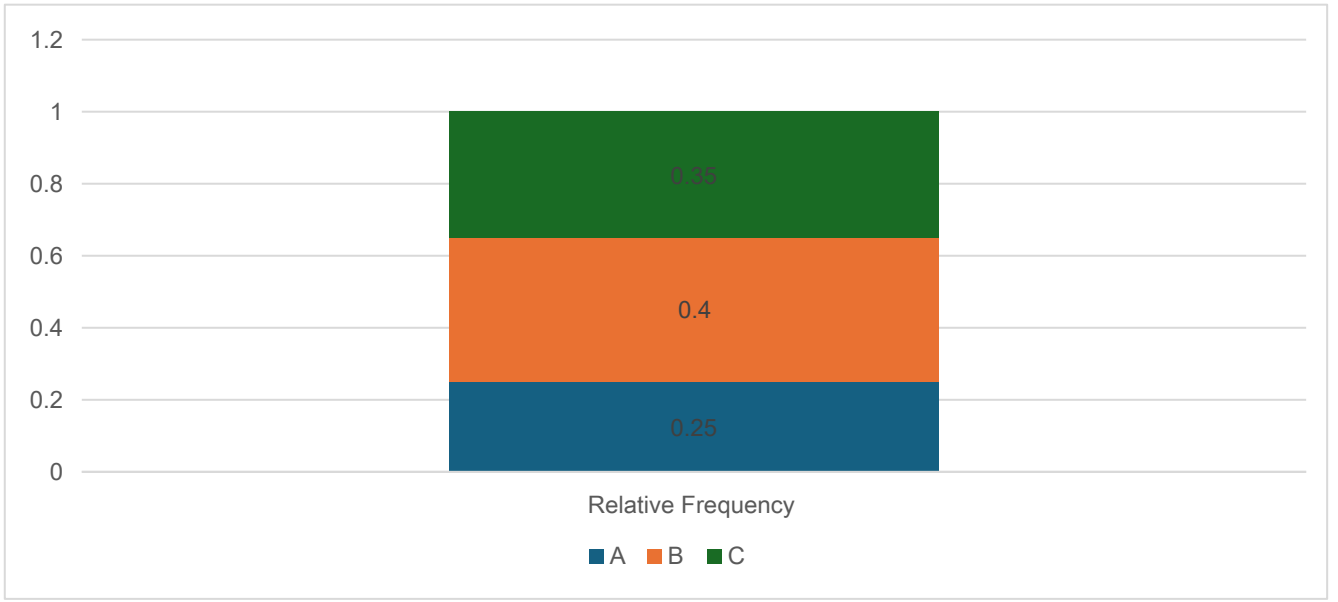
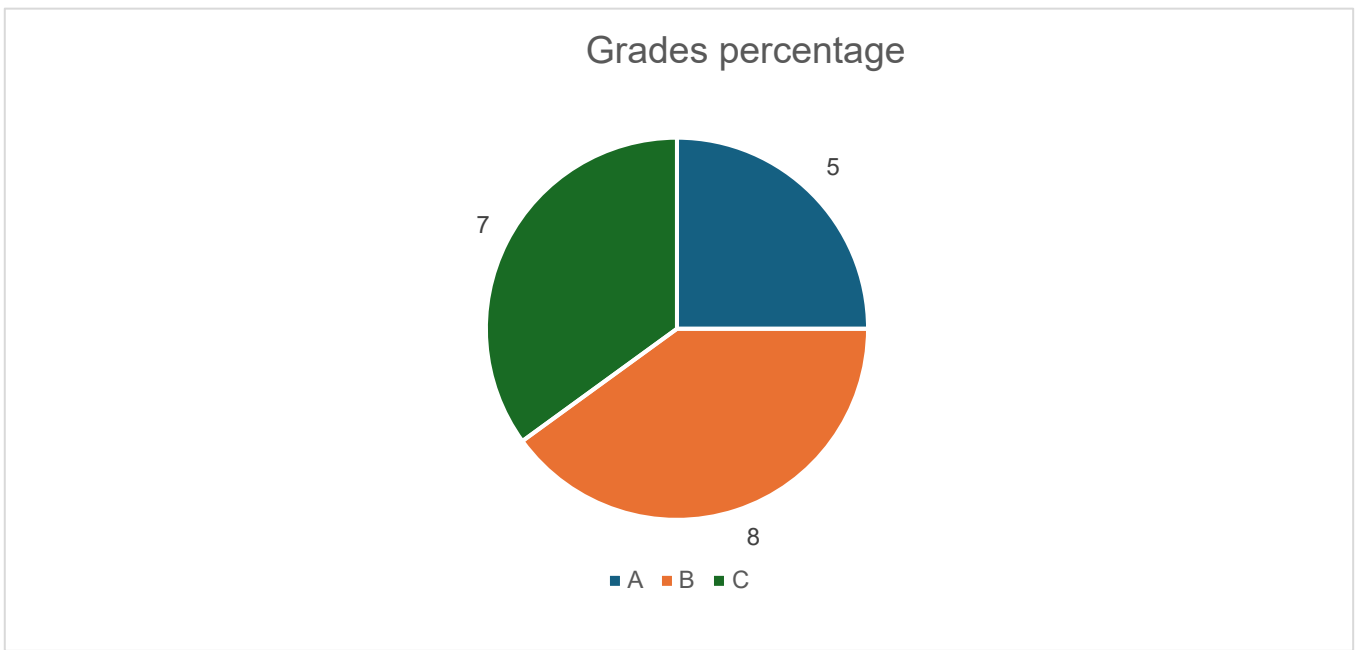
Course ID	Grade
1	A
2	C
3	B
4	C
5	A
6	C
7	A
8	B
9	C
10	B
11	B
12	C
13	B
14	C
15	B
16	B
17	C
18	A
19	B
20	A

