

Task-4

EDA Project - AMCAT Data Analysis

Introduction: In a world where digital technology is rapidly transforming industries, it is crucial for businesses to understand their customers' behavior and preferences. This data-driven approach is essential for making informed decisions, improving products, and enhancing customer satisfaction. In this task, we will analyze a dataset from the AMCAT (Assessment Manager for Career Advancement) project, which contains information about students' performance in various assessments. The dataset includes details such as student ID, assessment ID, score, and time taken to complete the assessment. Our goal is to explore the data, identify patterns, and gain insights into student performance and assessment trends. We will use Python for data manipulation and visualization, and we will create a comprehensive report summarizing our findings. The dataset is structured as follows: Each row represents a student's performance in a specific assessment. The columns are: 'Student ID', 'Assessment ID', 'Score', and 'Time Taken'. The 'Student ID' column is a unique identifier for each student. The 'Assessment ID' column identifies the specific assessment. The 'Score' column represents the student's performance, and the 'Time Taken' column indicates the duration of the assessment. We will start by loading the data into a pandas DataFrame and then proceed with exploratory data analysis (EDA). This will involve checking for missing values, understanding the distribution of scores and time taken, and identifying any correlations between variables. We will also create visualizations to help us understand the data better. Finally, we will summarize our findings and provide recommendations based on the analysis.

```
import pandas as pd
df = pd.read_csv('amcat_data.csv')
df.head()
df.info()
```

Step 2

Import the data and display the head, shape and description of the data.

```
import pandas as pd
df = pd.read_csv('amcat_data.csv')
df.head()
df.shape
df.describe()
```

	Student ID	Assessment ID	Score	Time Taken
0	101	101	85	120
1	102	102	78	110
2	103	103	92	130
3	104	104	88	125
4	105	105	75	115

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Official Solution

1. The first number is 100.

2. The second number is 100.

3. The third number is 100.

4. The fourth number is 100.

5. The fifth number is 100. The sixth number is 100. The seventh number is 100. The eighth number is 100. The ninth number is 100. The tenth number is 100. The eleventh number is 100. The twelfth number is 100. The thirteenth number is 100. The fourteenth number is 100. The fifteenth number is 100. The sixteenth number is 100. The seventeenth number is 100. The eighteenth number is 100. The nineteenth number is 100. The twentieth number is 100. The twenty-first number is 100. The twenty-second number is 100. The twenty-third number is 100. The twenty-fourth number is 100. The twenty-fifth number is 100. The twenty-sixth number is 100. The twenty-seventh number is 100. The twenty-eighth number is 100. The twenty-ninth number is 100. The thirtieth number is 100. The thirty-first number is 100. The thirty-second number is 100. The thirty-third number is 100. The thirty-fourth number is 100. The thirty-fifth number is 100. The thirty-sixth number is 100. The thirty-seventh number is 100. The thirty-eighth number is 100. The thirty-ninth number is 100. The fortieth number is 100. The forty-first number is 100. The forty-second number is 100. The forty-third number is 100. The forty-fourth number is 100. The forty-fifth number is 100. The forty-sixth number is 100. The forty-seventh number is 100. The forty-eighth number is 100. The forty-ninth number is 100. The fiftieth number is 100. The fifty-first number is 100. The fifty-second number is 100. The fifty-third number is 100. The fifty-fourth number is 100. The fifty-fifth number is 100. The fifty-sixth number is 100. The fifty-seventh number is 100. The fifty-eighth number is 100. The fifty-ninth number is 100. The sixtieth number is 100. The sixty-first number is 100. The sixty-second number is 100. The sixty-third number is 100. The sixty-fourth number is 100. The sixty-fifth number is 100. The sixty-sixth number is 100. The sixty-seventh number is 100. The sixty-eighth number is 100. The sixty-ninth number is 100. The seventieth number is 100. The seventy-first number is 100. The seventy-second number is 100. The seventy-third number is 100. The seventy-fourth number is 100. The seventy-fifth number is 100. The seventy-sixth number is 100. The seventy-seventh number is 100. The seventy-eighth number is 100. The seventy-ninth number is 100. The eightieth number is 100. The eighty-first number is 100. The eighty-second number is 100. The eighty-third number is 100. The eighty-fourth number is 100. The eighty-fifth number is 100. The eighty-sixth number is 100. The eighty-seventh number is 100. The eighty-eighth number is 100. The eighty-ninth number is 100. The ninetieth number is 100. The ninety-first number is 100. The ninety-second number is 100. The ninety-third number is 100. The ninety-fourth number is 100. The ninety-fifth number is 100. The ninety-sixth number is 100. The ninety-seventh number is 100. The ninety-eighth number is 100. The ninety-ninth number is 100. The hundredth number is 100.

