**1] For a general election to be held for choosing the elected representatives to the Maharashtra state assembly, if a sample survey is conducted in the Mumbai airport, will the survey results be reliable? Explain your reasoning.**

***Ans.*** It’s not actually reliable

Reasons:

1]We would be only taking opinions of those people who can afford the flight.

2]According to the C.rangarajan Methodology of measuring poverty,29.5 % of people in the Indian population are below poverty level.

<https://www.drishtiias.com/images/uploads/1570703843_image2.jpg>

3]Some Indian political parties are supported by most of the poor people, some of the parties are supported by minority people, some parties are supported by rich people(industrialists and businessmen).

4]For eg. City: Nasik

There is a clear difference between votes for BJP and NCP.

NCP had more votes in rural areas & BJP had more votes in urban areas.

So, conducting surveys on the airport is not really reliable.

5]Consider Eg. Chhatrapati Shivaji Maharaj International Airport.

There are many people at the airport who are not from Mumbai so, there is no point to take opinions from them.

**2]You are asked to conduct a sample survey for a general election to be held for choosing the elected representatives to the Maharashtra state assembly. Which are the best public places to conduct it. Why? Suppose the choices are (a) banks, (b) post-offices, (c) places of worship,**

**(d) public transportation, (e) traffic junction, and, (f) market. Order these choices in terms of your preference with an explanation as to why.**

***Ans.***

1]Places of Worship

2]Market

3]Banks

4]traffic Junctions.

5]Public Transportation

6]post offices

1]Places of Worship

These are places in India where everyone can come. In these places, everyone can go.there is no restrictions at these places.From beggar to the businessman, temples are for everyone

2]Market

After temples, Market is a good place to take surveys because here you can meet various types of people. You can choose more random people in the market hence it’s better than a bank.

3]Banks:

Banks are also for everyone. but there is a bit discrimination in it also.SBI is ok.

But there is Bank of Maharashtra and Canara bank. Most of the middle-class people in Maharashtra have their account in BOM.

4]Traffic Junctions:

It is actually a good place but in traffic, people may get bored and might not behave properly to give the survey because everyone is in a hurry.

5]Public Transportation

Here also we miss those people who have their own cars and those who can’t afford public transport(They travel by cycle and all)

6]Post Offices:

In Urban area Post, offices are somewhat outdated now due to network connectivity and all.

In a rural area , we can get good data.

Different responces accoording to geological location.

In Places of worshiop-How man people goes to places of worship.

In surveys,proportion of real and in surveys are importatant.

**Read the attached document on how the Lokniti-CSDS National Election Study was held post-poll in 2019. Then, answer the following questions:**

**(a) The methodology document indicates "Our investigators sat down**

**in the homes of people whose names were selected from the electoral**

**roll, and asked them a detailed set of questions". It would have been**

**easier to ask questions near the polling booth by randomly choosing**

**voters. Why was this not done?**

***Ans***. 1]There is too much crowd outside the polling booth.

If we have to ask a detailed question to them, we cannot ask due to lack of a free atmosphere.

Near the polling booth, there is a chance to expose their personal opinion about parties or candidates.

At home, they can answer the questions freely without any burden.

Near voting booth, there are some secret agents are planted to give vote to specific candidates(illegally) So, they have that burden near a polling booth

0

Accuracy vs precision:These things are relevabt

**(b) The methodology document indicates that at every stage (the constituency, the assembly segment, the polling booths, the voters) were all chosen randomly. Is this the correct way? Isn't it known that some constituencies reflect the mood of the nation better and those should have been chosen for the study? Also, if more youngsters have voted in the election, does it not make sense to choose only voters below 30for the poll?**

***Ans***. It is not the wrong way actually. Samples should be random.

For the first part:

My answer is, Yes we can actually do that and it can result in better accuracy:

How to choose those assemblies?

