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LAW: SELECTION OF JURY

A **jury** is a sworn body of people convened to render an impartial verdict (a finding of fact on a question) officially submitted to them by a court, or to set a penalty or judgment. Modern juries tend to be found in courts to ascertain the guilt, or lack thereof, in a crime. The "petit jury" (or "trial jury", sometimes "petty jury") hears the evidence in a trial as presented by both the plaintiff/prosecutor (petitioner) and the defendant (respondent). After hearing the evidence and often jury instructions from the judge, the group retires for deliberation, to consider a verdict. The majority required for a verdict varies. In some cases, it must be unanimous while in other jurisdictions it may be a majority or supermajority. A jury that is unable to come to a verdict is referred to as a hung jury. The size of the jury varies; in criminal cases involving serious felonies there are usually 12 jurors, although Scotland uses 15. In civil cases, many trials require fewer than 12 jurors.

Traditional Jury selection is a method used to choose the people who will serve on a jury. The jury pool, also known as the venire, is first selected from among the community using a reasonably random method. Jury lists are compiled from voter registrations and driver license/state ID renewals. From those lists, summonses are mailed. A panel of jurors is then assigned to a courtroom. The prospective jurors are randomly selected to sit in the jury box. At this stage they will be questioned in court by the judge and/or attorneys in the United States. Ultimately, they choose which people should be on the jury. Depending on the jurisdiction,

attorneys may have an opportunity to mount a challenge for cause argument or use one of a limited number of peremptory challenges to exclude potential jurors. A challenge for cause argument is one in which attorneys must state the reason for a challenge such as a clear bias or conflict of interest. The opposing party is allowed to respond and the judge decides whether to exclude the potential juror. But the second option of peremptory challenge is one where an attorney can exclude a juror without stating a reason. While challenges for cause are unlimited, attorneys have only a limited number of peremptory challenges, sometimes as few as four, although 10 is more common in non-capital felony cases (felony without capital punishment). Hence excluding the right jurors using the peremptory challenge is very crucial for the winning or losing of the case, in other terms the verdict of the person in trial.

Scientific jury selection, often abbreviated **SJS**, is the use of social science techniques and expertise to choose favorable juries during a criminal or civil trial. The theory behind SJS is that juror attitudes predict voting preferences most effectively. By discovering what relationships exist between certain attitudes, attorneys can exclude those from the jury whose attitudes would predispose them to a bad verdict. Researcher Shari Diamond indicates that jury consultants primarily rely on two methods: telephone surveys and mock trials (trial simulations). Telephone surveys are the practitioners' "primary research method". During a survey of the community where the trial is taking place, jury consultants ask about:

- Background characteristics of the jury pool such as race, sex, marital status, age, income, and job; and perhaps more specific questions that depend upon the case itself

- Beliefs and attitudes likely associated with a favorable or unfavorable verdict

- After reading a summary of the facts of the case, which verdict the survey respondent would favor.

Diamond writes that jury consultants then compare the three data sets to determine which background characteristics correlate to favorable attitudes and verdicts, and which attitudes correlate to favorable verdicts. Attorneys can then use that information to select favorable jurors, based either on prospective jurors' characteristics or whatever an attorney can learn about jurors' attitudes. This has prompted the most frequent criticism of SJS: that consultants stack juries with inexorably biased or dumb jurors; in turn, practitioners insist this is impossible and that bias can only be removed from a jury pool. An alternative is to test respondents at the researcher's facility with opening statements or a full-blown mock trial instead of reading a case summary over the telephone. The higher cost of a mock trial allows for a more realistic portrayal of the real trial and (researchers hope) more accurate data. It also provides a better opportunity to question the subjects, before and after the trial simulation. On the other hand, telephone surveys provide a larger and more representative sample of the jury pool. Diamond indicates that since both methods have advantages, SJS practitioners commonly rely on both in the same case. There was a criticism claiming that the practice is controversial because of fears that it gives lawyers the ability to "fix" the jury and enhances the distorting effect of money. However, research indicates that the effect of the practice is modest at best.

Statistics in Jury Selection – Statistical Analysis of sample data

Statistical methodology can be used in a jury trial to help attorneys to select out those jurors who are likely to be unfavorable. The process in which the selected potential jurors are subjected to a system of examination whereby both the prosecution (or plaintiff in a civil case)

and defense can object to a juror is known as "Voir Dire". The application of Statistics and

Social Science to assist in the Voir Dire process uses demographic characteristics of potential

jurors. The demographic data is collected using sampling process where a good number of

people are selected randomly and surveyed. The selection here should be random in order to

eliminate biasness of data, that is, it must provide highest possible equal chance to the

characteristics considered. The statistical analysis of the sample data set can be determined using

tools like RapidMiner, IBM SPSS (Statistical Package for Social Sciences) etc.