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1992	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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2001	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2002	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2003	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2004	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2005	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2006	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57																																											

Year	Value	Year	Value	Year	Value
1990	100.0	1995	100.0	2000	100.0
1991	101.2	1996	102.5	2001	101.5
1992	102.5	1997	104.0	2002	103.0
1993	104.0	1998	106.0	2003	105.0
1994	106.0	1999	108.0	2004	107.0
1995	108.0	2000	110.0	2005	109.0
1996	110.0	2001	112.0	2006	111.0
1997	112.0	2002	114.0	2007	113.0
1998	114.0	2003	116.0	2008	115.0
1999	116.0	2004	118.0	2009	117.0
2000	118.0	2005	120.0	2010	119.0

	1990	1991	1992	1993
1990	19.21	19.21	19.21	19.21
1991	19.21	19.21	19.21	19.21
1992	19.21	19.21	19.21	19.21
1993	19.21	19.21	19.21	19.21
1994	19.21	19.21	19.21	19.21
1995	19.21	19.21	19.21	19.21
1996	19.21	19.21	19.21	19.21
1997	19.21	19.21	19.21	19.21
1998	19.21	19.21	19.21	19.21
1999	19.21	19.21	19.21	19.21
2000	19.21	19.21	19.21	19.21
2001	19.21	19.21	19.21	19.21
2002	19.21	19.21	19.21	19.21
2003	19.21	19.21	19.21	19.21
2004	19.21	19.21	19.21	19.21
2005	19.21	19.21	19.21	19.21
2006	19.21	19.21	19.21	19.21
2007	19.21	19.21	19.21	19.21
2008	19.21	19.21	19.21	19.21
2009	19.21	19.21	19.21	19.21
2010	19.21	19.21	19.21	19.21
2011	19.21	19.21	19.21	19.21
2012	19.21	19.21	19.21	19.21
2013	19.21	19.21	19.21	19.21
2014	19.21	19.21	19.21	19.21
2015	19.21	19.21	19.21	19.21
2016	19.21	19.21	19.21	19.21
2017	19.21	19.21	19.21	19.21
2018	19.21	19.21	19.21	19.21
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2054	19.21	19.21	19.21	19.21
2055	19.21	19.21	19.21	19.21

	Investment	Manufacturing	Services	Manufacturing	Services
1990-1991	100	100	100	100	100
1992-1993	100	100	100	100	100
1994-1995	100	100	100	100	100
1996-1997	100	100	100	100	100
1998-1999	100	100	100	100	100
2000-2001	100	100	100	100	100
2002-2003	100	100	100	100	100
2004-2005	100	100	100	100	100
2006-2007	100	100	100	100	100
2008-2009	100	100	100	100	100
2010-2011	100	100	100	100	100
2012-2013	100	100	100	100	100
2014-2015	100	100	100	100	100
2016-2017	100	100	100	100	100
2018-2019	100	100	100	100	100
2020-2021	100	100	100	100	100
2022-2023	100	100	100	100	100
2024-2025	100	100	100	100	100
2026-2027	100	100	100	100	100
2028-2029	100	100	100	100	100
2030-2031	100	100	100	100	100
2032-2033	100	100	100	100	100
2034-2035	100	100	100	100	100
2036-2037	100	100	100	100	100
2038-2039	100	100	100	100	100
2040-2041	100	100	100	100	100
2042-2043	100	100	100	100	100
2044-2045	100	100	100	100	100
2046-2047	100	100	100	100	100
2048-2049	100	100	100	100	100
2050-2051	100	100	100	100	100
2052-2053	100	100	100	100	100
2054-2055	100	100	100	100	100
2056-2057	100	100	100	100	100
2058-2059	100	100	100	100	100
2060-2061	100	100	100	100	100
2062-2063	100	100	100	100	100
2064-2065	100	100	100	100	100
2066-2067	100	100	100	100	100
2068-2069	100	100	100	100	100
2070-2071	100	100	100	100	100
2072-2073	100	100	100	100	100
2074-2075	100	100	100	100	100
2076-2077	100	100	100	100	100
2078-2079	100	100	100	100	100
2080-2081	100	100	100	100	100
2082-2083	100	100	100	100	100
2084-2085	100	100	100	100	100
2086-2087	100	100	100	100	100
2088-2089	100	100	100	100	100
2090-2091	100	100	100	100	100
2092-2093	100	100	100	100	100
2094-2095	100	100	100	100	100
2096-2097	100	100	100	100	100
2098-2099	100	100	100	100	100
2100-2101	100	100	100	100	100
2102-2103	100	100	100	100	100
2104-2105	100	100	100	100	100
2106-2107	100	100	100	100	100
2108-2109	100	100	100	100	100
2110-2111	100	100	100	100	100
2112-2113	100	100	100	100	100
2114-2115	100	100	100	100	100
2116-2117	100	100	100	100	100
2118-2119	100	100	100	100	100
2120-2121	100	100	100	100	100
2122-2123	100	100	100	100	100
2124-2125	100	100	100	100	100

	gross amount	gross amount	gross amount	gross amount
1	1,000	1,000	1,000	1,000
2	1,000	1,000	1,000	1,000
3	1,000	1,000	1,000	1,000
4	1,000	1,000	1,000	1,000
5	1,000	1,000	1,000	1,000
6	1,000	1,000	1,000	1,000
7	1,000	1,000	1,000	1,000
8	1,000	1,000	1,000	1,000
9	1,000	1,000	1,000	1,000
10	1,000	1,000	1,000	1,000

Category	Frequency
1	1000
2	1000
3	1000
4	1000
5	1000
6	1000
7	1000
8	1000
9	1000
10	1000

