

Absenteeism of Undergraduate Students in Mathematics and Statistics Classrooms: An Analysis of Causes and Effects

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Abstract

This study focuses on finding most significant causes of classroom absenteeism and also aims to explore its effect on performance of the students. Data was collected through survey questionnaires to probe into the causes of absenteeism in Mathematics and Statistics classes; given out to 78 undergraduate students. Data pertaining to their attendance during one full semester in the said subjects and their performance at the end of that semester in the examination was collected from college office records. All student were also personally interviewed to understand their viewpoint on absenteeism and their future career goals if any. The study revealed that the most significant reasons for absenteeism were inconvenient timetable, early morning lecture timings, health problems and peer pressure. Also important were their participation in extracurricular activities and sometimes a casual attitude towards life. It is observed that the percentage of male and female students attending classes or missing them is not much different. It is also observed that students without any specific career goal tend to miss classes more often than the ones with set goals. Also, significant positive relationship was found between classroom attendance and examination performance.

Keywords

Absenteeism, Attendance, Examination Performance, Career Goal, Mathematics, Statistics

I. Introduction

Indian universities and colleges offer education to masses. Classroom teaching is an affordable and inexpensive means of teaching all over India. In this era of technological and electronic revolution, classroom teaching is still the most widely accepted means of teaching in India. An important factor that makes classroom teaching ineffective is absenteeism of students in classrooms. Mumbai University has a mandatory attendance policy for all its undergraduate courses. Yet it is observed that many students are not very regular in attending classes. This causes a problem for the educator. The teacher has to waste valuable and limited classroom time in re-teaching the students who have missed classes. Many times it is observed that students take turns to attend classes so that they get all the “notes”. This poses a great problem of continuity for the teacher because his/her audience in the previous class is mostly absent and the current audience has no knowledge of what was taught in previous class. For subjects like Mathematics and Statistics, classroom explanations are often the most effective method of imparting knowledge and enhancing problem solving skills. Absenteeism hampers the healthy teaching-learning environment and affects the learning outcome adversely. It leaves the teacher with a feeling of irritability and incompleteness. This study focuses on finding significant causes of absenteeism of undergraduate students in Mathematics and Statistics classrooms and attempts to explore the relationship between absenteeism and student performance in examination. An initial discussion with students and teachers led us to mark a few reasons which may be significantly responsible for absenteeism. They included early or inconvenient lecture timing, commuting from far off places, peer pressure, illness and other activities. It was also noticed that many students were clueless about what they want to do after graduation. They had no or very vague career goals. It is generally believed that girls are more sincere than boys, so they may be attending lectures more regularly. It is also perceived that students who miss classes may not do well in the subsequent examination. Based on the initial discussion, following objectives were arrived upon.

II. Objectives of Study:

A. To find out most significant causes of student absenteeism

in classroom

- B. To study the relation between absenteeism and gender.
- C. To study the relation between absenteeism and career goal setting.
- D. To study the relation between absenteeism and examination performance.

III. Hypotheses of Study

Following are the hypotheses formulated for the study:

H_{01} : The two factors Absenteeism and Gender of the learner are independent.

H_{02} : The two factors Absenteeism and setting of career goal of the learner are independent.

H_{03} : Mean marks scored by the students with low attendance is same as mean marks scored by the students with high attendance

IV. Population and Sample

This study is based on a random sample of size 78 from a population of 250 students registered in the subjects of Mathematics and Statistics in SIES College of Arts, Science and Commerce, Sion, Mumbai.

V. Methodology

The methodology used in this study is descriptive survey method, supported by personal interviews of students. Students were asked to fill a questionnaire which was designed after a preliminary discussion with students and teachers regarding absenteeism. It contains closed as well as open ended questions. A pilot study was first undertaken. After making suitable changes the final questionnaire was designed. It was followed by a personal interaction with the students to enable them to express themselves more freely on issues like career goal setting in life. Data regarding their attendance in the subjects of Mathematics and Statistics and their marks in the examination held at the end of the semester; was collected from the college office.

VI. Data Analysis

The possible reasons for absenteeism were grouped into 5 broad categories as follows.

1. Infrastructure/ timetable/ commuting related problems
2. Health/ Family/ Finance related problems
3. Attitude/ Peer pressure related problems
4. Subject understanding/ Communication / teacher related problems
5. Other activities/ Other Examinations/ Internship/ Other private classes related problems

The data regarding attendance of students and examination performance obtained was analysed using Percentages, Mean, Chi square, Yule's coefficient of association, Standard Deviation and Z test.

