

# **The impact of question wording reversal on probabilistic estimates of defection / loyalty for a subscription product**

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This study examines how different question wording affects responses to Verbal probability Scale questions about loyalty or defection. The product category was domestic insurance, a “subscription” type product. One group of survey respondents were asked about the probability that they would remain with their insurance provider at the next renewal. Another group of respondents were asked about the probability that they would change or defect from their insurance provider at the next renewal. The study finds that there is very little difference in responses to the different types of question wording. The implication is that either type of question wording may be used in customer loyalty studies without biasing the results.

Keywords: question wording, Verbal Probability Scale, Juster Scale, survey research, customer loyalty

## **Introduction**

A notably successful tool for estimating customer behaviour is the Juster scale (Juster 1966), an eleven-point, zero to ten scale that asks respondents to allocate probabilities to their future behaviour (see Day, Gan, Gendall and Esslemont 1991 for a review of the development of the Juster scale). The predictive ability of the Juster scale, and a closely related scale called the Verbal Probability Scale (which has been found to be particularly suitable for use in telephone surveys), has been reported in many published studies involving various types of consumer goods (e.g. Brennan & Esslemont 1994; Brennan, Esslemont & Hini 1994, Brennan, Hini & Esslemont 1994; Seymour, Brennan & Esslemont 1994; Brennan, Esslemont & Hini 1995). The Juster scale or Verbal Probability Scale has also been used to estimate demand for co-operative housing (Riquier, Luxton & Sharp 1996), internet billing options via web surveys (Parackal & Brennan 1998) and loyalty / defection levels in subscription markets (Danenberg & Sharp 1996, Danenberg 1998). It is the estimation of future loyalty (or disloyalty) in subscription markets that is the focus of this paper.

A question that arises as to the use of the Verbal Probability Scale in loyalty research is whether question wording affects the results. In particular, whether the results obtained from asking respondents about the probability that they will remain loyal to their provider over a specified period would be the same as if the respondents were asked about the probability that they will change or defect from their provider. For example, is “9 chances in 10 of renewing” the same as “1 chance in 10 of changing/defecting” to respondents ? It is obviously very important to know if the results obtained depend on the way in which the probabilistic question is asked. This is of particular importance in measuring loyalty, as the average scores obtained from the scale can be interpreted as indicating aggregate levels of loyalty / defection. For example if the mean score for probability of renewal is 0.9, this is interpretable as an expected 90% renewal rate (e.g. see Danenberg and Sharp 1996). As no previous published research on the effect of question wording reversal using the Verbal Probability Scale was found, a study was undertaken to examine this issue.

## Method

Domestic household (building & car) insurance was the chosen product category used in this research. Domestic insurance is a “subscription” market (see Sharp & Wright 1999) where customers purchase cover for one year, then must either renew, change providers or discontinue their use of the product. This makes it ideal as a vehicle for asking questions about the probability of future loyalty or defection.

As part of a survey of insurance consumers in Western Australia, two versions of a questionnaire were developed. The first used the Verbal Probability Scale asking about the probability of *changing* insurance providers at the next renewal. The second version also used the Verbal Probability Scale but asked about the probability of *renewing* with the current provider at the next renewal. A total of 601 consumers was administered one of the two versions of the question. The proportions were approximately half each as shown in Table 1. The question on either renewing or changing providers was repeated for both car and buildings insurance.

To elaborate, one group of respondents was asked about the probability that they would change their current buildings insurance provider, then was asked about the probability that they would change their current car insurance provider. The other group of respondents was asked about the probability that they would renew with their current buildings insurance provider, then asked about the probability that they would renew with their current car insurance provider. Some respondents did not answer both questions as they did not have both types of insurance.

**Table 1. Question wording frequencies**

	No. respondents	%
Questions worded as “changing”	312	52
Questions worded as “renewing”	289	48
Total	601	100

The criteria for inclusion in the survey was that the respondent had either a buildings or car insurance policy. A CATI (Computer Aided Telephone Interviewing) system was used, which makes administering different versions of a questionnaire to different people very easy. The allocation of question type to respondents ensured that there was no association between the two, to avoid any confounding effects. A proportion of the interviews were monitored by a supervisor to ensure the interviewers followed their instructions closely as part of normal quality control guidelines.