1) Complete the frequency table below for the student's grade:

Grade	Frequency	Relative Frequency	Percent Frequency
A	5	0.25	25
B	8	0.4	40
C	7	0.35	35
Total	20	1	100

2) Develop a Bar chart and Pie chart for the grade frequency.





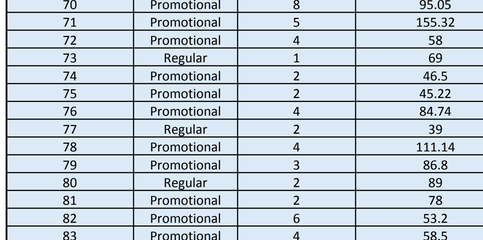
Customer	Type of Customer	Items	Net Sales	Method of Payment	Gender	Marital Status	Age	
1	Regular	1	39.5	Discover	Male	Married	32	
2	Promotional	1	102.4	Proprietary Card	Female	Married	36	
3	Regular	1	22.5	Proprietary Card	Female	Married	32	
4	Promotional	5	100.4	Proprietary Card	Female	Married	28	
5	Regular	2	54	MasterCard	Female	Married	34	
6	Regular	1	44.5	MasterCard	Female	Married	44	
7	Promotional	2	78	Proprietary Card	Female	Married	30	
8	Regular	1	22.5	Visa	Female	Married	40	
9	Promotional	2	56.52	Proprietary Card	Female	Married	46	
10	Regular	1	44.5	Proprietary Card	Female	Married	36	
11	Regular	1	29.5	Proprietary Card	Female	Married	48	
12	Promotional	1	31.6	Proprietary Card	Female	Married	40	
13	Promotional	3	60.4	Proprietary Card	Female	Single	40	
14	Promotional	2	64.5	Visa	Female	Married	46	
15	Regular	1	49.5	Visa	Male	Single	24	
16	Promotional	2	71.4	Proprietary Card	Male	Single	36	
17	Promotional	3	94	Proprietary Card	Female	Single	22	
18	Regular	3	54.5	Discover	Female	Married	40	
19	Promotional	2	38.5	MasterCard	Female	Married	32	
20	Regular	4	44.8	Discover	Male	Married	34	
21	Promotional	1	31.6	Proprietary Card	Female	Single	28	
22	Promotional	4	70.82	Proprietary Card	Female	Married	38	
23	Promotional	7	266	American Express	Female	Married	50	
24	Regular	2	74	Proprietary Card	Female	Married	42	
25	Promotional	2	39.5	Visa	Male	Married	48	
26	Promotional	1	30.02	Proprietary Card	Female	Married	60	
27	Regular	1	44.5	Proprietary Card	Female	Married	54	
28	Promotional	5	192.8	Proprietary Card	Female	Single	42	
29	Promotional	3	71.2	Proprietary Card	Female	Married	32	
30	Promotional	1	18	Proprietary Card	Female	Married	70	
31	Promotional	2	63.2	MasterCard	Female	Married	28	
32	Regular	1	75	Proprietary Card	Female	Married	52	
33	Regular	1	23.2	Discover	Male	Married	62	
34	Regular	1	40	Proprietary Card	Female	Married	34	
35	Promotional	5	105.5	MasterCard	Female	Married	56	
36	Regular	1	29.5	MasterCard	Male	Single	36	
37	Regular	2	102.5	Visa	Female	Single	42	
38	Promotional	6	117.5	Proprietary Card	Female	Married	50	
39	Promotional	5	13.23	Proprietary Card	Female	Married	44	
40	Regular	2	52.5	Proprietary Card	Female	Married	58	
41	Promotional	13	198.8	Proprietary Card	Female	Married	42	
42	Promotional	4	19.5	Visa	Female	Married	46	
43	Regular	2	123.5	Proprietary Card	Female	Married	48	
44	Promotional	1	62.4	Proprietary Card	Female	Married	54	
45	Promotional	2	23.8	Proprietary Card	Female	Married	38	
46	Promotional	2	39.6	Proprietary Card	Female	Married	60	
47	Regular	1	25	MasterCard	Female	Married	46	
48	Promotional	3	63.64	Proprietary Card	Female	Married	30	
49	Promotional	1	14.82	Proprietary Card	Female	Married	32	
50	Promotional	9	145.2	MasterCard	Female	Married	46	
