

2001 Veterinary Student Survey Report

INTRODUCTION

This report is a presentation and analysis of the results of a survey conducted upon year three, four and five Massey Veterinary students. This survey was conducted in approximately the middle of semester one, 2001. The survey employed self-report forms (i.e. the respondents filled them out unaided in their own time). A copy of the questionnaire employed can be found in appendix A.

The data obtained is presented in detail in section one. Each of the nine questions is offered individually enabling comparisons to be made between the results for each student year. This data is presented in percentage form in a table and then graphically in a histogram. Appendix B contains histograms showing the data for each student year grouped together. The means of each of the three student years are then compared via a statistical paradigm to determine if these means can be considered to differ in a systematic manner. A t statistic is employed for this purpose. For a full report on these t-tests consult Appendix C.

For reference, these are the questions asked of the Veterinary students.

Questions:

- 1) *The aforementioned labs have added to my scientific understanding of biological functions and behaviours*
- 2) *The physiological knowledge gained from the labs justified the use of live animals*
- 3) *The surgical knowledge and skill gained from the labs justified the use of live animals*
- 4) *The anaesthesia knowledge and skill gained from the lab justified the use of live animals*
- 5) *The live animals were treated with respect and dealt with in a humane way at all times during the lab*
- 6) *It is acceptable to continue the use of live animals in the aforementioned labs to demonstrate an accepted scientific principle*
- 7) *I would prefer to learn live tissue handling (surgical skills) in a more clinically oriented veterinary paper*
- 8) *If alternatives were offered (computer simulation, models, videos, tutorials) as well as live sheep labs, I would choose not to participate in the terminal sheep labs*
- 9) *I believe that such alternative learning methods could still provide me with the required knowledge of physiological principles taught by this course*

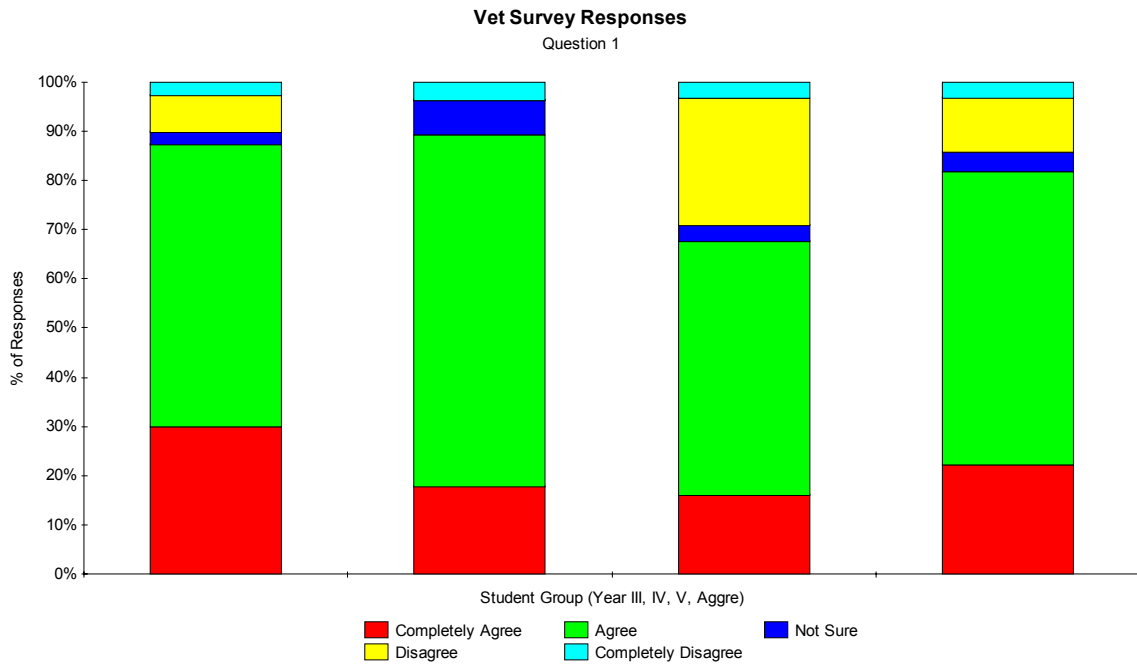
Response Options:

1. *Completely Agree*
2. *Agree*
3. *Not Sure*
4. *Disagree*
5. *Completely Disagree*

SECTION 1 – EXAMINATION OF INDIVIDUAL QUESTIONS

Question 1: The aforementioned labs have added to my scientific understanding of biological functions and behaviours

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	30.0%	17.9%	16.1%	22.2%
Agree	57.5%	71.4%	51.6%	59.6%
Not Sure	2.5%	7.1%	3.2%	4.0%
Disagree	7.5%	0.0%	25.8%	11.1%
Completely Disagree	2.5%	3.6%	3.2%	3.0%
N =	40	28	31	99