A copy of both versions of the Verbal Probability Scale as administered to respondents is shown as Appendix 1. The two versions are identical apart from substitution of the words “change” and “change from” for “renew with”; and “changing” and “changing from” for “renewing with”.

As the questions relating to buildings and car insurance were asked of the same respondents we examined how many respondents gave the same or a different response to the two insurance categories. The reason was that if most respondents gave the same response for both

categories there would be little point in reporting the results for both categories separately. However, as Table 2 shows, 34% of respondents gave a different response when asked about car insurance compared to their response about buildings insurance. Therefore it is appropriate to present the results for both buildings and car insurance separately.

**Table 2. Same or different response for buildings / car insurance questions.**

<b>Response</b>	<b>n</b>	<b>%</b>
Gave same response to both questions	302	66
Gave different response to one of the two questions	155	34
Total (does not include responses where there was a missing value for one of the responses)	477	100

## Results and Discussion

The proportions of responses for each scale point are presented in Tables 3 and 4.

**Table 3. Proportions of responses to each scale point : Buildings Insurance**

<b>Probability of Renewal /10</b>	<b>(1) % of Responses: Building Insurance</b>	<b>Probability of Defection /10</b>	<b>(2) % of Responses: Building Insurance</b>	<b>Difference (2-1)</b>
0/10	2	10/10	2	0
1	1	9	1	0
2	1	8	2	+1
3	1	7	3	+2
4	1	6	2	+1
5	8	5	8	0
6	3	4	3	0
7	7	3	9	+2
8	10	2	7	-3
9	13	1	6	-7
10/10	37	0/10	42	+5
<i>Don't know</i>	16	<i>Don't know</i>	14	-2
Mean rating	8.2		2.1	
Estimated Renewal rate	82%		79%	
Total responses	267		244	

In two instances there were statistically significant difference in proportions between the “renew” responses compared to the “change/defect” responses. For car insurance, there was a higher proportion of respondents who gave a response of “9 chances in 10 of renewing” compared to “1 chance in 10 of defecting”. There was also a lower proportion of respondents who gave a response of “10 chances in 10 of renewing” compared to “0 chance in 10 of defecting” for car insurance. However, as the wording change from “renew” to

“change/defect” produced a positive difference in proportions for one response category, and a negative difference in proportions for the other response category, no clear effect is evident.

**Table 4. Proportions of responses to each scale point : Car Insurance**

	(1)		(2)	
Probability of Renewal /10	% of Responses: Car Insurance	Probability of Defection /10	% of Responses: Car Insurance	Difference (2-1)
0/10	2	10/10	1	- 1
1	1	9	1	0
2	2	8	3	+ 1
3	2	7	3	+ 1
4	2	6	1	- 1
5	10	5	10	0
6	2	4	3	+ 1
7	7	3	8	+ 1
8	12	2	9	- 3
9	17	1	8	- 9*
10/10	41	0/10	51	+10*
<i>Don't know</i>	2	<i>Don't know</i>	2	0
Mean rating	8.0		1.9	
Estimated Renewal rate	80%		81%	
Total responses	258		282	

\* statistically significant difference in proportions at the  $p=0.10$  level

To investigate any differences in responses further, we aggregated the data into two categories. The first category was all the responses of up to 8 chances in 10 of renewing (for the “renew” question respondents) or greater than 2 chances in 10 of changing/defecting (for the “change” question respondents). The second category was all the responses of over 8 chances in 10 of renewing or less than two chances in 10 of changing/defecting. The figure of 8 was used as the break point as it was closest to the mean average score. The aggregation facilitated a chi-square test of statistical significance of whether question wording affected responses. The chi-square test was used rather than a t-test or F-test of mean scores because the data violated two assumptions of these tests, namely normality and equal variances (see Berenson & Levine 1989, ch12 and ch14). The chi-square test does not require these data qualities. The results are shown in Table 5.