51	Promotional	6	176.62	Proprietary Card	Female	Married	38	
52	Promotional	5	118.8	Proprietary Card	Male	Married	68	
53	Regular	1	58	Discover	Female	Single	78	
54	Regular	2	74	Visa	Female	Single	20	
55	Regular	2	49.5	MasterCard	Female	Married	32	
56	Promotional	3	141.6	Proprietary Card	Female	Married	38	
57	Promotional	6	123.1	Proprietary Card	Female	Married	54	
58	Promotional	2	80.4	Proprietary Card	Female	Married	48	
59	Promotional	4	65.2	MasterCard	Female	Married	46	
60	Promotional	4	113	Proprietary Card	Female	Single	50	
61	Promotional	1	108.8	Proprietary Card	Female	Married	46	
62	Promotional	3	59.91	Proprietary Card	Female	Single	30	
63	Promotional	5	53.6	Proprietary Card	Female	Married	54	
64	Promotional	1	31.6	Proprietary Card	Female	Single	42	
65	Promotional	2	49.5	Proprietary Card	Female	Married	48	
66	Promotional	1	39.6	Proprietary Card	Female	Married	62	
67	Promotional	2	59.5	Proprietary Card	Female	Married	34	
68	Promotional	5	146.8	Proprietary Card	Female	Married	28	
69	Promotional	2	47.2	Proprietary Card	Male	Married	46	
70	Promotional	8	95.05	Proprietary Card	Female	Married	54	
71	Promotional	5	155.32	Proprietary Card	Female	Married	30	
72	Promotional	4	58	MasterCard	Female	Married	32	
73	Regular	1	69	Proprietary Card	Female	Single	22	
74	Promotional	2	46.5	Proprietary Card	Female	Married	32	
75	Promotional	2	45.22	Proprietary Card	Female	Married	74	
76	Promotional	4	84.74	Proprietary Card	Female	Married	62	
77	Regular	2	39	Proprietary Card	Female	Married	42	
78	Promotional	4	111.14	Proprietary Card	Female	Married	28	
79	Promotional	3	86.8	Proprietary Card	Female	Married	38	
80	Regular	2	89	Discover	Female	Married	54	
81	Promotional	2	78	MasterCard	Female	Married	68	
82	Promotional	6	53.2	Proprietary Card	Female	Single	30	
83	Promotional	4	58.5	Visa	Female	Married	36	
84	Promotional	3	46	Proprietary Card	Female	Married	44	
85	Regular	2	37.5	Visa	Female	Married	44	
86	Promotional	1	20.8	Proprietary Card	Female	Married	62	
87	Regular	6	144	MasterCard	Female	Single	48	
88	Regular	4	107	Proprietary Card	Female	Married	36	
89	Promotional	1	31.6	Proprietary Card	Female	Single	20	
90	Promotional	6	57.6	Proprietary Card	Female	Married	42	
91	Promotional	4	95.2	Proprietary Card	Female	Married	54	
92	Promotional	1	22.42	Proprietary Card	Female	Married	54	
93	Regular	5	159.75	Proprietary Card	Female	Married	72	
94	Promotional	17	229.5	Proprietary Card	Female	Married	30	
95	Regular	3	66	American Express	Female	Married	46	
96	Regular	1	39.5	MasterCard	Female	Married	44	
97	Promotional	9	253	Proprietary Card	Female	Married	30	
98	Promotional	10	287.59	Proprietary Card	Female	Married	52	
99	Promotional	2	47.6	Proprietary Card	Female	Married	30	
100	Promotional	1	28.44	Proprietary Card	Female	Married	44	

1) Generate the Percent Frequency table for "Type of Customer".

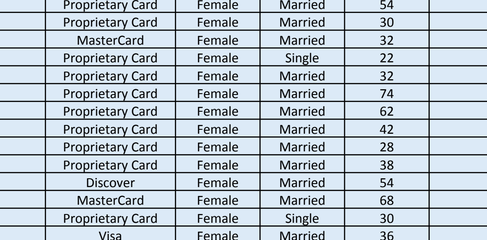
Type Of Customer	Frequency	Relative Frequency	Percent Frequency
Regular	32	0.32	32
Promotional	68	0.68	68
Total	100	1	100

2) Generate the Bar chart and Pie chart for "Type of Customer".