We have overall data of the country:

Suppose x% Male, y% female

u% Youngsters w % adults, z% senior citizens.

So suppose one constituency matches the approx % of country %,It should take in count.

Also In India religion is an important thing in elections.

So, x% Hindu, y % islam, z% Jain…

If any constituency matches it approx % then that constituency should take in count.

For the second part:

Not really because we can get closure to the result but not the exact result.tere is biasing in our result because we are only focusing on the young generation, not on the adults.

**(c) In the 2019 elections, about 60 crore Indians voted. The survey was**

**conducted by talking to nearly 20000 voters. Do you think that this is**

**enough?**

Ans. No, I think to reach out the accuracy, they could have increased no. of voters like 2 lakhs.

It's only 0.0033%population.If we increase no. of voters,accuracy can increase.

**d]The survey was conducted after polling was completed but before**

**results were announced. Suppose two more surveys are conducted {**

**one before polling and another after the results are announced. Do you**

**expect the results to vary? Why?**

Ans. Yes of course:

1]Before Polling: The publicity about every part was going on,pros and cons of every party were also coming through the news.There is a chance of changing the voter’s mind before the polling and after the polling.

2]After results:

Not really because the voter had already voted for his favourite party and there was no publicity after the voting So i think results should not change.

**4]You are the MoodIndigo coordinator. You want to know the favourite**

**Bollywood actors among college students in Mumbai. You approach**

**Red Mirchi FM station to conduct the survey. The host of Red Mirchi**

**FM asks the listeners to call and name their favourite Bollywood actor**

**on a given day. (a) Do you think the sample is representative? Com-**

**ment. (b) Can you come up with one more methodology to obtain**

**a representative sample? Clearly indicate your methodology (like the**

**CSDS-Lokniti document) and your assumptions.**

Ans. Yes , That sample is representative. As far as i know, radio Mirchi like FM stations focus on youth. Their calls are also for youths, their songs are for the young generation so they developed quite a good amount of audience in the youngsters,so i think it will be ok to take surveys from radio mirchi.

My Idea:

1]First I have to make a list of all colleges in Mumbai with their contact numbers & mail IDs.

2]I have to contact the cultural head of that particular college through mail or through phone call.

3]I will mail him google form regarding the same.

4]He has that responsibility to float that google form in that college group.

5]Finally the cultural head of every college sends respective results to me.

**5.In the CSDS-Lokniti survey, dummy votes were used for collecting data**

**on voting. This was done in order to ensure that the voters remain**

**anonymous. Now, consider the following problem and solution method-**

**psychology from C R Rao's Statistics and Truth.**

**Another interesting application of randomness is in eliciting**

**responses to sensitive questions. If we ask a question like,**

**"Do you smoke marijuana?", we are not likely to get a correct**

**response. On the other hand, we can list two questions (one**

**of which is innocuous) T: Does your telephone number end**

**with an even digit? S: Do you smoke marijuana? and ask the**

**respondent to toss a coin and answer S correctly if head turns**

**up and T correctly if the tail turns up. The investigator does not**

**know which question the respondent is answering and the**

**secrecy of information is maintained. From such responses,**

**the true proportion of individuals smoking marijuana can be**

**estimated.**

**Suppose you have such data collected from a set of respondents. How**

**will you calculate the true proportion of individuals smoking mari-**

**juana?**

1000 respondent

1000 toss:

575-yes responces

Abc h/t yes

6.What is the Hawthorne effect in data collection? Look up the information online. Is this effect true? Did you ever notice the Hawthorne effect?

Ans. The Hawthorne Effect is a phenomenon in which individuals alter their [behavior](https://www.goodtherapy.org/blog/psychpedia/behavior) in response to being observed, and usually refers to positive changes. Workers participating in a study might, for example, temporarily become more productive as a result of being observed.

Yes. It is true.

Yes I observed it .Suppose we are chatting in the class in the lecture hall and suddenly the teacher enters the classroom . Then we just take out our books and start to study.