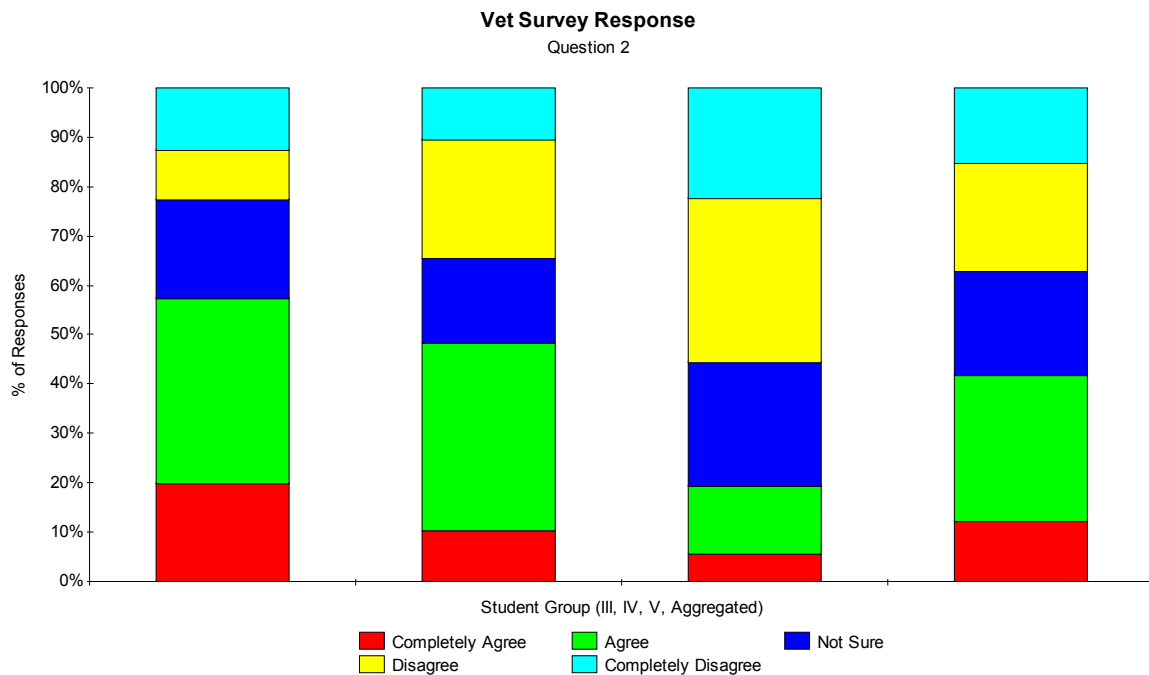


Student Years	t statistic	Mean
III -> IV	0.233	Year III = 1.95
III -> V	3.292**	Year IV = 2
IV - V	2.858**	Year V = 2.83

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p > .01 (1% chance of error), *** p > .001 (0.1% chance of error)

Question 2: The physiological knowledge gained from the labs justified the use of live animals

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	20.0%	10.3%	5.6%	12.4%
Agree	37.5%	37.9%	13.9%	29.5%
Not Sure	20.0%	17.2%	25.0%	21.0%
Disagree	10.0%	24.1%	33.3%	21.9%
Completely Disagree	12.5%	10.3%	22.2%	15.2%
N =	40	29	36	105

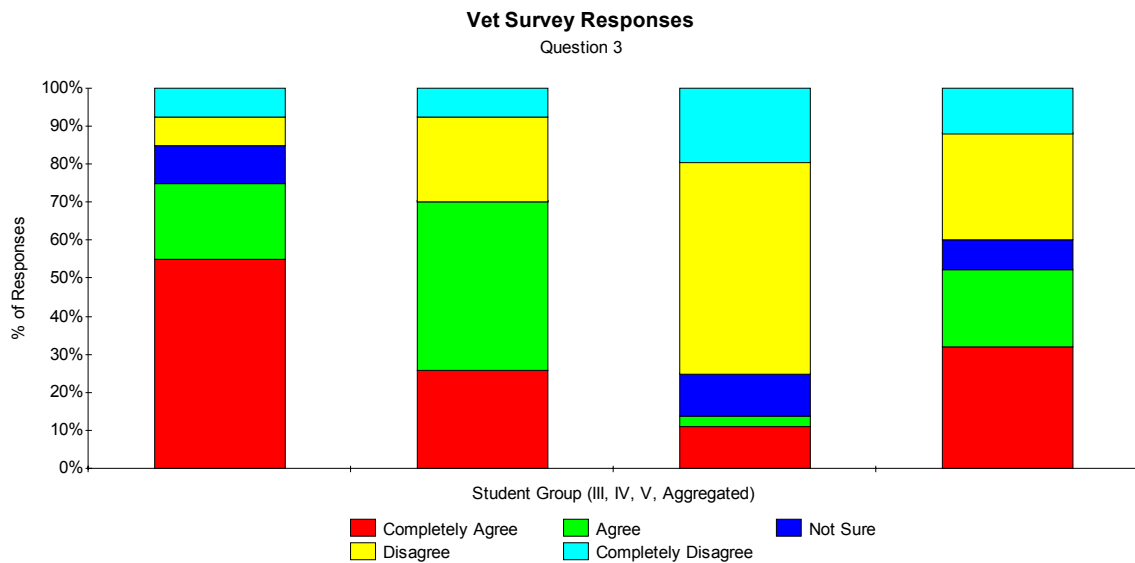


Student Years	t statistic	Mean
III -> IV	0.755	Year III = 2.63
III -> V	3.288**	Year IV = 2.86
IV - V	2.781**	Year V = 3.57

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p. > .01 (1% chance of error), *** p. > .001 (0.1% chance of error)

Question 3: The surgical knowledge and skill gained from the labs justified the use of live animals

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	55.0%	25.9%	11.1%	32.0%
Agree	20.0%	44.4%	2.8%	20.4%
Not Sure	10.0%	0.0%	11.1%	7.8%
Disagree	7.5%	22.2%	55.6%	28.2%
Completely Disagree	7.5%	7.4%	19.4%	11.7%
N =	40	27	36	103

