#### Business Statistics Australia New Zealand 7th Edition Selvanathan Test Bank

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# Chapter 3—Graphical descriptive techniques – Nominal data

#### **MULTIPLE CHOICE**

1. Which of the following is a graphical technique used to present nominal (categorical) dat	1. V	Which of the following	s a graphical techni	que used to present nominal	(categorical) data?
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		nen of the follo wing	no er Breipinie.		ionnai (caregonical) aara
	A.	Bar chart.	01	<b>k</b>	
	B.	Pie chart.			
	C.	A bar chart and/or a	pie chart.		
	D.	None of these choic	es are corre	ct.	
	AN des	IS: C P cribe nominal data	<b>ΓS</b> : 1	DIF: Easy	TOP: Graphical techniques to
2	Wh	nich of the following	hest describ	es a bar chart?	
	A.	A chart in which ver	rtical bars re	epresent data in different cate	egories.
	<b>B</b> .	A circle subdivided	into sectors	representing data in differen	t categories
	<u> </u>	A chart in which ver	rtical bars of	f unequal widths are usually	used.
	D.	A chart in which ver	rtical bars u	sually have no gaps between	them
	AN des	IS: A P ccribe nominal data	ГS: 1	DIF: Easy	TOP: Graphical techniques to
3.	Wh A.	hich of the following A component bar ch	best describ art represer	es a component bar chart? ts all categories within a sing	gle bar.
	В.	The height of each c	omponent is	s proportional to the frequenc	cy of the category that it
		represents.			
	C.	Component bar char	ts may be us	sed as a comparison of two or	r more breakdowns as an
		alternative to using	two pie cha	rts.	
	D.	All of these choices	are correct.		
	AN cha	IS: D Part: Which chart is be	<b>ΓS</b> : 1 st?	DIF: Moderate	TOP: Selecting the appropriat
4.	Wh	nich of the following	statements a	about pie charts is false?	
	A.	Pie charts can only l	be used for a	nominal data.	
	Β.	Pie charts are usuall	y used to di	splay the relative sizes of cat	egories for qualitative data.
	C.	Pie charts always ha	we the shap	e of a circle.	
	D.	The area of each slid	ce of a pie c	hart is proportional to the rela	ative frequency of the
		corresponding categ	jory.		
	AN cha	IS: A P art: Which chart is be	Г <b>S</b> : 1 st?	DIF: Moderate	TOP: Selecting the appropriat
5.	Wh	nich of the following	statements i	s true?	
	A.	All calculations are	permitted of	n nominal (categorical) data.	
	В.	A contingency table	lists the co	unts of each combination of t	the values of the two
	C	Vallaules. Divorioto refere to th	o distributi	on of one verichle	
		A contingeney tel-1e	connet he 1	on on two nominal variable.	20
	D.	A conungency table	cannot be t	based on two nominal variabl	es.
	AN	IS: B P	ΓS: 1	DIF: Moderate	TOP: Describing the relations

between two nominal variables

TOP: Describing the relationship

7. Which of the following statements is true?

A.	A contingency table may also be called a cross classification table
B.	A contingency table is used to describe two nominal variables.
C.	A bar chart may be used as a graphical display of a contingency table.
D.	All of these choices are correct.

ANS: D PTS: 1 DIF: Moderate TOP: Describing the relationship between two nominal variables.

### **TRUE/FALSE**

1. A bar chart is a graphical display of a nominal (categorical) variable. The reason for the gaps between the bars is to emphasise that the bars can be placed in any order as the variable is categorical.

ANS: T PTS: 1 DIF: Easy TOP: Graphical techniques to describe nominal data

2. A pie chart is always preferable to a bar chart, when describing a nominal variable.

ANS: F	PTS: 1	DIF: Moderate	TOP: Selecting the appropriate
chart: Which chart	is best?		

3. When a comparison of two breakdowns is desired, component bar charts offer a good alternative to using two pie charts.