**7.In this course, we have announced that the self-evaluation quiz marks**

**are not counted towards evaluation for grading. However, let us say**

**that by mid-September Institute informs me that there is no possibility**

**of in-person, proctored final examination. Will it be ethical, at that**

**point, to inform that we will use the self-evaluation quiz marks towards**

**evaluation for grading?**

Ans. No. Absolutely not because when the quiz is going to count in final grading ,we prepare for it very well and try our best to succeed. In these self evaluation quizzes we are not as serious as the final quiz,It is fact.

Someone may debate on this fact but it is reality .

8.**Suppose you visit a restaurant. While paying the bill, the restaurant**

**the manager asks you if you are satisfied with the service. You are. Then,**

**he offers that if you give a good review on Google Maps and show the**

**same to him, he will give you a 10% discount on your bill. Is ethical**

**for you to accept the offer? Is it ethical if you give the review and**

**refuse the discount? Is it ethical if you give the review and disclose**

**that you got the discount for the review?**

Ans. I think to give review is a choice of the customer ,we cannot force them to give the review by offering them a bribe.(in the form of anything).

If you have that type of enthu to give review then give them without taking a discount.It is ethical.

Google Map reviews should be trustworthy.

**9.Suppose you visit a restaurant. While paying the bill, the restaurant manager offers that if you review the restaurant on Google Maps and show the same to him, he will give you a 10% discount on your bill irrespective of whether the review is positive or negative. Is is ethical**

**for you to accept the offer? Is it ethical if you give the review and refuse the discount? Is it ethical if you give the review and disclose that you got the discount for the review? How does this offer compare with the previous one in terms of ethics?**

Ans. Answer is the same as above.

I think the answer to both questions depends on the thought process of the student.

**10.In the quiz 0 that we asked you to take, suppose a student gives height**

**as 153.05 (in cms) or weight as 58.390 (in kgs). Is this correct? Why?**

Ans.It will depend on scale.

We do not see this type of machines where least count is low.one cannot report such precise .

11.In a medical trial that you are administering, to half of the patients,you are giving no medicine (placebo). Is it ethical? Does it make any difference if you know who is getting placebo or if you are not aware of it?

Ans. It is not ethical because it is injustice to other patients.It is a violation of human rights.

It does not make any difference to me that I know or don’t know.

12.In a sheet metal forming company, some sheets develop defects and so,the company wants you to analyse their process data and identify the origin of the defect. You ask the company to supply you all the data (of both defective and non-defective plates). The shop floor manager

believes that you need only data pertaining to defective sheets. Is she

correct? If not, how will you convince her that you actually need all

data?

Ans. No. She is not correct.

First we need to check what types of defects are happening -1]Interstitial or 2]less flexibility

To convince her,we have to say that we need ideal data of those parameters.We have to check differences in them by analysing data and analysing output.So that we can analyse defects.

13]Consider the frequency table (Table 1) which gives the age distribution of members of a chess club in a school:

(a) How many students are there in the club? (b) What is the mean

age of the members of the club? (c) What is the median age of the

members of the club? (d) What is the mode of the given data set?

(e) What is the standard deviation of the given data? (f) How does

the mean age change if children above the age of 16 are not included

in the calculation? (g) How does the median age change if children

above the age of 16 are not included in the calculation? (i) Compare

the changes in mean age and median age when children above the age

of 16 are included and excluded. Which one changes more? Why? (j)

Based on this data, somebody concludes that the chess playing abilities

of students peak in the early teens and declines in the late teens. Do

Do you think that is a correct conclusion?

Age Frequency

10 5

11 12

12 11

13 12

14 10

15 5

16 2

17 1

18 1

Table 1: The frequency table of ages of the members of a chess club in a

school.

a]No. Of students: 59

b]Mean:12.74

c]Median: 12.5

d]mode:12

e]