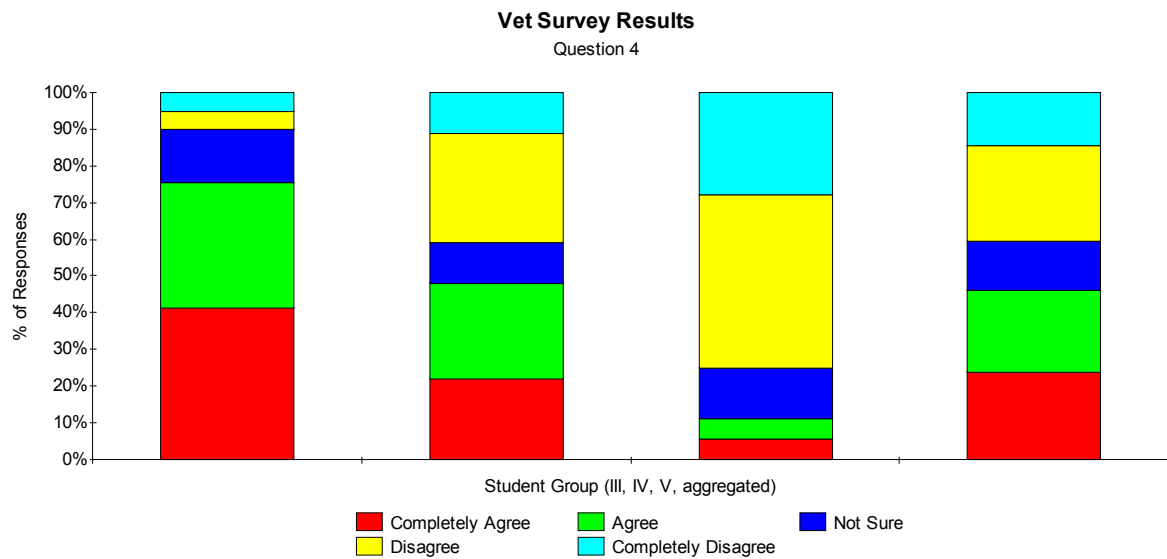


Student Years	t statistic	Mean
III -> IV	1.493	Year III = 1.93
III -> V	6.249***	Year IV = 2.41
IV - V	4.113***	Year V = 3.69

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p. > .01 (1% chance of error), *** p. > .001 (0.1% chance of error)

Question 4: The anaesthesia knowledge and skill gained from the lab justified the use of live animals

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	41.5%	22.2%	5.6%	24.0%
Agree	34.1%	25.9%	5.6%	22.1%
Not Sure	14.6%	11.1%	13.9%	13.5%
Disagree	4.9%	29.6%	47.2%	26.0%
Completely Disagree	4.9%	11.1%	27.8%	14.4%
N =	41	27	36	104

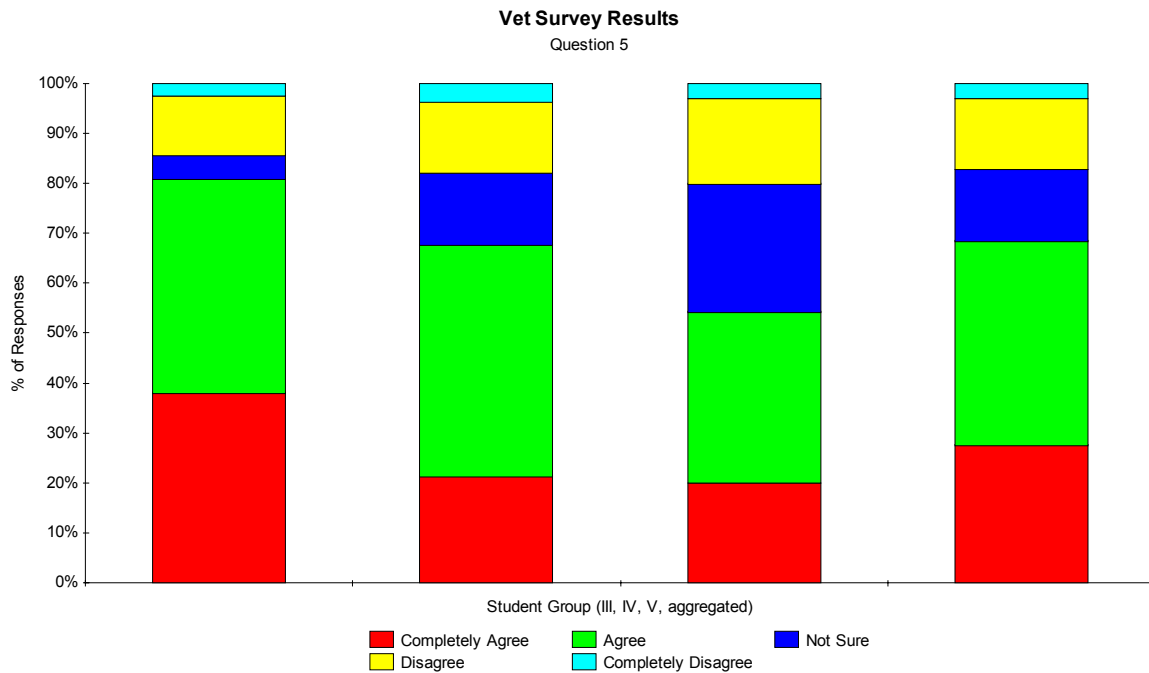


Student Years	t statistic	Mean
III -> IV	2.764**	Year III = 1.98
III -> V	7.556***	Year IV = 2.81
IV - V	3.376**	Year V = 3.86

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p > .01 (1% chance of error), *** p > .001 (0.1% chance of error)

Question 5: The live animals were treated with respect and dealt with in a humane way at all times during the lab

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	38.1%	21.4%	20.0%	27.6%
Agree	42.9%	46.4%	34.3%	41.0%
Not Sure	4.8%	14.3%	25.7%	14.3%
Disagree	11.9%	14.3%	17.1%	14.3%
Completely Disagree	2.4%	3.6%	2.9%	2.9%
N =	42	28	35	105