VII. Observations and Findings

A. Reasons responsible for classroom absenteeism:

1. Infrastructure/ timetable/ commuting related problems

The most prominent reason for absenteeism in this category was early morning lecture timings with which 66% of the population agreed. In the one on one interactions, students revealed that they tend to miss their first lectures held at 7.10 a.m. most often.

Inconvenient timetable emerged as next significant cause. Continuous lecture periods with very short or no breaks, little time to eat contributes in missing lectures, with which 44% of the participants agreed .

Next reason in this category was commuting problems, with which 33% of the participants agreed. Students travelling from far off places have to depend on public transport systems, which results in inevitable delay and missing lectures quite often.

Also a smaller fraction of 16% of participants agreed that they don't feel like coming to college, because they don't like the canteen/ library/ infrastructure/ lack of open spaces in the college.

2. Health/ Family/ Finance related problems

A significant 33% of participants agreed that they most often miss lectures due to poor health. Though they did not support this with medical reports, they shared complaints like persistent colds, lack of energy, headaches, weakness, anaemia, frequent fevers and stomach upsets due to eating out. Not being able to carry enough food from home for the whole day and non availability of nutritious food was also a common complaint.

13% participants shared that they have to do part time jobs to support their families financially. Poor financial position of parents, single parent to support the family or having no parents makes it necessary for some students to work part time to earn their livelihood.

11% students mentioned that they have family problems like an invalid family member to take care of or to help ailing parents in domestic chores like filling water and cooking , looking after siblings which many a times are reasons for not being able to come to college.

3. Attitude/ Peer pressure related problems

One third of students mentioned that they feel that missing lectures is "Cool" and they can "Enjoy life" by missing classes. They watch movies or hang out with friends or frequent nearby coffee shops. They think that college time is for enjoying life with friends. Also a significant 28% of students give in to peer pressure and miss classes because their friends say so.

4. Subject understanding/ Communication / teacher related problems

Subject understanding for a student and interest in the subject largely depend on a teacher. It is important for a teacher to identify the students who do not understand either due to weak fundamentals or due to communication problems. A teacher can accordingly modify his teaching methodology to facilitate such students.

32% students felt that they are weak in the fundamentals of the subject and do not understand classroom teaching. So they prefer to miss classes.

Also, 24% students felt that their dislike for the subject is responsible for their absenteeism in classes.

17% students felt that the classroom teaching was too elementary and slow and that they were often bored and hence didn't feel like coming to class .

14 % students registered communication problems leading to lack of understanding, as a reason for absenteeism.

11% students expressed dislike for the teacher because of strictness of teacher or shouting in classroom or lack of explanation skills and subject knowledge.

8% students are of the opinion that they don't get any individual attention in class so they don't feel like attending.

5. Other activities/ Other Examinations/ Internship/ Other private classes related problems

In this category, we discovered that 24% students tend to miss classes because they are involved in extracurricular activities like sports, cultural competitions, and co-curricular activities like NSS, NCC, research meets, competitions and exhibitions.

10% of students claimed to be preparing for entrance examinations due to which they miss classes.

8% students are involved in internship whereas 7% students are involved in attending other coaching classes or other short term courses.

B. Absenteeism and Gender

The sample contains equal number of girls as well as boys. The gender wise analysis of data indicates that the mean percentage attendance of boys and girls is almost the same. (Table1)

Table1: Gender wise Mean Percentage Attendance

Gender	Female	Male	All students
Mean Percentage attendance	61.08	59.13	60.10

H_{01} : The two factors Absenteeism and Gender of the learner are independent.

To test the independence of two factors absenteeism and gender; Yule's coefficient of association was calculated.

Table 2: Gender wise Attendance

Attendance	Female	Male	Row total
Low ($\leq 50\%$)	14	14	28
High ($> 50\%$)	25	25	50
Col total	39	39	78
Yule's coefficient of association = 0.			

Yule's coefficient of association is 0. Hence we conclude that the two factors absenteeism and gender are independent.

C. Absenteeism and Career Goal

Goal setting is observed more prominently in boys (29.48%) than in girls (21.79%). Both boys and girls with set career goals show improved attendance than those without (Table3).