This is a simple prototype of an expert system which computes the likelihood of a

particular kind of people voting guilty or not guilty for a verdict under consideration given the

statistical analysis of the demographic sampling.

The following is taken from a white paper released by S. James Press JurECon, Inc. Los

Angeles and University of California, Riverside to illustrate the methodology with an example.

The situation described, the company mentioned and the data used are all fictitious, but

the case has its roots in real disagreements among actual organizations; the actual facts are

proprietary.

Sample Case: The Mandeville Chemical Company (MCC) has been in business for many years

manufacturing items containing chemicals. While these chemicals have had many beneficial uses

in industrial applications, one of them has been found to be toxic to human beings and can cause

a variety of diseases, including cancer. Many workers brought suit against MCC to cover their

medical expenses, and MCC paid off. But MCC, in turn, filed suit against its insurance

companies for failing to compensate MCC. The insurance companies argued that MCC had

never informed them that it was in the business of making a dangerous product. Had they known,

they would not have agreed to insure. The case was clearly very complicated. It was not a simple case of some "little guy" suing a big corporation; it was a case of "the big" suing "the big". So a lot of capital was at stake. What kind of jurors will be likely to be unfavorable (or favorable) toward MCC?

The company decided to survey 800 people via telephone. These people were asked whether they were U.S citizens, whether they were located within the trial venue and some other questions to determine whether they were potential jurors in the case. Of those surveyed, 720 were found to be potential jurors. Potential jurors were asked a battery of questions. Random digit dialing was used to include people with unlisted numbers. In this procedure the first three digits of a telephone number are selected to correspond to the geographic area of interest. Then the last four digits are selected at random. The result may be a listed or an unlisted number. This is done repeatedly so that many people are reached. The first three digits are then changed and the process is repeated.

With a sample as large as 720, conclusions drawn from the sample about how potential jurors view the case could be generalized, with a high degree of confidence, to the larger population of potential jurors contained in the venue. Note that this generalization can be made when the sample is drawn randomly from the population of all potential jurors in the venue. Respondents to the survey were informed about the facts in the case and were then asked to give their background characteristics, such as gender, age, income category and so on. Some subsidiary questions were also asked to determine whether there are any points about the case difficult to understand. If so, the case for the plaintiff could be honed to clarify such points. Finally, the respondents were asked how they would vote if they were on a jury trying the case.

Interpreting the results of the sampling

This is achieved using the Statistical Analysis Software mentioned above. It was found that 65% of the total 720 people surveyed who were eligible to be jurors in the trial would be unfavorable toward MCC, and 35% would be favorable. The problem was to determine how to distinguish between the two groups so that socioeconomic "marker" variables for partiality against MCC could be used to determine which jurors should be challenged peremptorily and excused.

Cross tabulations of the fractions of respondents unfavorable and favorable toward MCC (the plaintiff) are shown, for age and gender in Tables 1 and 2 respectively.

When MCC looked at the 35% of the total number of respondents who favored the plaintiff, it didn't know anything about them.

Examination of Table 1, however, showed that 66% of the population favorable toward MCC was aged 18 to 35 (0.23/0.35), with only 11% aged 36 to 50 (0.04/0.035), 6% aged 51 to 65 (0.02/0.35), and 17% aged 66 to 80. More important, MCC then knew that the member of the age group 18 to 35 were more likely to be favorable toward the company than were older people, although the few in the 51 to 65 category were slightly more likely to be favorable. (0.40 vs 0.38). It is also clear from the Table 1 that the 18 to 35 group was more likely to be favorable toward MCC than was the 36 to 50 group (0.38 vs 0.29). Table 2 shows that 13% of males were likely to be favorable toward MCC (0.08/0.60) and that females were five times as likely as males to be favorable toward MCC (0.68/0.13). Thus MCC knew that if it were to do its best through peremptory challenges to eliminate potentially unfavorable jurors, it should try to avoid older persons and males.

Absolute Fraction Favorable

$= Percentage\ of\ age\ group\ population\ favorable\ \times Percentage\ of\ total\ number of\ respondents\ favorable$

Absolute Fraction Unfavorable =

Percentage of age group population unfavorable X Percentage of total numberof respondents unfavorable

Fraction of Age Group Favorable

= Percentage of age group population favorable X Percentage of total age group

Similarly, the fractions are calculated for each characteristic such as gender, income level etc.

TABLE 1: Cross tabulations of the fractions of respondents unfavorable and favorable toward MCC for age.

Age	Absolute Fraction Unfavorable Toward MCC	Absolute Fraction Favorable Toward MCC	Totals	Fraction of Age Group Favorable Toward MCC
18 - 35	0.37	0.23	0.60	0.38
36 - 50	0.10	0.04	0.14	0.29
51 – 65	0.03	0.02	0.05	0.40
66 – 80	0.15	0.06	0.21	0.29
Totals	0.65	0.35	1.00	0.35

TABLE 2: Cross tabulations of the fractions of respondents unfavorable and favorable toward MCC for gender.