[illegible]

[illegible]

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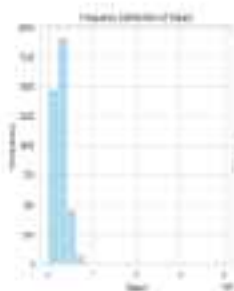
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psi: 0.244401
bias adjustment: none
Covariance: unstructured
var: 0.244401
cov: 0.222360
psi: 0.227301
var-cov: 0.244401
psi: 0.244401

```

Step - 3: Univariate Analysis → PDF, Histograms, Boxplots, Countplots, etc.

11 Find the outliers in each numerical column.

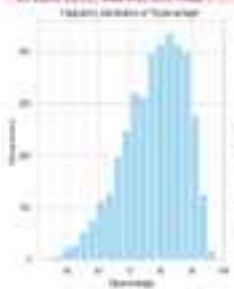
[illegible]



Frequency distribution of Year (approx. 2000-2005) with Normality

Mean: 1.5, Std. Deviation: 1.5, N: 1000
 Std. Dev. = 1.5, Std. Error = 0.037, N = 1000, Std. Error = 0.037

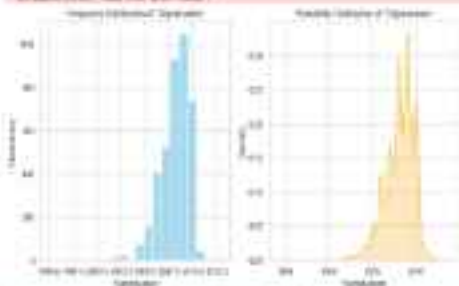
Normal Q-Q Plot, Year



Continuous random variable: Uniformly distributed with 10 outcomes

Mean is the average of the 10 "100" values, which is 100. The standard deviation is about 20.4, which is the square root of 416.

As stated above, mean (100), variance (416)



Continuous random variable: Normal distributed with 10 outcomes

Mean is the average of the 10 "100" values, which is 100. The standard deviation is about 20.4, which is the square root of 416.

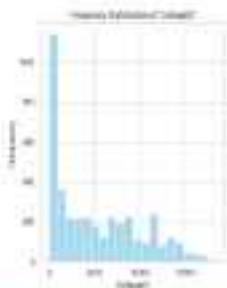
As stated above, mean (100), variance (416)



Continuous random variable: Normal distributed with 10 outcomes

Mean is the average of the 10 "100" values, which is 100. The standard deviation is about 20.4, which is the square root of 416.

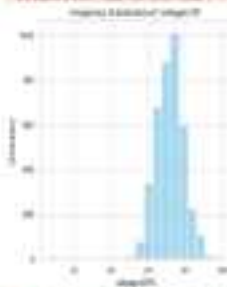
As stated above, mean (100), variance (416)



Chomsky's hypothesis (and its generalization) is not falsifiable (up to its falsification)

Depth is not determined by the fact of depth^2 being 12 (or not).
This is not a scientific test of the hypothesis in a proper sense (per se).

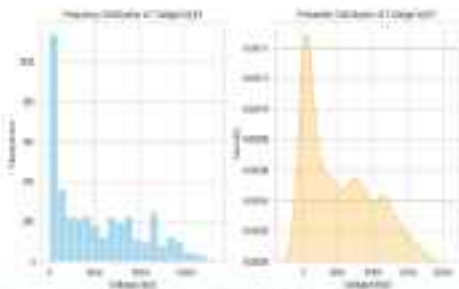
It's a kind of truth, even if not falsifiable.



Chomsky's hypothesis (and its generalization) is not falsifiable (up to its falsification)

Depth is not determined by the fact of depth^2 being 12 (or not).
This is not a scientific test of the hypothesis in a proper sense (per se).

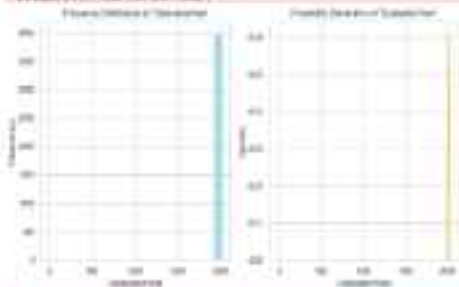
It's a kind of truth, even if not falsifiable.



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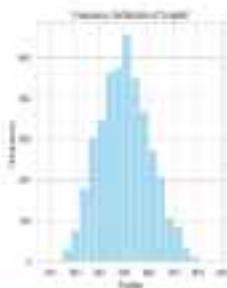
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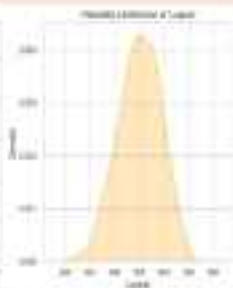
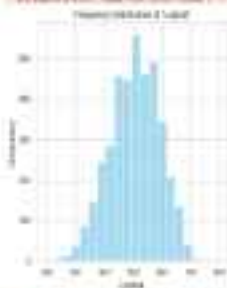
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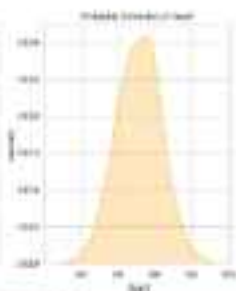
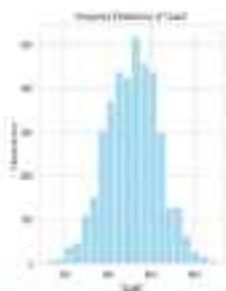
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DOI: 10.1037/0893-3200.13.1.101



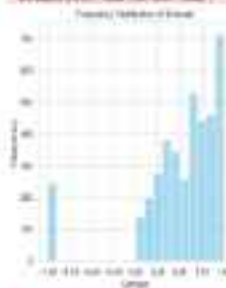
Journal of Management Inquiry 18(4) 401–418