Table 3: Attendance and Career Goal

Attendance	Goal yes	Goal no	Row total
Low (≤ 50 %)	10	18	28
High (> 50 %)	30	20	50
Column total	40	38	78

H_{02} : The two factors Absenteeism and setting of career goal of the learner are independent.

To test the independence of these two factors Chi square was calculated for the sample based upon data given in Table 3.

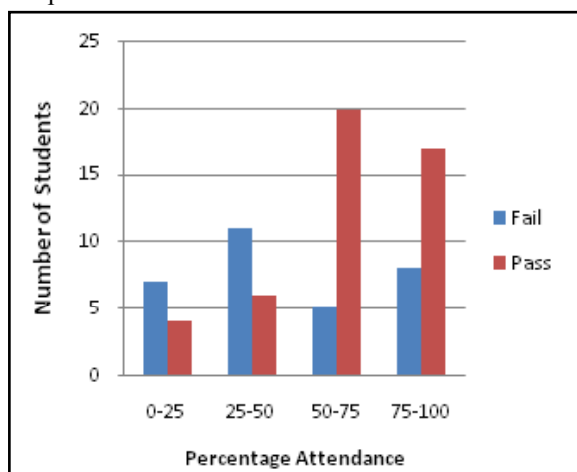
Chi square value calculated = 4.237218045
Chi square value tabulated = 3.841

Hence we conclude at 5% level of significance that the two factors attendance and setting of career goals are interdependent.

D. Absenteeism and Examination Performance:

Graph1 shows that students with higher percentage attendance have become successful in examination in larger numbers than the ones with lower percentage attendance.

Graph 1 : Attendance and Examination Performance



Z test for equality of two means with unequal sample sizes and assuming unequal variances was used to determine whether the mean marks of students with low attendance is smaller than that of students with high attendance.

$H_{03} : \mu_x = \mu_y$ Vs $H_{13} : \mu_x \leq \mu_y$
 μ_x and μ_y denote mean marks of the population.
 x denotes the marks obtained by a student with low attendance & y denotes the marks obtained by a student with high attendance.

\bar{x} , \bar{y} denote the two sample means
 n_x , n_y denote the sample sizes.

Table 4: Z test to determine the relation between mean marks of students and their attendance

\bar{x}	\bar{y}	n_x	n_y	σ_x^2	σ_y^2
32.59	49.55	28	50	306	405.9665

Z calculated = - 3.73503	p value = 0.00095
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The p value is very low. Hence we can conclude that average marks obtained by students with low attendance is significantly lower than average marks obtained by students with higher attendance.

VIII. Conclusions

From the above findings, it is evident that Gender and absenteeism are independent factors. There is a positive effect of attending lectures on examination performance of learners. Goal Setting shows a positive effect on attendance of learners. We also observe that average percentage attendance of the population is found to be as less as 60.10 %. There are factors responsible for student absenteeism like poor fundamentals, difficulty level of the subject, communication skills that an educator can help with in classrooms, provided they attend classes. This indicate that there is a need for motivating students to attend classes more regularly, and also to define their career goals early in life. This will have a positive effect on their classroom attendance as well as performance in examination.

IX. Recommendations

In order that students feel encouraged to attend college more regularly, we recommend the following steps.

- To try finding solutions for infrastructural limitations and time restrictions to facilitate students to attend lectures.
- To organise regular health check up camps and providing affordable and nutritious food on college campus for the students.
- To provide remedial coaching, as well as financial help to students facing family and financial problems.
- To provide vocational training and opportunities for “Earn while you learn” to supplement their family income.
- To counsel students regarding their casual attitude towards education and to make them aware of importance of setting a career goal in life.
- To organise career guidance sessions for students.
- To conduct study tours and Industrial visits for students to make them aware of application of the subject in the industry.
- To organise quizzes and presentations in class for improving student teacher relationship which in turn will enhance attendance and participation in class.
- To organise teacher feedback followed by measures to improve teacher performance.
- To encourage teachers to attend faculty development programmes so as to enhance their skills and performance levels.
- To encourage teachers to explore creative techniques and innovative teaching methods to increase interest of students in subject.
- To provide students with regular guidance about choice of subject according to their preference and capacity to

- understand
- To set up student support mechanism to provide counselling with regards to Career, Time and study management skills, and ways to manage academic pressure in higher education.
- To Introduce students to Mathematical and Statistical Software packages so as to augment interest in the subject

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