Bar Chart

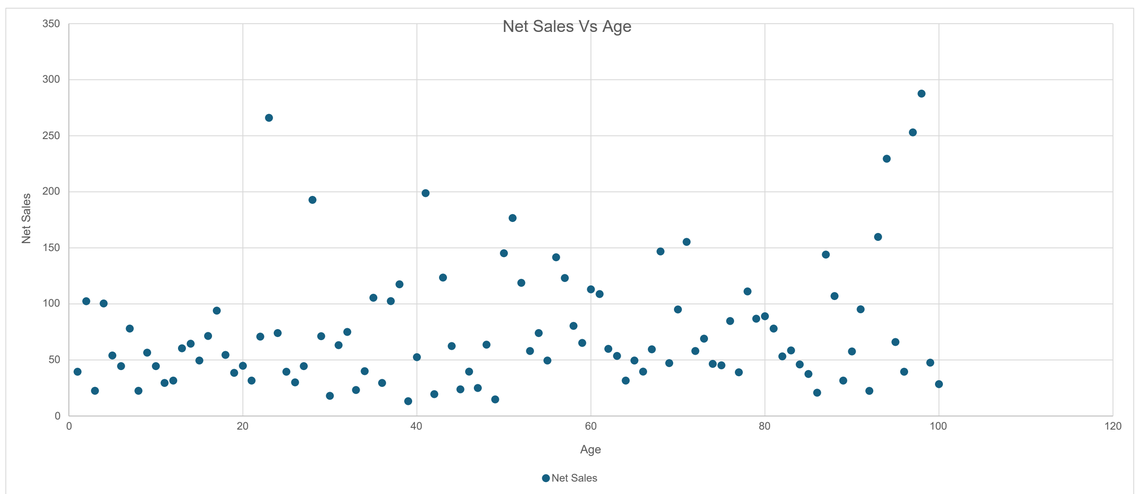


Pie Chart



ScatterPlot

3) Generate scatter plot with "Net Sales" and "Age"



4) Construct a Cross tabulation table for the "Type of Customer "versus "Net Sales".

Count of Net Sales	Column Labels																						
Row Labels	**13.23-23.23**	**23.23-33.23**	**33.23-43.23**	**43.23-53.23**	**53.23-63.23**	**63.23-73.23**	**73.23-83.23**	**83.23-93.23**	**93.23-103.23**	**103.23-113.23**	**113.23-123.23**	**123.23-133.23**	**133.23-143.23**	**143.23-153.23**	**153.23-163.23**	**173.23-183.23**	**183.23-193.23**	**193.23-203.23**	**223.23-233.23**	**243.23-253.23**	**263.23-273.23**	**283.23-293.23**	**Grand Total**
Promotional	6	7	4	7	10	6	3	2	5	4	3		1	2	1	1	1	1	1	1	1	1	68
Regular	3	3	5	7	3	2	3	1	1	1		1		1	1								32
Grand Total	**9**	**10**	**9**	**14**	**13**	**8**	**6**	**3**	**6**	**5**	**3**	**1**	**1**	**3**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**100**

Row Labels	Sum of Net Sales
Promotional	5692.3
Regular	1927.75
Grand Total	**7620.05**

NFL Team Financial Overview: Annual Revenue & Estimated Team Value		
Team	Revenue $(millions)	Value $(millions)
Arizona Cardinals	253	961
Atlanta Falcons	252	933
Baltimore Ravens	292	1,227
Buffalo Bills	256	870
Carolina Panthers	271	1,057
Chicago Bears	298	1,252
Cincinnati Bengals	250	924
Cleveland Browns	264	1,005
Dallas Cowboys	539	2,300
Denver Broncos	283	1,161
Detroit Lions	248	900
Green Bay Packers	282	1,183
Houston Texans	320	1,450
Indianapolis Colts	276	1,200
Jacksonville Jaguars	260	840
Los Angeles Chargers	285	1,290
Los Vegas Raiders	310	1,330
Toronto Beavers	260	1,000
San Antonio Warriors	250	945
Mexico City Aztecs	275	1,100
Orlando Bulls	265	1,020
Columbus Explorers	290	1,210
Kansas City Chiefs	245	1,009
Miami Dolphins	268	1,074
Minnesota Vikings	234	1,007
New England Patriots	408	1,800
New Orleans Saints	276	1,004
New York Giants	338	1,550
New York Jets	321	1,380
Oakland Raiders	229	825
Philadelphia Eagles	306	1,314
Pittsburgh Steelers	266	1,118
San Diego Chargers	250	949
San Francisco 49ers	255	1,224
Seattle Seahawks	270	1,081
St Louis Rams	239	875
Tampa Bay Buccaneers	267	1,067
Tennessee Titans	270	1,055
Washington Redskins	381	1,700
Columbus Explorers	290	1,210

The National Football League (NFL) data shows the annual revenue (millions) and the estimated team value (millions) for the 40 teams in the National Football League.

