LAIKIPIA UNIVERSITY COLLEGE

NYAHURURU CAMPUS

DIBM 0213: BUSINESS STATISTICS

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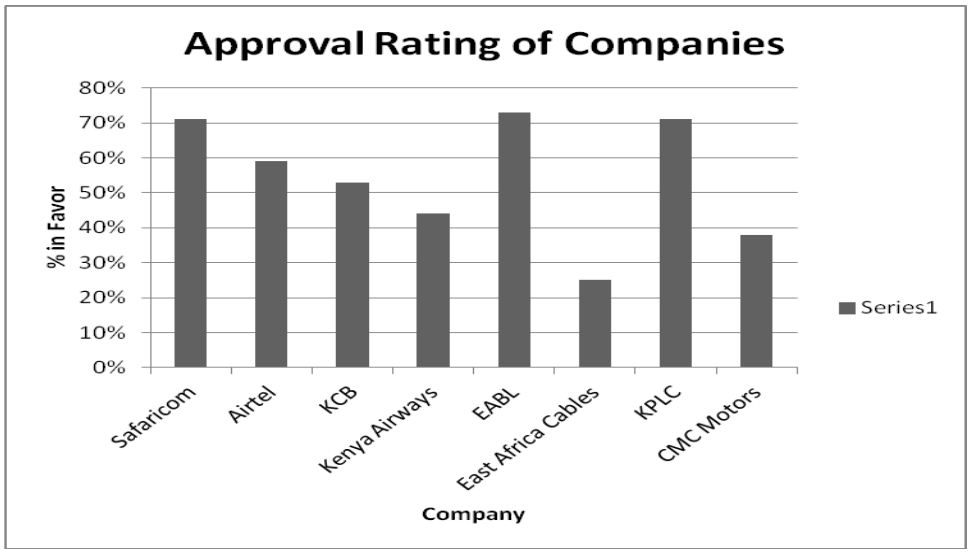
1. What are the characteristics of a data set that would lead you to construct a pie chart? (4 mks)
   • ***Use Pie Charts***
   – *If all the categories sum to a meaningful total*
   – *If you want to emphasis the differences in proportions between categories that sum to 100%*
   – *For a single snapshot*
   • ***Avoid Pie Charts***
   – *If looking at changes over time would need to have a separate pie chart for each year*
   – *If more than 5 categories…*
   – *If small proportional difference between the segments…*

2. Distinguish categorical and quantitative variables, giving two real life examples of each. (4 mks)
   *Some variables are **categorical** and others are **quantitative.** A categorical variable places each individual into a category, such as male or female. A quantitative variable has numerical values that measure some characteristic of each individual, such as height in centimeters or salary in Kenya Shillings. You can perform arithmetic manipulations (add, subtract, divide, multiply, average) on quantitative variables, but you can't do it on categorical variables.*

3. The Synnovate group asked a random sample of adults whether they had favorable or unfavorable opinions of a number of major companies. Answers to such questions depend a lot on recent news. Here are the percents with favorable opinions for several of the companies:

COMPANY	**% in Favor of company**
Safaricom	71
Airtel	59
Kenya Commercial Bank	53
Kenya Airways	44
EABL	73
East Africa Cables	25
Kenya Power and Lighting	71
CMC Motors	38

   Make a bar graph to display these data. (The scale may be approximate). (4 mks)



4. Consider the following data:

71	89	65	97	46	52	99	41	62	88
73	50	91	71	52	86	92	60	70	91
73	98	56	80	70	63	55	61	40	95

a. Make a stem plot for the data. (4 mks)

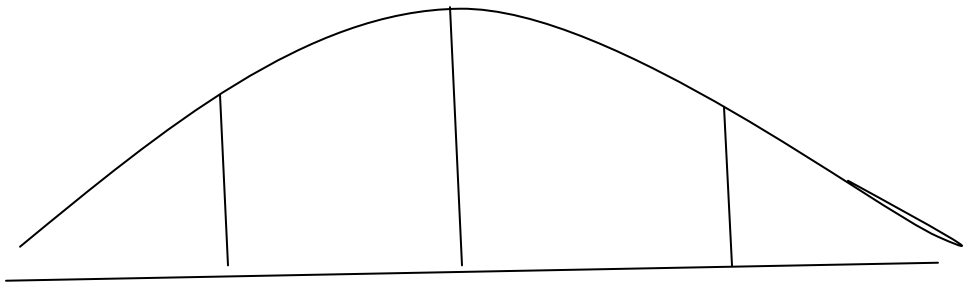
4	0	1	6				
5	0	2	2	5	6		
6	0	1	2	3	5		
7	0	0	1	1	3	3	
8	0	6	8	9			
9	1	1	2	5	7	8	9

b. Determine the mean and variance of the data. (6 mks)

	X	(X-Mean)Δ_2	Z= (X-Mean)/ Standard deviation
	40	975.3129	-1.728664343
	41	913.8529	-1.673311659
	46	636.5529	-1.396548235
	50	450.7129	-1.175137496
	52	369.7929	-1.064432127
	52	369.7929	-1.064432127
	55	263.4129	-0.898374073
	56	231.9529	-0.843021388
	60	126.1129	-0.621610649
	61	104.6529	-0.566257965

	62	85.1929	-0.51090528
	63	67.7329	-0.455552595
	65	38.8129	-0.344847226
	70	1.5129	-0.068083802
	70	1.5129	-0.068083802
	71	0.0529	-0.012731117
	71	0.0529	-0.012731117
	73	3.1329	0.097974252
	73	3.1329	0.097974252
	80	76.9129	0.485443045
	86	218.1529	0.817559153
	88	281.2329	0.928264523
	89	315.7729	0.983617207
	91	390.8529	1.094322577
	91	390.8529	1.094322577
	92	431.3929	1.149675261
	95	565.0129	1.315733315
	97	664.0929	1.426438685
	98	716.6329	1.48179137
	99	771.1729	1.537144054
Total	**2137**	**9465.367**	
n=	**30**	**Variance=9465/29=**	**326.3793103**
Mean=	**2137/30**	**Standard deviation=√326.379=**	**18.06597106**
	71.23		

c. Standardize the data (*refer table above*) and determine the percentage of the data that falls between 40 and 70. (8 mks)
P (40<=X<=70) =P (-1.73<=Z<=1.51)



=P(Z>=-1.73) + P(Z<=1.51)= 0.4582+0.4345= 0.8927

Standard Normal Curve Probability Distribution

The table is based on the upper right 1/2 of the Normal Distribution; total area shown is .5
The Z-score values are represented by the column value + row value, up to two decimal places
The probabilities up to the Z-score are in the cells

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990