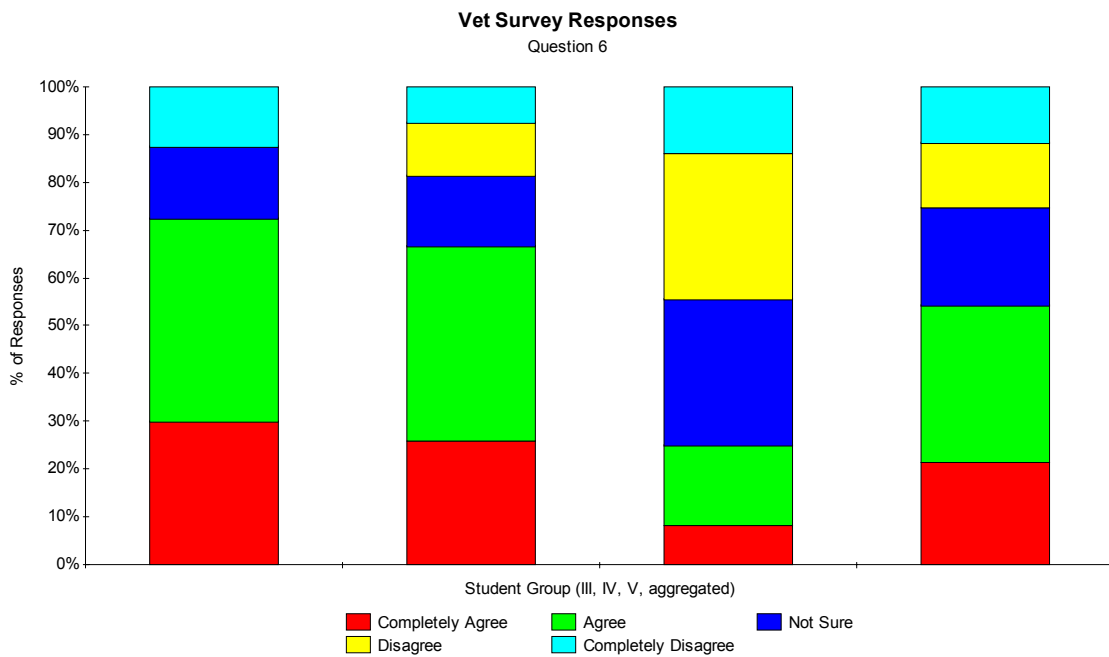


Student Years	t statistic	Mean
III -> IV	1.312	Year III = 1.98
III -> V	2.058*	Year IV = 2.32
IV - V	0.592	Year V = 2.49

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p. > .01 (1% chance of error), *** p. > .001 (0.1% chance of error)

Question 6: It is acceptable to continue the use of live animals in the aforementioned labs to demonstrate an accepted scientific principle

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	30.0%	25.9%	8.3%	21.4%
Agree	42.5%	40.7%	16.7%	33.0%
Not Sure	15.0%	14.8%	30.6%	20.4%
Disagree	0.0%	11.1%	30.6%	13.6%
Completely Disagree	12.5%	7.4%	13.9%	11.7%
N =	40	27	36	103

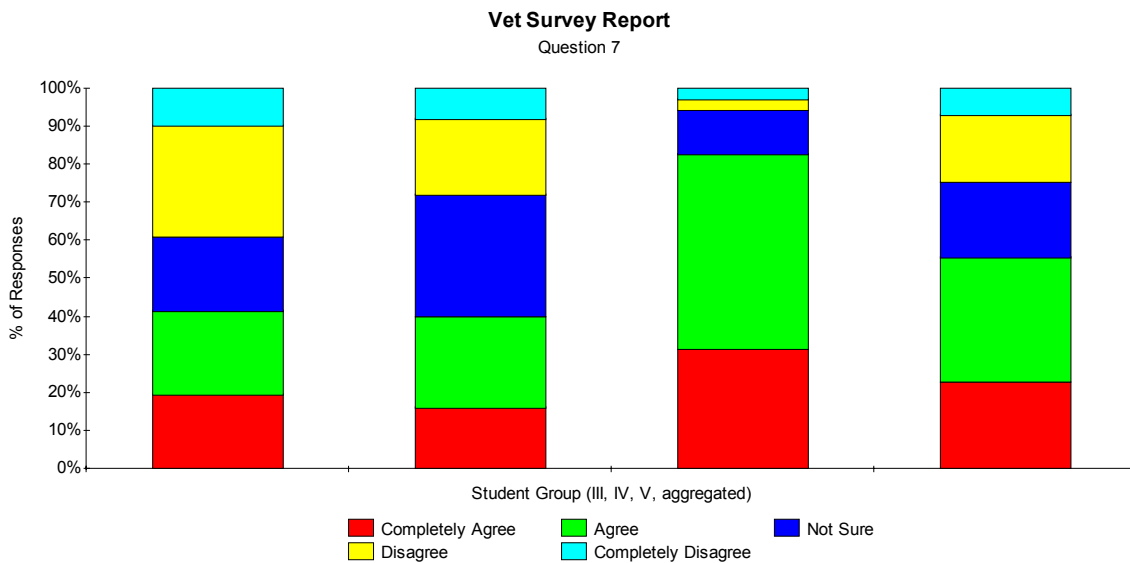


Student Years	t statistic	Mean
III -> IV	0.352	Year III = 2.23
III -> V	3.697***	Year IV = 2.33
IV - V	3.054**	Year V = 3.25

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p. > .01 (1% chance of error), *** p. > .001 (0.1% chance of error)

Question 7: I would prefer to learn live tissue handling (surgical skills) in a more clinically oriented veterinary paper

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	19.5%	16.0%	31.4%	22.8%
Agree	22.0%	24.0%	51.4%	32.7%
Not Sure	19.5%	32.0%	11.4%	19.8%
Disagree	29.3%	20.0%	2.9%	17.8%
Completely Disagree	9.8%	8.0%	2.9%	6.9%
N =	41	25	35	101