1) Find the following Numerical Values for the Revenue and Estimated Value of the teams:
   a. Mean
   b. Median
   c. Mode
   d. Q1, Q2, Q3
   e. Range
   f. IQR
   g. Sample Variance
   h. Sample SD (Standard Deviation)
   i. Coefficient of Variation
   j. Minimum, Maximum
   k. Lower and Upper Limit
2) Generate Box-plot for Revenue and Current Value.
3) Conduct a comprehensive bivariant data analysis on the variables and document your findings.

DESCRIPTIVE STATISTICS OF REVENUE AND VALUE (a-f)

Descriptive Stastics of Annual Revenue			Descriptive Stastics of Estimated Team Value		
MEASURE OF LOCATIONS	MEAN	284.8	MEASURE OF LOCATIONS	MEAN	1160
	MEDIAN	270		MEDIAN	1078
	MODE	250		MODE	1210
	Q1	254.5		Q1	990.3
	Q2	270		Q2	1078
	Q3	290.5		Q3	1233
MEASURE OF VARIABILITY	RANGE	310	MEASURE OF VARIABILITY	RANGE	1475
	IQR	36		IQR	243

DESCRIPTIVE STATISTICS OF REVENUE AND VALUE (g-k)

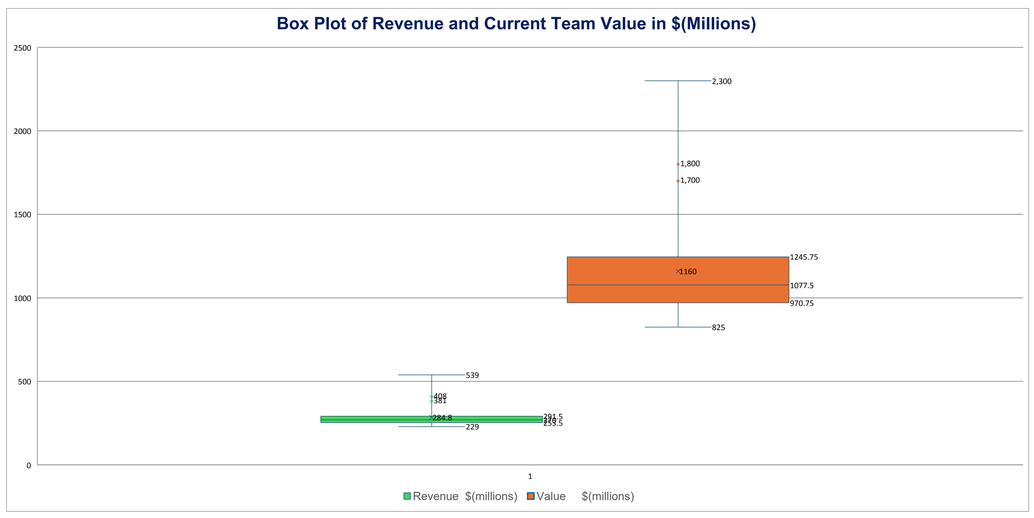
AnnualRevenue(x)		Estimated Team Value(Y)	
USING VARIANCE FUNCTION	3022.061538	USING VARIANCE FUNCTION	83417.231
USING GENERAL FORMULA FOR VARIANCE CALCULATION Var(x) = ∑((xi - x̄) ^2)/(n-1)	3022.020513	USING GENERAL FORMULA FOR VARIANCE CALCULATION Var(y) = ∑((yi -ȳ) ^2)/(n-1)	83417.23077

Revenue $(millions)	x - x̄	(x - x̄)^2
253	-31.8	1011.2
252	-32.8	1075.8
292	7.2	51.8
256	-28.8	829.4
271	-13.8	190.4
298	13.2	174.2
250	-34.8	1211
264	-20.8	432.6
539	254.2	64617.6
283	-1.8	3.2
248	-36.8	1354.2
282	-2.8	7.8
320	35.2	1239
276	-8.8	77.4
260	-24.8	615
285	0.2	0
310	25.2	635
260	-24.8	615
250	-34.8	1211
275	-9.8	96
265	-19.8	392
290	5.2	27
245	-39.8	1584
268	-16.8	282.2
234	-50.8	2580.6
408	123.2	15178.2
276	-8.8	77.4
338	53.2	2830.2
321	36.2	1310.4
229	-55.8	3113.6
306	21.2	449.4
266	-18.8	353.4
250	-34.8	1211
255	-29.8	888
270	-14.8	219
239	-45.8	2097.6
267	-17.8	316.8
270	-14.8	219
381	96.2	9254.4
290	5.2	27