ANS: T	PTS: 1	DIF: Moderate	TOP: Selecting the appropriate
chart: Which cha	rt is best?		

4. The wedges of a pie chart, if displayed as proportions, will sum to 1 or 100%.

ANS: T	PTS: 1	DIF: Moderate	TOP: Graphical techniques to
describe nominal data	ì		

5. If the focus is to compare the size or frequency of various categories, a bar chart may be appropriate. Pie charts are effective whenever the objective is to display the components of a whole entity in a manner that indicates their relative sizes.

ANS: T	PTS: 1	DIF: Moderate	TOP:	Selecting the appropriate
chart: Which ch	art is best?			

# SHORT ANSWER

- 1. Identify the type of data for which each of the following graphs is appropriate.
  - a. Pie chart.
  - b. Bar chart.

ANS:

a. Nominal (categorical) or ordinal data

b. Nominal (categorical), ordinal or numerical (quantitative).

PTS: 1 DIF: Easy TOP: Selecting the appropriate chart: Which chart is best?

2. Voters participating in a recent election exit poll in a Queensland electorate were asked to state their political party affiliation. Coding the data 1 for Coalition, 2 for minor parties and 3 for Labor, the data collected were as follows:

3	1	2	3	1	3	3	2	1
3	3	2	1	1	3	2	3	1
3	2	3	2	1	1	3		

Create a bar chart to display the political party affiliation in the Queensland electorate. Write a short sentence to describe the political affiliation.

ANS:

Party	Frequency	Proportion
Coalition	8	0.32
Minor	6	0.24
Labor	11	0.44

Labor is stronger in the Queensland electorate than the Coalition and minor parties. Bar chart:



3. Car buyers were asked by a car dealer to rate their level of satisfaction with the service they had received. The four ratings were Excellent (E), Good (G), Satisfactory (S) and Unsatisfactory (U). The following data were obtained.

a. Create a bar chart of the level of satisfaction with the service.b. Create a pie chart of the level of satisfaction with the service.

0. 01	b. Create a pre chart of the rever of satisfaction with the service								
S	E	E	E	U	E	G	S	E	U
U	G	E	G	S	E	G	G	E	G
S	E	E	S	U	G	G	E	E	S
S	U	E	U	S	G	G	E	U	S

ANS:

a.





4. Construct a pie chart for the sample of 200 business school graduates is shown in the following table.

Major of graduates	Number of graduates
Accounting	58
Finance	42
Management	38
Marketing	52
Other	10

ANS:

Major of graduates	Proportion of graduates
Accounting	0.29
Finance	0.21
Management	0.19
Marketing	0.26
Other	0.05
Total	1.00



PTS: 1 DIF: Moderate TOP: Graphical techniques to describe nominal data

5. Given the following five categories and the number of times each occurs, construct a pie chart and a bar chart.





6. Voters participating in a recent election exit poll in a Queensland electorate were asked to state their political party affiliation as well as their gender. Coding the data 1 for Coalition, 2 for minor parties and 3 for Labor, and F for female, M for male.

3M	1F	2F	3M	1F	3M	3F	2F	1F
3F	3M	2F	1M	1M	3M	2F	3M	1M
3M	2F	3F	2F	1F	1F	3M		

a. Create a cross classification table of gender by political affiliation.

b. Create a component bar chart, for each gender.

c. Interpret your component bar chart by gender.

ANS:

a.

Gender										
		F	М	Total						
Political	Coalition	5	3	8						
affiliation	Minor	6	0	6						

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b.

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Component bar chart of gender, separated into political affiliation.



c. In this sample, females have a greater spread of political affilation between labour, coalition and the minor parties, with the minor parties having a slight majority. Whereas, males in this sample had a higher political affilation with Labour and none with the minor parties.

PTS: 1 DIF: Difficult TOP: Graphical techniques to describe nominal data