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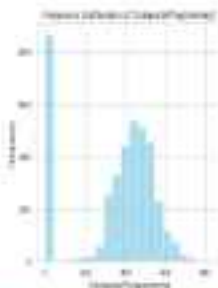
Frequency distribution and Normal curve for 1000 observations of X_1 (1st test)

Mean = 75.00000000, Std. Dev. = 10.00000000, Std. Error = 0.00000000
 Minimum = 50.00000000, Maximum = 100.00000000, Sum = 75000.00000000
 are based on 1000 observations (sum of squares = 1000000.00000000)



Frequency distribution and Normal curve for 1000 observations of X_2 (2nd test)

Mean = 75.00000000, Std. Dev. = 10.00000000, Std. Error = 0.00000000
 Minimum = 50.00000000, Maximum = 100.00000000, Sum = 75000.00000000
 are based on 1000 observations (sum of squares = 1000000.00000000)



Statistics program can recognize that data is not normally distributed

Mean is not located in the center of the data
 The data is skewed left or right or is a uniform distribution

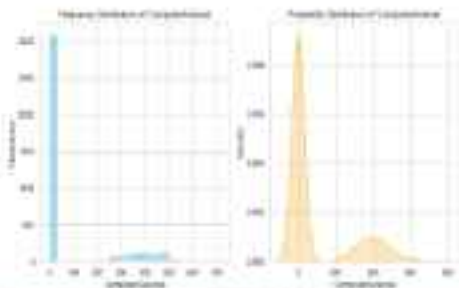
It's based on this, not the other way around



Statistics program can recognize that data is not normally distributed

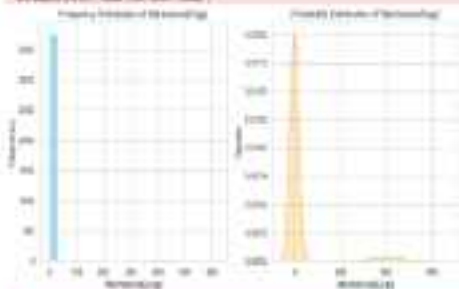
Mean is not located in the center of the data
 The data is skewed left or right or is a uniform distribution

It's based on this, not the other way around



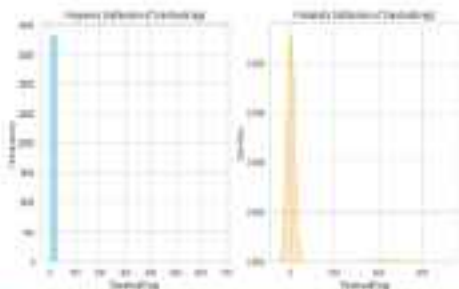
Frequency Distribution of Comprehension, N=1000000, n=10, 10,000,000

Mean = 10.000000000000000, Std. Dev. = 10.000000000000000
 Std. Err. = 0.000000000000000, 95% CI = 10.000000000000000
 are based on 1000000 cases (from 1000000 cases)



Frequency Distribution of Reading, N=1000000, n=10, 10,000,000

Mean = 10.000000000000000, Std. Dev. = 10.000000000000000
 Std. Err. = 0.000000000000000, 95% CI = 10.000000000000000
 are based on 1000000 cases (from 1000000 cases)

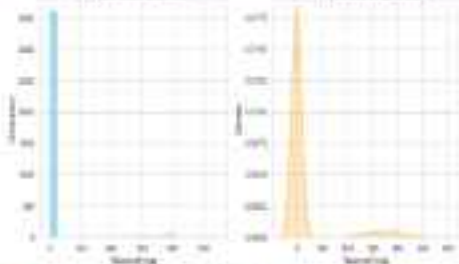


Frequency of 'Survived' by 'Sex' (Women)

Survived is not skewed in this plot (0.0 - 1.0) - why? (0.0 - 1.0)

Survived is not skewed in this plot (0.0 - 1.0) - why? (0.0 - 1.0)

It's skewed (0.0 - 1.0) - why? (0.0 - 1.0)

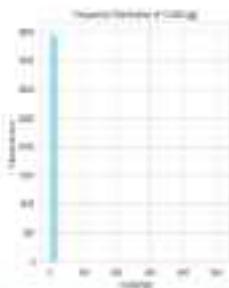


Frequency of 'Survived' by 'Sex' (Men)

Survived is not skewed in this plot (0.0 - 1.0) - why? (0.0 - 1.0)

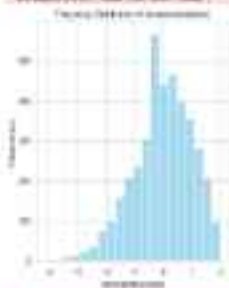
Survived is not skewed in this plot (0.0 - 1.0) - why? (0.0 - 1.0)

It's skewed (0.0 - 1.0) - why? (0.0 - 1.0)



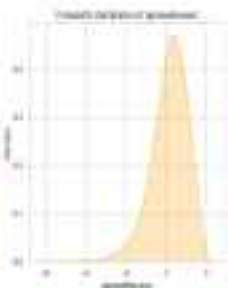
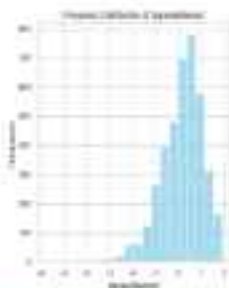
Frequency distribution of Testing, with 100000 as N, 0.0 as Mean

Mean is calculated as that of 0.0, since 100000
 Std. dev. is calculated as that of 0.0, since 100000
 are equal to 0.0, mean that, also mean



Frequency distribution of Performance, with 100000 as N, 0.0 as Mean

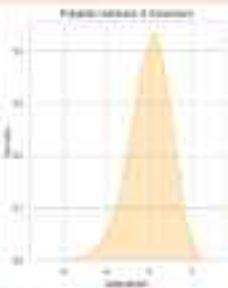