Value $(millions)	y-ȳ	(y-ȳ)^2
961	-199	39601
933	-227	51529
1,227	67	4489
870	-290	84100
1,057	-103	10609
1,252	92	8464
924	-236	55696
1,005	-155	24025
2,300	1140	1299600
1,161	1	1
900	-260	67600
1,183	23	529
1,450	290	84100
1,200	40	1600
840	-320	102400
1,290	130	16900
1,330	170	28900
1,000	-160	25600
945	-215	46225
1,100	-60	3600
1,020	-140	19600
1,210	50	2500
1,009	-151	22801
1,074	-86	7396
1,007	-153	23409
1,800	640	409600
1,004	-156	24336
1,550	390	152100
1,380	220	48400
825	-335	112225
1,314	154	23716
1,118	-42	1764
949	-211	44521
1,224	64	4096
1,081	-79	6241
875	-285	81225
1,067	-93	8649
1,055	-105	11025
1,700	540	291600
1,210	50	2500

SAMPLE DEVIATION SD(x) = SQRT(Var(x))	54.9733	SAMPLE DEVIATION SD(y) = SQRT(Var(y))	288.8204127
COEFFICIENT OF VARIATION Coefficient of Variation = (SD(x) / Mean) * 100	19.3024	COEFFICIENT OF VARIATION Coefficient of Variation = (SD(y) / Mean) * 100	24.89831144
MINIMUM	229	MINIMUM	825
MAXIMUM	539	MAXIMUM	2300
UPPER LIMIT	344.5	UPPER LIMIT	1597.75
LOWER LIMIT	200.5	LOWER LIMIT	625.75

GENERATE BOX PLOT FOR ANNUAL REVENUE & ESTIMATED TEAM VALUE



COMPREHENSIVE BIVARIANT DATA ANALYSIS

Revenue $(millions)	Value $(millions)	(x - x̄)*(y-ȳ)
253	961	6328.2
252	933	7445.6
292	1,227	482.4
256	870	8352
271	1,057	1421.4
298	1,252	1214.4
250	924	8212.8
264	1,005	3224
539	2,300	289788
283	1,161	-1.8
248	900	9568
282	1,183	-64.4
320	1,450	10208
276	1,200	-352
260	840	7936
285	1,290	26
310	1,330	4284
260	1,000	3968
250	945	7482
275	1,100	588
265	1,020	2772
290	1,210	260
245	1,009	6009.8
268	1,074	1444.8
234	1,007	7772.4
408	1,800	78848
276	1,004	1372.8
338	1,550	20748
321	1,380	7964
229	825	18693
306	1,314	3264.8
266	1,118	789.6
250	949	7342.8
255	1,224	-1907.2
270	1,081	1169.2
239	875	13053
267	1,067	1655.4
270	1,055	1554
381	1,700	51948
290	1,210	260

COVARIANCE (x,y) = ∑((xi - x̄) * (yi - ȳ))/ (n-1)	15259.61538
Standard deviation of Revenue	54.9732802
Standard deviation of Team Value	288.8204127
Correlation coefficient = COV(x, y)/ (SD(x) * SD(y))	0.961089985

The revenue shows a very strong positive linear relationship with estimated team value, demonstrated by a correlation coefficient of 0.961 which indicates predictable growth patterns between these variables.

The covariance formula calculates how two variables vary together, and the correlation coefficient standardizes this measure to show the strength of the relationship. A correlation coefficient of 0.961 suggests a very strong positive linear relationship be tween the two variables, meaning that as one variable (e.g., Revenue) increases, the other variable (e.g., Estimated Team Value) also tends to increase consistently and predictably.

Restaurant ID	Quality Rating (x)	Meal Price Rating (y)
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11	1	1
12	1	1
13	1	1
14	1	1
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16	1	1
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292	3	3
293	3	3
294	3	3
295	3	3
296	3	3
297	3	3
298	3	3
299	3	3
300	3	3

1) Generate the frequency table (cross tabulation) for the table.
Let x = quality rating and y = meal price.

Frequency Table for Quality Rating

Quality Rating (x)	Frequency	Relative Frequency	Percentage Frequency
1	84	0.28	28
2	150	0.5	50
3	66	0.22	22
Total	300	1	100

Frequency Table for Meal Price Rating

Meal Price Rating(y)	Frequency	Relative Frequency	Percentage Frequency
1	78	0.26	26
2	117	0.39	39
3	105	0.35	35
Total	300	1	100

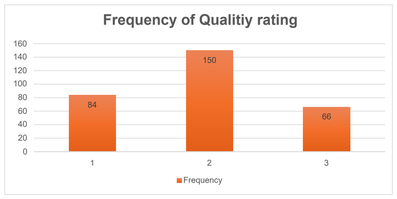
Cross Tabulation (Count)