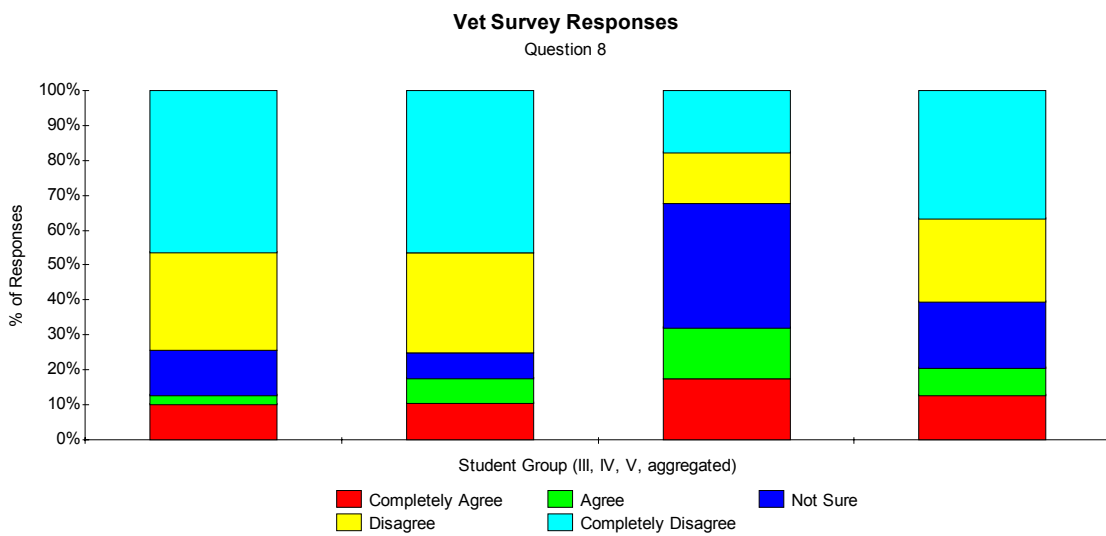


Student Years	t statistic	Mean
III -> IV	0.243	Year III = 2.88
III -> V	3.562***	Year IV = 2.8
IV - V	3.168**	Year V = 1.94

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p. > .01 (1% chance of error), *** p. > .001 (0.1% chance of error)

Question 8: If alternatives were offered (computer simulation, models, videos, tutorials) as well as live sheep labs, I would choose not to participate in the terminal sheep labs

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	10.3%	10.7%	17.6%	12.9%
Agree	2.6%	7.1%	14.7%	7.9%
Not Sure	12.8%	7.1%	35.3%	18.8%
Disagree	28.2%	28.6%	14.7%	23.8%
Completely Disagree	46.2%	46.4%	17.6%	36.6%
N =	39	28	34	101

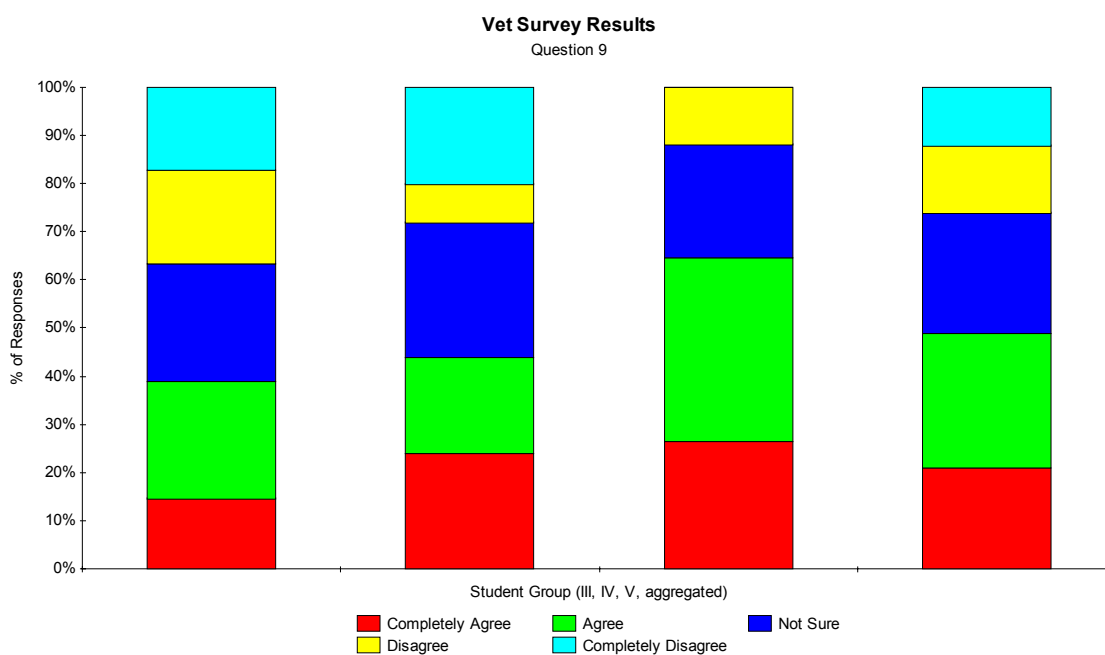


Student Years	t statistic	Mean
III -> IV	0.140	Year III = 3.97
III -> V	3.181**	Year IV = 3.93
IV - V	2.713**	Year V = 3.00

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p > .01 (1% chance of error), *** p > .001 (0.1% chance of error)

Question 9: I believe that such alternative learning methods could still provide me with the required knowledge of physiological principles taught by this course

Response	Year III	Year IV	Year V	Aggregate
Completely Agree	14.6%	24.0%	26.5%	21.0%
Agree	24.4%	20.0%	38.2%	28.0%
Not Sure	24.4%	28.0%	23.5%	25.0%
Disagree	19.5%	8.0%	11.8%	14.0%
Completely Disagree	17.1%	20.0%	0.0%	12.0%
N =	41	25	34	100



Student Years	t statistic	Mean
III -> IV	0.575	Year III = 3.00
III -> V	2.902**	Year IV = 2.76
IV - V	1.752	Year V = 2.21

*, **, or *** indicates statistically significant difference between the means of the two groups
 * p > .05 (5% chance of error) ** p > .01 (1% chance of error), *** p > .001 (0.1% chance of error)

SECTION 2: DISCUSSION

The following discussion briefly draws attention to a few salient points. It is not an in-depth treatment of the data, it does not claim to be comprehensive doubtless and many others points and interpretations can be made.

As regards the overall pattern of results obtained, there is evidence for a systematic change in perspectives from year three to year four students. In every question the attitudes of the fifth year students differed significantly from those of third year students. Moreover, this attitude change appears to occur later in the vet degree as fourth year student evidence significantly differing opinions from fifth year students in seven of the nine questions. The views of third and fourth year students did not appear to differ markedly as they had systematically differing opinions in only one case.

Questions two to four in the survey deal with the perceived value gained from the practise of using live animals for teaching purposes. The responses here display the typical pattern evidenced throughout the survey in that there is a linear pattern to the mean responses for each year, relative to each other. For example, the mean responses for question three (going from year three to five) are 1.93, 2.41 and 3.69. Likewise for question four the respective response means are 1.98, 2.81 and 3.86. In other words, as the vet students are gaining experience their opinions appear to move systematically away from the position they held in year three. In questions two to four the experiences of the vet students appear to be inducing doubt as to how justifiable is the use of live animals, relative to the knowledge and skill gained from the practise.