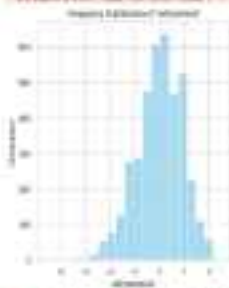
Mean is calculated as that of 0.0, since 100000
 Std. dev. is calculated as that of 0.0, since 100000
 are equal to 0.0, mean that, also mean



Frequency distribution of speedometer: data obtained up to 10 km/h

Mean is calculated as that of 10 km/h, which is 7.5 km/h.
This is the standard error of speedometer in 4 groups (per km/h).

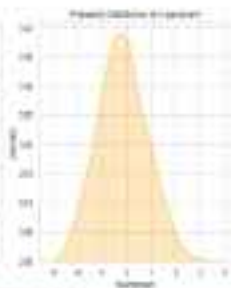
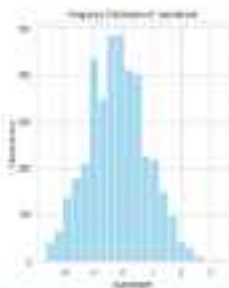
It is found that the mean speedometer is 7.5 km/h.



Frequency distribution of speedometer: data obtained up to 10 km/h

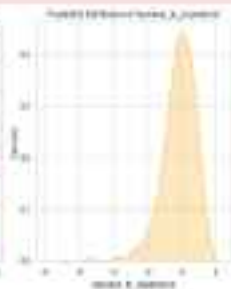
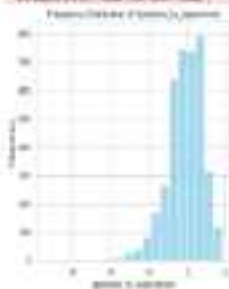
Mean is calculated as that of 10 km/h, which is 7.5 km/h.
This is the standard error of speedometer in 4 groups (per km/h).

It is found that the mean speedometer is 7.5 km/h.



Frequency distribution of variables: WITH MISSING (n = 15, 15 observations)

Mean is calculated as 10.00, Std. Dev. is 3.16227766
 Minimum is 0 and Maximum is 20.00, which gives the range
 as 20.00 (20.00 - 0.00 = 20.00)



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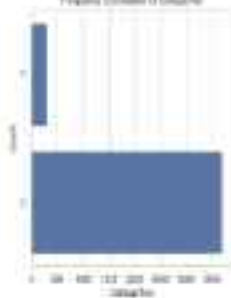
In the above code, an explanation:

This code visualizes numerical data distributions using histograms to represent frequency and KDE plots to depict probability density. It iterates through numerical columns, generating side-by-side plots for effective comparison. Additionally, it calculates descriptive statistics, such as mean, standard deviation, and percentile, offering a comprehensive statistical summary of numerical features.

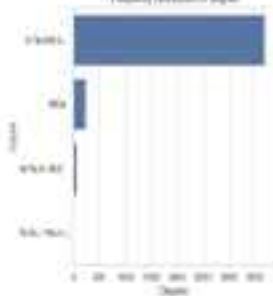
```
for column in numerical_columns:
    # Create a histogram and KDE plot
    plt.figure(figsize=(10, 5))
    plt.hist(data[column], bins=30, density=True, color='blue', alpha=0.7)
    plt.kdeplot(data[column], color='red', alpha=0.5)
    plt.title(f'Histogram and KDE for {column}')
    plt.xlabel(column)
    plt.ylabel('Density')
    plt.grid(True)
    # Save the plot
    plt.savefig(f'plots/{column}_hist_kde.png')
    # Print descriptive statistics
    print(f'Descriptive Statistics for {column}:')
    print(f'Mean: {data[column].mean():.2f}')
    print(f'Standard Deviation: {data[column].std():.2f}')
    print(f'Percentile 25: {data[column].quantile(0.25):.2f}')
    print(f'Percentile 75: {data[column].quantile(0.75):.2f}')
    print(f'Min: {data[column].min():.2f}')
    print(f'Max: {data[column].max():.2f}')
```

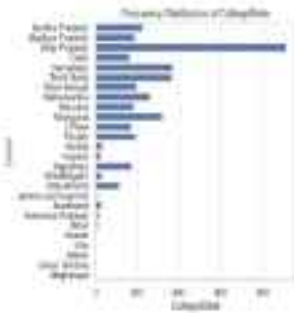
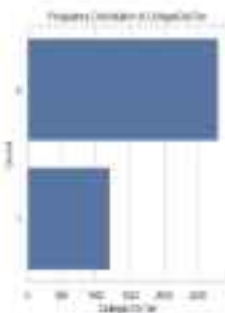


Frequency Distribution of Colleague



Frequency Distribution of Degree





3) Understand the frequency distribution of each categorical variable/Column

Mention observations after each plot.