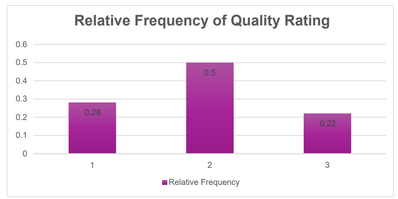
Count of Meal Price Rating (y)	Meal Price Rating (y)			
Quality Rating (x)	1	2	3	Grand Total
1	42	39	3	84
2	33	63	54	150
3	3	15	48	66
Grand Total	**78**	**117**	**105**	**300**

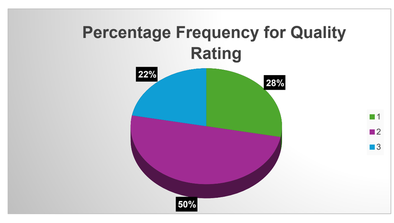
Cross Tabulation (Sum)

Sum of Meal Price Rating (y)	Meal Price Rating (y)			
Quality Rating (x)	1	2	3	Grand Total
1	42	78	9	129
2	33	126	162	321
3	3	30	144	177
Grand Total	**78**	**234**	**315**	**627**

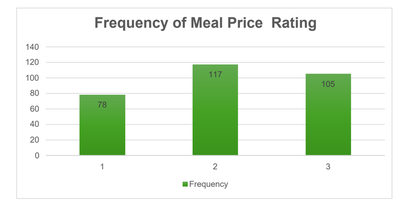
2. Conduct a comprehensive univariant data analysis for the variables and document your findings.

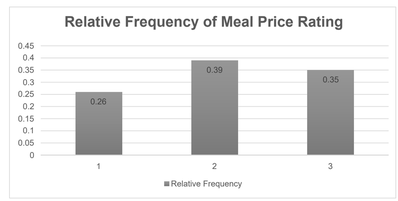


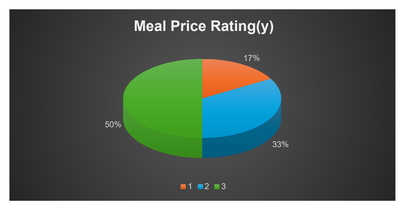




Quality Rating:
• Distribution Overview:–
Rating 2 (moderate quality): 150 instances (50%)
Rating 1 (low quality): 84 instances (28%)
Rating 3 (high quality): 66 instances (22%)
• Visual Analysis:–
Bar charts confirm rating 2 as the predominant category.
Frequency and relative frequency patterns align consistently.
Pie chart visualization shows rating 2 comprising exactly half of all ratings .
• Key Observations:–
Ratings cluster around the middle value, indicating average quality perfor mance.
Lower ratings exceed higher ratings by 6 percentage points–:
The skew toward lower quality suggests room for improvement initiatives
• Strategic Implications:–
Focus should be on converting moderate ratings to high ratings.
Addressing quality deficiencies could shift the distribution toward higher rat ings.
Current pattern provides a baseline for measuring improvement efforts .
Meal Price Rating:
• Distribution Overview:–
Moderate pricing (Rating 2): 117 instances (39%)
Higher pricing (Rating 3): 105 instances (35%)
Lower pricing (Rating 1): 78 instances (26%)
• Visual Analysis:–
Bar charts show moderate pricing as the most prevalent category.
Higher pricing follows closely behind the moderate category.
Pie chart confirms moderate pricing represents the largest segment.
• Key Observations:–
Combined moderate and high pricing ratings account for 74% of all responses.
Distribution shows a clear tilt toward mid-to-high price perception.
Lower price perceptions represent the smallest portion of feedback
• Strategic Implications:–
Customer base generally perceives prices in the moderate to higher range
Lower affordability perceptions are less common among respondents.
Businesses may need to evaluate if current pricing strategy aligns with desired market positioning







3. Conduct a comprehensive bivariant data analysis on the variables and document your findings.

Overview:
This analysis examines the relationship between Quality Ratings and Meal Price Ratings using cross-tabulated data visualized in a bar chart.
• Data Structure:–
X-axis: Quality Rating (1-3)
Y-axis: Meal Price Rating (1-3, color-coded)
Values represent count frequencies for each rating combination .
• Count Distribution:–
Low Quality (Rating 1):
- Low Price (1): 42 instances
- Medium Price (2): 39 instances
- High Price (3): 3 instances

Medium Quality (Rating 2):
- Low Price (1): 33 instances
- Medium Price (2): 63 instances
- High Price (3): 54 instances

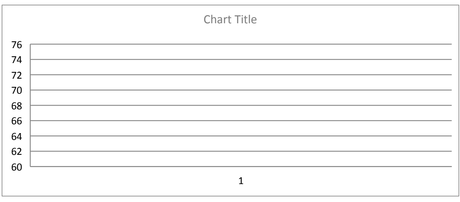
High Quality (Rating 3):
Low Price (1): 3 instances
Medium Price (2): 15 instances
High Price (3): 48 instances
• Key Patterns:–
Medium quality ratings show the highest overall frequency
High prices rarely coincide with low quality ratings (only 3 instances)
Low prices rarely coincide with high quality ratings (only 3 instances)
Medium quality most commonly aligns with medium pricing
High quality predominantly corresponds with high pricin