Question five asks how humanely did the respondent perceive the animal being treated during labs. Once again fifth-year student respondents held systematically different opinions to third-year students – being less likely to agree with the contention that animals were treated with respect and humanity during the labs in question. However, the difference in opinion is not as marked as with some of the other questions, being only about half a point. What is noticeable about these responses though is the growth of those ‘not sure’ of their beliefs vis-à-vis this issue. In third-year only 4.8% of respondents were unsure as to their beliefs regarding this issue. This climbs to 14.3% in fourth year and by fifth year 25.7% of respondents are unsure. One explanation for this could be that the longer ago they occurred, the more students experienced difficulty in remembering the content of these labs. The proportion of the three cohorts that disagree with this proposition remains very stable; the difference in responses occurring amongst the ratio of ‘not sure’ responses to the ‘agree’ and ‘completely agree’ responses.

Fifth-year students are also more likely to disagree with the ethical validity of employing live animals to demonstrate an accepted scientific principle. The mean response of fifth-year students was approximately one point higher than that of third or fourth-year students, indicating that they were less accepting of this proposition.

Questions seven to nine discuss attitudes towards alternative teaching methodologies, e.g. computer simulations, models, videos and tutorials. The previous pattern of responses continues here, with an increase in experience associated with more positive attitudes towards alternative teaching methodologies. One qualifier that must be observed is that third

year students have not undertaken the 'clinical oriented veterinary papers' referred to in question seven yet. Thus, it is possible that year three students may have a less defined understanding of the nature of the question than the other two cohorts.

The results obtained in the present survey display a consistent pattern, with attitudes varying from student group to student group and tending to vary in a recurring pattern of increasing divergence from starting (i.e. year three) opinions to those displayed in the most experienced student group (i.e. year five). That is, if a certain opinion is held by year three students, from years four to five those opinions move in the direction of the opposite viewpoint. Note that the data cannot be used to suggest that exposure to veterinary practises causes the attitude disparity evident as the survey employs a cross-sectional design with independent samples. To generate evidence for the course-related experiences of the vet students inducing the attitude change noted a longitudinal design would have to be employed (i.e. the same group of students should be sampled for three years in a row). Without such a survey design it is impossible to know such things as whether the three groups sampled started out with the attitudes displayed and their perspectives could thus be attributable to previous life experiences and be independent of the training and experiences imparted by the Massey veterinary degree.

APPENDIX A: THE QUESTIONNAIRE

This survey addresses the year III Physiology Terminal Sheep Labs, used to demonstrate physiological principles.

Euthanasia occurred in the following practical classes:

- Arterial blood pressure in the sheep
- Effects of haemorrhage
- Autonomic responses in sheep
- Demonstration of bile acids

Circle the option that best describes your position

III

IV

V

2000 Graduate

Staff/Clinician

For each of the following statements answer with the number that best describes you:

1. Completely Agree
2. Agree
3. Not Sure
4. Disagree
5. Completely Disagree

Please make any further comments where appropriate.

- 1) The aforementioned labs have added to my scientific understanding of biological functions and behaviours

- 2) The physiological knowledge gained from the labs justified the use of live animals

- 3) The surgical knowledge and skill gained from the labs justified the use of live animals

- 4) The anaesthesia knowledge and skill gained from the lab justified the use of live animals

- 5) The live animals were treated with respect and dealt with in a humane way at all times during the lab