```

# Create categorical variable 'Color'
categorical_color = ['Red', 'Blue', 'Green', 'Yellow', 'Orange', 'Purple', 'Brown', 'Grey', 'Black', 'White', 'Pink', 'Gold', 'Silver', 'Copper', 'Bronze', 'Steel', 'Aluminum', 'Glass', 'Rubber', 'Plastic', 'Wood', 'Metal', 'Paper', 'Cardboard', 'Fabric', 'Leather', 'Silk', 'Cotton', 'Linen', 'Wool', 'Nylon', 'Polyester', 'Spandex', 'Kevlar', 'Carbon Fiber', 'Fiberglass', 'Kevlar', 'Carbon Fiber', 'Fiberglass', 'Kevlar', 'Carbon Fiber', 'Fiberglass']

# Create categorical variable 'Shape'
categorical_shape = ['Circle', 'Square', 'Triangle', 'Rectangle', 'Oval', 'Diamond', 'Hexagon', 'Octagon', 'Star', 'Heart', 'Cross', 'Crescent', 'Spiral', 'Other']

# Displaying frequency distribution for each categorical variable
for i in categorical_color:
    print(i, "Frequency: ", sum(categorical_color == i))

for i in categorical_shape:
    print(i, "Frequency: ", sum(categorical_shape == i))
  
```


See <http://www.irs.gov> for more information.

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Abstract

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Journal of Management Education

cellular growth of *S. typhimurium* in the presence of β -irradiation.

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4. *Thyridopteryx* (Lévy) is a genus of the family *Thyridopterygidae* (Lévy).

10

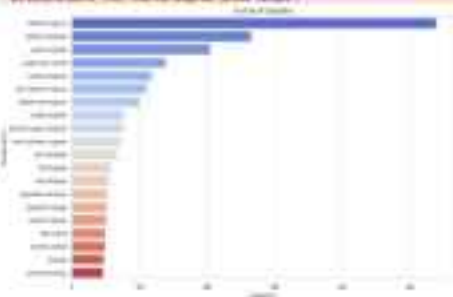
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Having no prior criminal convictions, the 14 defendants will all be sentenced to at least 10 years in prison, with 12 sentenced to life in prison, the state attorney says. The state also charged the defendants with racketeering.

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	Dispositive Features
1	cellular structure
2	cellular structure
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5	cellular structure
6	cellular structure
7	cellular structure
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9	cellular structure
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100	cellular structure

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Results

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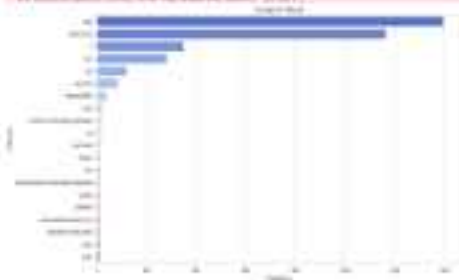
^a Adapted from Taylor et al., 1986.

The full Treasury response is:

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Abstract: We prove uniform convergence for a sequence of GPs in the sense of \mathcal{H}_∞ norm. The \mathcal{H}_∞ norm is defined as the maximum of the absolute value of the function over the domain.

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Stack Trace

1	main	10
2	main	15
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4	main	25
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387	main	1940
388	main	1945
389	main	1950
390	main	1955
391	main	1960
392	main	1965
393	main	1970
394	main	1975
395	main	1980
396	main	1985
397	main	1990
398	main	1995
399	main	2000
400	main	2005
401	main	2010
402	main	2015
403	main	2020
404	main	2025
405	main	2030
406	main	2035
407	main	2040
408	main	2045
409	main	2050
410	main	2055
411	main	2060
412	main	2065
413	main	2070
414	main	2075
415	main	2080
416	main	2085
417	main	2090
418	main	2095
419	main	2100
420	main	2105
421	main	2110
422	main	2115
423	main	2120
424	main	2125
425	main	2130
426	main	2135
427	main	2140
428	main	2145
429	main	2150
430	main	2155
431	main	2160
432	main	2165
433	main	2170
434	main	2175
435	main	2180
436	main	2185</

Topicality: Frequency

1	100	100
2	90	90
3	80	80
4	70	70
5	60	60
6	50	50
7	40	40
8	30	30
9	20	20
10	10	10
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0

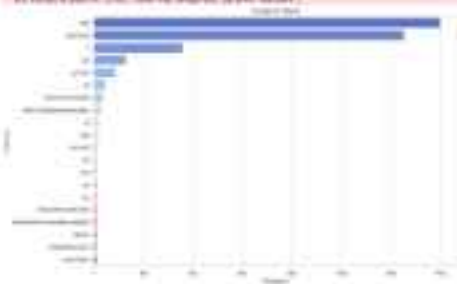
Topicality: Frequency

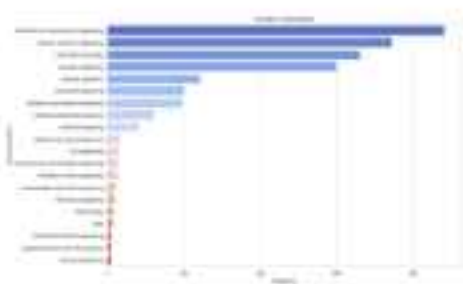
- Topicality: Frequency of use in the past 12 months. If you have used it, please indicate the frequency.
- The frequency ranges from 1 (Never) to 10 (Always).

Topicality: Frequency of use in the past 12 months. If you have used it, please indicate the frequency.

Having a topicality frequency of 10 is equivalent to 100% of the population. If you have used it, please indicate the frequency.

Topicality: Frequency of use in the past 12 months. If you have used it, please indicate the frequency.





Species richness, species diversity, and species evenness. The 1% is represented and 0.01% is represented as 0.01. Species richness is represented by the number of species, species diversity by the number of species, and species evenness by the number of species.

and species richness (0.01) and species diversity (0.01) are represented.