As Table 5 shows, there is some minor variation in responses, depending on the question wording. For example in buildings insurance, a total of 43% of respondents gave up to 8 chances in 10 of renewing (allowing for the recoding of responses to the “change/defect” questions to reflect the probability of renewing). When the question was worded in terms of renewal this proportion was 44%, and when the question was worded in terms of changing providers it was 41%. Similar small variations can be seen in the table for car insurance also. However, these variations are well within what would be expected from sampling error with p-values from the chi-square test at over 0.40. Of course, levels of statistical significance depend on sample size as well as the magnitude of the effect (e.g. Berenson and Levine 1989 ch. 11). Therefore if a much larger sample size was used the difference in proportion may well have been statistically significant. This said, the differences according to question wording are not only small but inconsistent - the proportions of up to 8 chances in 10 of renewing are

slightly *higher* when the question is worded in terms of renewal for buildings insurance, but are slightly *lower* for the same type of question but for car insurance. Also, Tables 3 and 4 show that the estimated renewal rate was virtually identical for both types of question wording (82% vs. 79% for buildings insurance, and 80% vs. 81% for car insurance). This reinforces the view that question wording had little effect in this study.

**Table 5. Contingency Table**

		Buildings Insurance			Car Insurance		
		Question phrased as Probability will renew /10	Question phrased as Probability will defect (recoded to probability will renew/10)	Row Total	Question phrased as Probability will renew /10	Question phrased as Probability will defect (recoded to probability will renew/10)	Row Total
Responses of up to 8 chances in 10 of renewing	Count	118	99	217	111	105	216
	Col %	44%	41%	43%	40%	42%	41%
Responses of above 8 chances in 10 of renewing	Count	149	145	294	165	148	313
	Col %	56%	59%	58%	60%	58%	59%
Total N		267	244	511	276	253	529
Column %		52%	48%	100%	52%	48%	100%
$\chi^2$ statistic		0.68			0.09		
DF		1			1		
P value		0.40			0.76		

## Conclusion

The overall conclusion is that the proportions of probabilistic estimates of future *loyalty* were found to be approximately equal to the proportions of probabilistic estimates of *disloyalty / defection* in this study. Therefore either method of questionnaire administration can apparently be used without biasing the results. However, more replication would be useful to see if the same lack of bias is found under different circumstances.

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## **Appendix 1. Verbal Probability Scales as administered to respondents**

*Note: The respondent had already been asked several other questions relating to their insurance cover before either version of this question was asked. The questionnaires for car insurance were identical to the ones shown here apart from the words “car insurance” being used instead of “buildings insurance”.*

### **“Change” wording version:**

“What are the chances that on your next renewal for your buildings insurance, you will change from your existing provider ?

I would like to know what the chances are of you changing from your existing insurance provider at your next renewal. I would like you to answer on a scale of "zero" to "ten". If you are certain, or practically certain that you will change your insurance provider, then you would choose the answer "ten". If you think there is no chance or almost no chance of you changing your car insurance provider, the best answer would be "zero". If you are uncertain about the prospects, please choose another answer as close to 0 or 10 as you think it should be. You can think of the numbers as chances out of 10. For example, 3 would mean 3 chances out of 10, or there was some possibility and an answer of 7 would mean 7 chances out of 10, or that it was probable that you would change your insurance provider.

So, taking everything into account, what are the chances that you will change from your existing insurance provider at your next renewal?”

### **“Renew” wording version**

“What are the chances that on your next renewal for your buildings insurance, you will renew with your existing provider ?

I would like to know what the chances are of you renewing with your existing insurance provider at your next renewal. I would like you to answer on a scale of "zero" to "ten". If you are certain, or practically certain that you will renew with your insurance provider, then you would choose the answer "ten". If you think there is no chance or almost no chance of you renewing with your car insurance provider, the best answer would be "zero". If you are uncertain about the prospects, please choose another answer as close to 0 or 10 as you think it should be. You can think of the numbers as chances out of 10. For example, 3 would mean 3 chances out of 10, or there was some possibility and an answer of 7 would mean 7 chances out of 10, or that it was probable that you would renew with your insurance provider.

So, taking everything into account, what are the chances that you will renew with your existing insurance provider at your next renewal? “