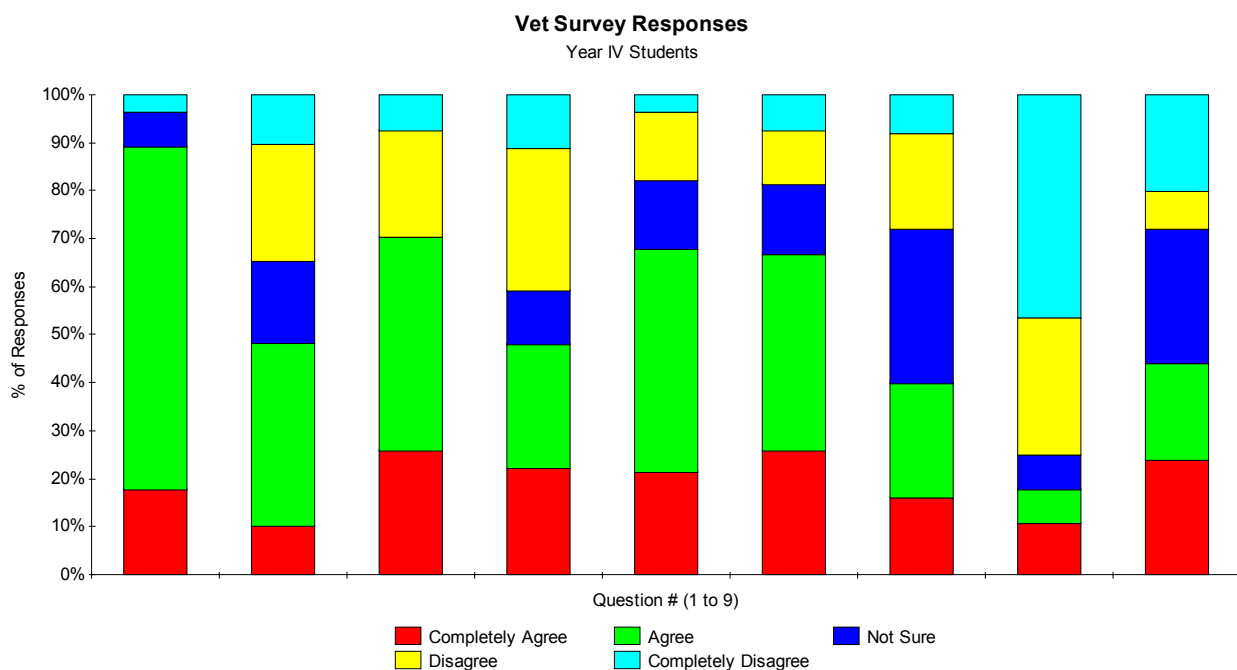
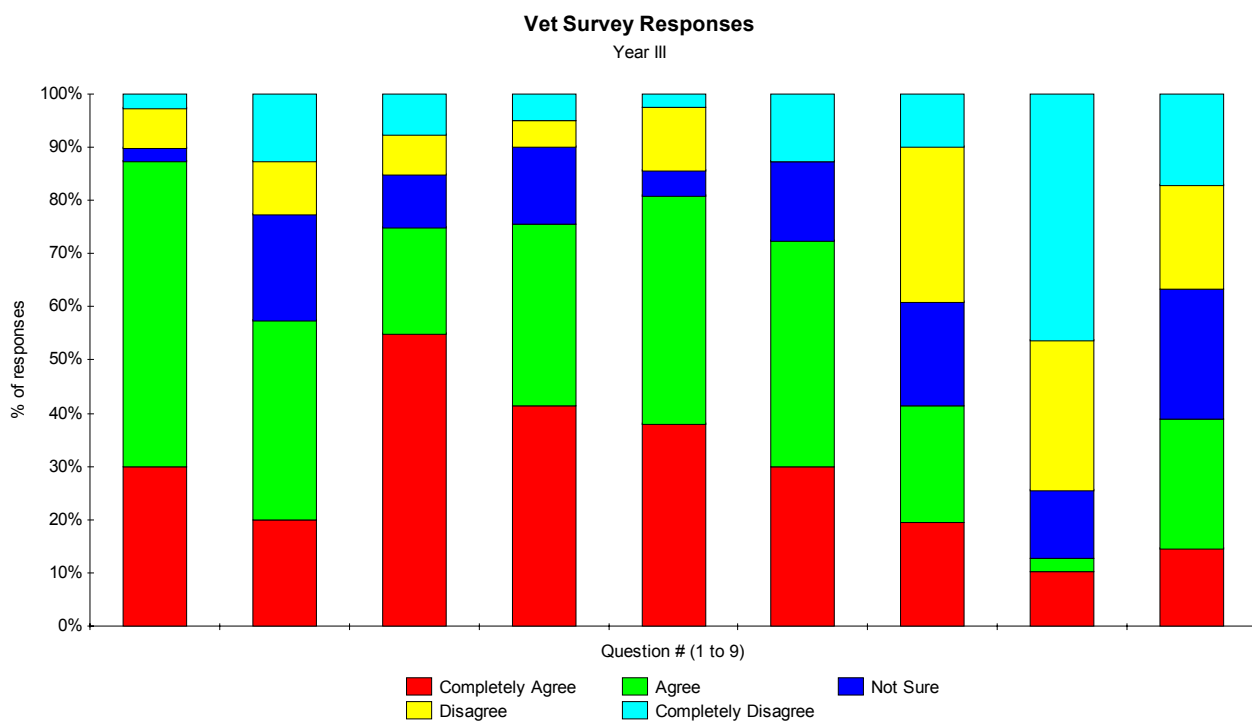
- 6) It is acceptable to continue the use of live animals in the aforementioned labs to demonstrate an accepted scientific principle

- 7) I would prefer to learn live tissue handling (surgical skills) in a more clinically oriented veterinary paper

- 8) If alternatives were offered (computer simulation, models, videos, tutorials) as well as live sheep labs, I would choose not to participate in the terminal sheep labs

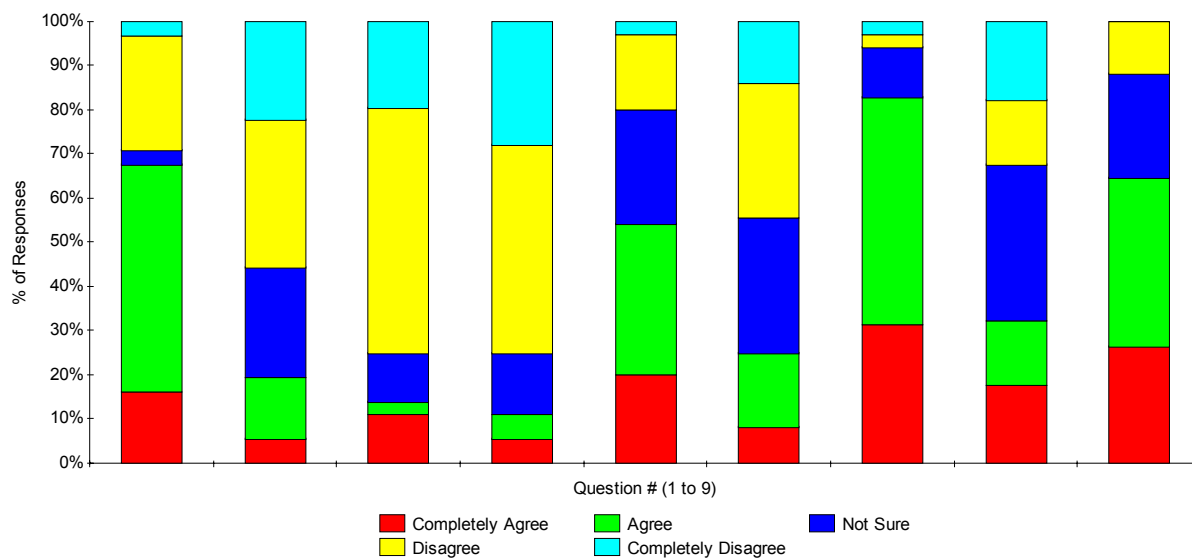
- 9) I believe that such alternative learning methods could still provide me with the required knowledge of physiological principles taught by this course