Gender	Absolute Fraction Unfavorable Toward MCC	Absolute Fraction Favorable Toward MCC	Totals	Fraction of Gender Group Favorable Toward MCC
Male	0.52	0.08	0.60	0.13
Female	0.13	0.27	0.40	0.68
Totals	0.65	0.35	1.00	0.35

Other variables could be used as well. Although these numbers might have been found for this particular case, in other cases totally different sets of numbers are likely to emerge. That is, people's demographic characteristics tend to shape their views according to the context of the case. Since information about ethnicity, education, income, blue collar vs white collar, and other variables are also available or can be determined through survey, cross tabulations of these other variables could also have been carried out.

Why we need a Bayesian Network for this?

The percentage of single characteristics under consideration is determined through statistical analysis. This can be extended to calculating the likelihood for a particular type of person say, what will be the likelihood of a female of the age group 51 to 65 to be favorable

toward MCC and a female of the age group 18 to 35. In this case, clearly the first is more likely to be favorable toward MCC than the latter.

This is calculated using the Statistical Straight-Line formula,

$$Probability = Tally/Gray$$

where Tally = Summation of the individual probabilities

Gray = Total number of probabilities

This is computable manually if the data considered is also small. But in reality, the demographic data is huge and this would be really beneficial if we can narrow down the type of people who will most likely be favorable toward MCC.

This Bayesian Network shows how the characteristics of a person can be used to determine the likelihood or the probability of her/his decision to vote guilty or not guilty. This network is simplified for better understanding. More accurate results can be obtained by taking into consideration more characteristics for the determination of the likelihood. The network is built for the decision making of the prosecution. It can be altered for Defense as well by changing the utility values. The Decision node represents the decision taken for a juror, that is, whether to accept or challenge them. The Utility node represents the satisfaction of the outcome. When the probability that they will vote guilty is more and the decision is to accept, then the satisfaction is the highest (say 100). When the probability that they will vote not guilty is more and the decision is to challenge, the satisfaction is second highest (say 80). When the probability that they will vote guilty is more and the decision is to challenge, the satisfaction is the least (say 0). This is because not only the prosecution has taken a bad decision, they also lose a challenge. When the

probability that they will vote not guilty is more and the decision is to accept, the satisfaction is the second least (say 20). This is because at least they will have an extra challenge to use later.

Future Scope:

The concept can be extended to more characteristics taken into consideration for the determination of the probability. One important variation is "group dynamics analysis". Some jury selection is concerned with the attitudes and bias of individuals. Some trial consultants also try to predict how individuals will form themselves into groups in the jury and which jurors will become leaders and followers in those groups. This model gives the probability of voting guilty and not guilty of a juror with a particular set of characteristics. It gives a decision whether to select or reject a juror based on this probability. The decision of selecting certain number of jurors from a pool of jurors is a more complex process. During a jury selection process, litigators must make decisions to exercise a limited number of peremptory juror challenges, often with incomplete knowledge of the value of potential replacement jurors and with limited knowledge of their opponent's selection strategy. This makes Jury Selection an ideal candidate for the application of Game Theory.

Glossary

*Jury***:** *In trials, a group of people who are selected and sworn to inquire into matters of fact and to reach a verdict on the basis of the evidence presented to them.*

Plaintiff/Prosecutor: The party who brings a case against another in a court of law. Plaintiff is used for civil cases and Prosecutor is used for criminal cases.

Defendant: The party who is sued or accused in a court of law.

Petitioner: One who presents a formal, written application to a court that requests action on a certain matter.

Respondent: The party who is required to answer a petition for a court order requiring the respondent to take some action.

Supermajority: A specified majority of votes, that is usually more than half of the total, such as 60 percent, required to approve a motion or pass legislation.

Venire: The panel of prospective jurors from which a jury is selected.

Voir Dire: The formal examination of a prospective juror under oath by the judge or attorneys.

Social Science Techniques: The scientific study of human society and social relationships. The main social sciences include economics, political science, human geography, demography and sociology.

Demographics: Demographics is defined as statistical data about the characteristics of a population, such as the age, gender and income of the people within the population.

Sampling: Sampling is the selection of a subset of individuals from within a statistical population to estimate characteristics of the whole population.

References

Press, S.James. **Statistics in Jury Selection: How to avoid unfavorable jurors**. JurEcon, Inc., Los Angeles and University of California, Riverside.

Lachman, Roy. **AI, Decision Science, and Psychological Theory in Decisions about People: A case study in Jury Selection.**

Diamond, S. S. (1990). **"Scientific Jury Selection: What Social Scientists Know and Do Not Know"**, *Judicature* 73 pp. 180–81.

The Joan Little Trial: A murder trial where SJS was used.

Harrisburg Seven Trial: A failed conspiracy case where SJS was used.

O. J. Simpson Murder Case: Another murder trial where SJS was used.