself that marks a clear interest, but only the highest individual score. We feel, a more sensitive tool would be able to correlate high scores on the test with a clear interest in an area with closely defined thresholds.

To pursue this from another angle, the linkage between the interest and aptitude scores are ambiguous. This implies that the tool with which the interests as well as aptitudes are measured needs to be more sensitive to be able to yield richer results.

Recommendation: The sensitivity of the tool in capturing student interest needs a closer examination.

7.3 Percentile vs. Absolute Score

The current interest tool, converts students raw scores into percentiles and interprets the students' highest score as her/his field of interest. Therefore what we are essentially saying is a student's interest in a particular field is measured in relation to the performance of other students in that field. However, as we saw with the analysis above, only 24% percent have at least one score above 80th percentile. Rather than doing so, if the test itself had an inbuilt threshold to recommend single and multiple interest (such as High, Medium & Low Categories), it would be a more valid and reliable way of measuring interests and providing recommendations to the child.

Further, if interests are indicated based on an individual highest rather than an absolute highest, then this indicates a ranking of interests rather than absolute measurements. In which case, there needs to be clarity on whether ranking of the the highest score also ranks students other interests in order of declining interest.

Recommendation: Test to recommend thresholds based on population norms to indicate single interest rather than percentile scores. Or else, the test should output recommendations as ranking of interests rather than single and multiple interests, given the formative age of the students.

7.4 Humanise the data

In order to bring alive the data that is reported, it is considered a best practice to include individual vignettes and stories that highlight specific aspects of the data, or drive home any key conclusions about the benefits of the Maha Career Mitra Project.

Recommendation: The final external report would definitely be enriched through the inclusion of real case studies and stories, since what stays with readers is a story, rather than a data point.

7.5 Impact of the Career Mitra Project

Further, there is an immediate need to understand if the testing implemented through this project is helpful for the students it aims to serve. Studying longitudinal data and tracking key decisions an individual student makes over their course of their lives is essential in making a stronger case for career guidance for students to be continued by present state partners and to convince newer state partners to adopt it.

Recommendation: Design and implement longitudinal observations and tracking of a random sample of the children to determine long term predictability and benefits of interest test.