City	AT&T	Sprint (y)	T-Mobile (x)	Verizon
Atlanta	71	66	70	79
Boston	74	64	69	76
Chicago	70	65	71	77
Dallas	74	65	75	78
Denver	73	67	71	77
Detroit	77	65	73	79
Jacksonville	75	64	73	81
Las Vegas	74	68	72	81
Los Angeles	68	65	66	78
Miami	73	69	68	80
Minneapolis	75	66	68	77
Philadelphia	71	66	72	78
Phoenix	76	66	68	81
San Antonio	75	65	75	80
San Diego	[redacted]	68	69	79
San Franc	[redacted]	69	66	75
Seattle	[redacted]	67	68	77
St. Louis	74	66	74	79
Tampa	73	63	73	79
Washington	71	68	72	76

1) Numerical measures in Excel for T-Mobile

Numerical Measures	T-Mobile
Mean	70.65
Median	71
Mode	68
25 Percentile(Q1)	68
50 Percentile(Q2)	71
75 Percentile(Q3)	73
Range	9
IQR	5
Lower Limit	60.5
Upper Limit	80.5
Sample Variance	7.818421053
Sample SD	2.796143961
Coefficient of Variation	3.957740922 %
Minimum	66
Maximum	75

2)Box-plot for T-Mobile



3)sample covariance and correlation between T-Mobile and Sprint

We know that,
Sample covariance

$$s_{xy} = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{n-1}$$

T-Mobile (x)	Sprint (y)	X-Mean(x)	Y-Mean(y)	(X-Mean(x))*(Y-Mean(y))
70	66	-0.65	-0.1	0.065
69	64	-1.65	-2.1	3.465
71	65	0.35	-1.1	-0.385
75	65	4.35	-1.1	-4.785
71	67	0.35	0.9	0.315
73	65	2.35	-1.1	-2.585
73	64	2.35	-2.1	-4.935
72	68	1.35	1.9	2.565
66	65	-4.65	-1.1	5.115
68	69	-2.65	2.9	-7.685
68	66	-2.65	-0.1	0.265
72	66	1.35	-0.1	-0.135
68	66	-2.65	-0.1	0.265
75	65	4.35	-1.1	-4.785
69	68	-1.65	1.9	-3.135
66	69	-4.65	2.9	-13.485
68	67	-2.65	0.9	-2.385
74	66	3.35	-0.1	-0.335
73	63	2.35	-3.1	-7.285
72	68	1.35	1.9	2.565

Calculations	
Mean(x)	70.65
Mean(y)	66.1
Sum of (X-Mean(x))*(Y-Mean(y))	-37.3
Total	20
Sample covariance	-1.963157895

We know that,
sample correlation

$$r_{xy} = \frac{s_{xy}}{s_x s_y}$$

Calculations	
Variance(x)	7.818421053
Standard Deviation(x)	2.796143961
Variance(y)	2.831578947
standard Deviation(y)	1.682729612
sample correlation	-0.417235609

4)sample covariance and correlation between T-Mobile and AT&T

We know that,
Sample covariance

$$s_{xy} = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{n-1}$$

T-Mobile (x)	AT&T(y)	X-Mean(x)	Y-Mean(y)	(X-Mean(x))*(Y-Mean(y))
70	71	-0.65	-2.15	1.3975
69	74	-1.65	0.85	-1.4025
71	70	0.35	-3.15	-1.1025
75	74	4.35	0.85	3.6975
71	73	0.35	-0.15	-0.0525
73	77	2.35	3.85	9.0475
73	75	2.35	1.85	4.3475
72	74	1.35	0.85	1.1475
66	68	-4.65	-5.15	23.9475
68	73	-2.65	-0.15	0.3975
68	75	-2.65	1.85	-4.9025
72	71	1.35	-2.15	-2.9025
68	76	-2.65	2.85	-7.5525
75	75	4.35	1.85	8.0475
69	72	-1.65	-1.15	1.8975
66	73	-4.65	-0.15	0.6975
68	74	-2.65	0.85	-2.2525
74	74	3.35	0.85	2.8475
73	73	2.35	-0.15	-0.3525
72	71	1.35	-2.15	-2.9025

Calculations	
Mean(x)	70.65
Mean(y)	73.15
Sum of (X-Mean(x))*(Y-Mean(y))	34.05
Total	20
Sample covariance	1.792105263

We know that,
sample correlation

$$r_{xy} = \frac{s_{xy}}{s_x s_y}$$

Calculations	
Variance(x)	7.818421053
Standard Deviation(x)	2.796143961
Variance(y)	4.660526316
standard Deviation(y)	2.158825217
sample correlation	0.296883804