APPENDIX B DATA COMPARED BETWEEN STUDENT GROUPS



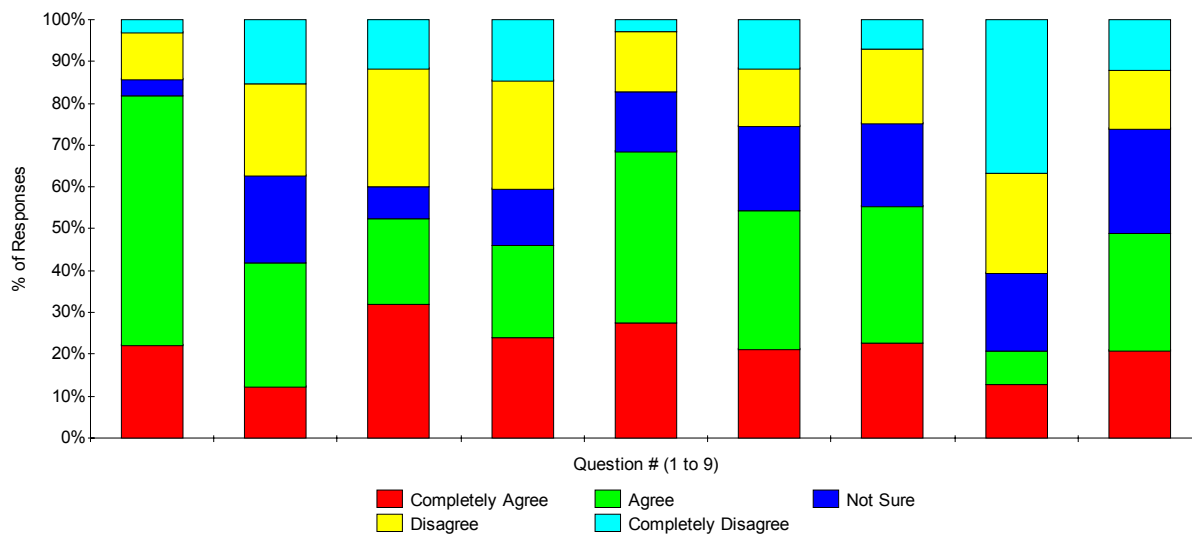
Vet Survey Responses

Year V Students



Vet Survey Responses

Aggregated Results



APPENDIX C: EXPANDED T-TEST DATA

Definition of Terms

T statistic: The t test compares the means of two groups, assuming that data are sampled from Gaussian populations.

Degrees of freedom (df): An integer value measuring the extent to which an EXPERIMENTAL DESIGN imposes constraints upon the pattern of the mean values of data from various meaningful subsets of data. This value is frequently referred to in the organisation of tables of statistical distributions used in undertaking SIGNIFICANCE TESTS. For simple one-way classifications the value of DEGREES OF FREEDOM is defined as one less than the number of subsets.

Standard error (s.e.): The standard error of the mean (SEM) is a measure of how far your sample mean is likely to be from the true population mean.

P value: The P value is a probability, with a value ranging from zero to one. If the P value is small, you'll conclude that the difference between sample means is unlikely to be a coincidence. Instead, you'll conclude that the populations have different means. Many people misunderstand P values. If the P value is 0.03, that means that there is a 3% chance of observing a difference as large as you observed even if the two population means are identical (the null hypothesis is true). It is tempting to conclude, therefore, that there is a 97% chance that the difference you observed reflects a real difference between populations and a 3% chance that the difference is due to chance. However, this would be an incorrect conclusion. What you can say is that random sampling from identical populations would lead to a difference smaller than you observed in 97% of experiments and larger than you observed in 3% of experiments.

Question 1

Years	t	df	s.e.	p.		mean	n
III -> IV	0.2334	66	0.214	0.8162	III =	1.95	40
III -> V	3.2928	74	0.268	0.0015	IV =	2	28
IV -> V	2.8584	62	0.292	0.0058	V =	2.83	31

Question 2

Years	t	df	s.e.	p.		mean	n
III -> IV	0.7558	67	0.314	0.4524	III =	2.63	40
III -> V	3.2881	75	0.287	0.0015	IV =	2.86	29
IV -> V	2.7813	67	0.292	0.007	V =	3.57	36

Question 3

Years	t	df	s.e.	p.		mean	n
III -> IV	1.4936	65	0.323	0.1401	III =	1.93	40
III -> V	6.2491	74	0.283	0.0001	IV =	2.41	27
IV -> V	4.113	61	0.313	0.0001	V =	3.69	36

Question 4

	t	df	s.e.	p.		mean	n
III -> IV	2.764	66	0.304	0.0074	III =	1.98	41
III -> V	7.5662	74	0.249	0.0001	IV =	2.81	27
IV -> V	3.3763	61	0.31	0.0013	V =	3.86	36

Question 5							
Years	t	df	s.e.	p.		mean	n
III -> IV	1.3122	68	0.263	0.1939	III =	1.98	42
III -> V	2.0586	75	0.248	0.043	IV =	2.32	28
IV -> V	0.5929	61	0.277	0.5554	V =	2.49	35

Question 6							
Years	t	df	s.e.	p.		mean	n
III -> IV	0.3525	65	0.307	0.7256	III =	2.23	40
III -> V	3.6979	74	0.277	0.0004	IV =	2.33	27
IV -> V	3.0547	61	0.3	0.0033	V =	3.25	36

Question 7							
Years	t	df	s.e.	p.		mean	n
III -> IV	0.2432	64	0.321	0.8086	III =	2.88	41
III -> V	3.5627	74	0.262	0.0006	IV =	2.8	25
IV -> V	3.1688	58	0.27	0.0024	V =	1.94	35

Question 8							
Years	t	df	s.e.	p.		mean	n
III -> IV	0.1403	65	0.326	0.8889	III =	3.97	39
III -> V	3.1814	71	0.306	0.0022	IV =	3.93	28
IV -> V	2.7139	60	0.342	0.0087	V =	3	34

Question 9							
Years	t	df	s.e.	p.		mean	n
III -> IV	0.5756	64	0.347	0.5669	III =	3	41
III -> V	2.9026	73	0.274	0.0049	IV =	2.76	25
IV -> V	1.7523	67	0.316	0.0851	V =	2.21	34