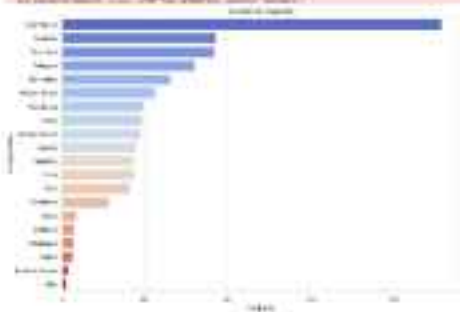


Table 1. Species richness, species diversity, and species evenness.

Species richness	Species diversity	Species evenness
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

We thank the following people:

• The authors of the 1000 Genomes Project, who provided the data used in this study.

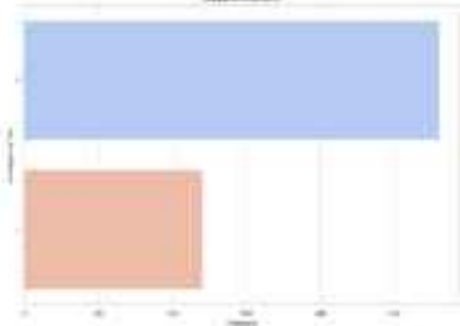
• The authors of the 1000 Genomes Project, who provided the data used in this study.

Contaminant exposure and management: distribution by age group

Shows whether certain segments of the population are more exposed to a risk, based on the location of the site and the population distribution pattern.

an environmental issue: children, pregnant women, elderly

contaminant



Simplest Form

0 100

0 100 200

Exposure to the population

Exposure to the population (0-17)

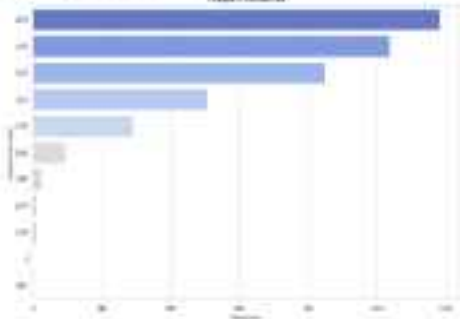
The total exposure is 150

Contaminant exposure and management: distribution by age group

Shows whether certain segments of the population are more exposed to a risk, based on the location of the site and the population distribution pattern.

an environmental issue: children, pregnant women, elderly

contaminant



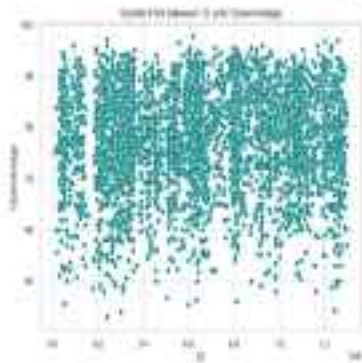
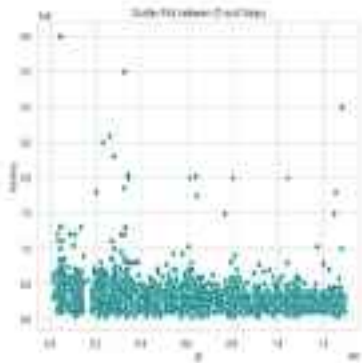


Figure 11: Scatter plot of $\log_{10}(\text{Density})$ vs $\log_{10}(\text{Density})$

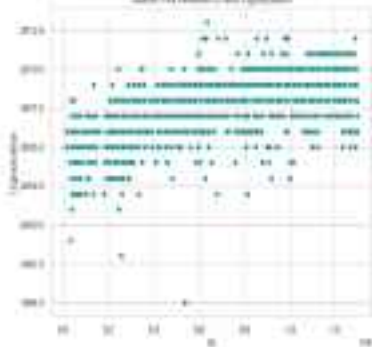
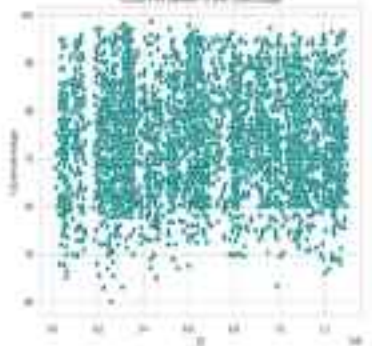
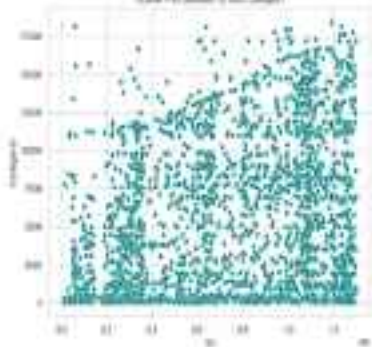
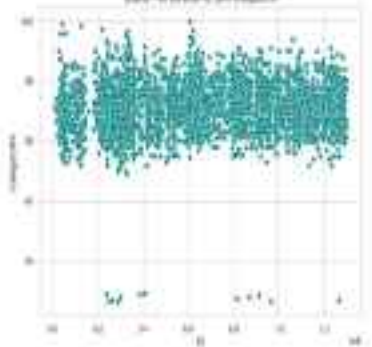
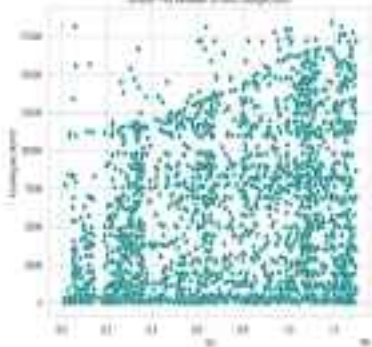


Figure 12: Scatter plot of $\log_{10}(\text{Density})$ vs $\log_{10}(\text{Density})$

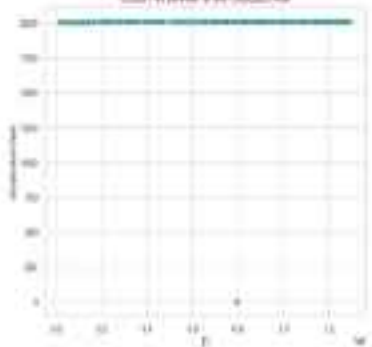


Scatter Plot between $\ln(\text{age})$ and $\ln(\text{age}^2)$ Scatter Plot between $\ln(\text{age})$ and $\ln(\text{age}^3)$ 

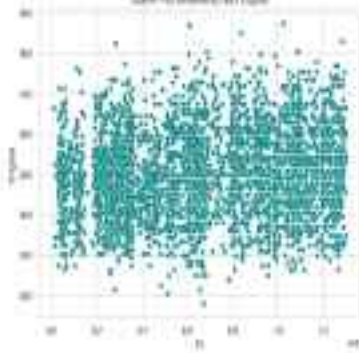
Scatter Plot of $\log_{10}(\text{Density})$ vs $\log_{10}(\text{Area})$



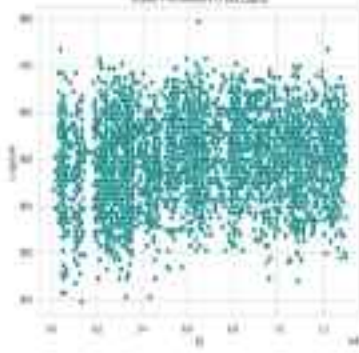
Scatter Plot of $\log_{10}(\text{Density})$ vs $\log_{10}(\text{Area})$



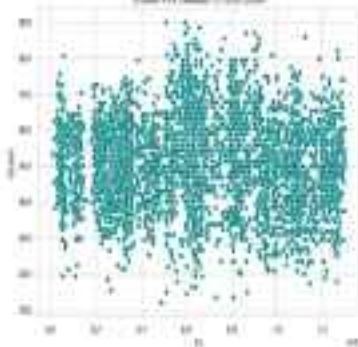
Scatter Plot: Income (Y-axis) vs. Age (X-axis)



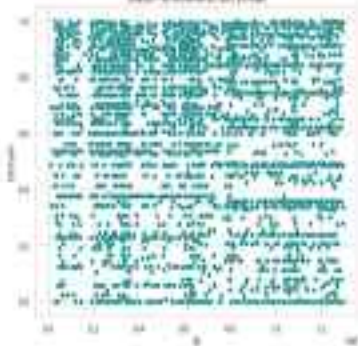
Scatter Plot: Income (Y-axis) vs. Education (X-axis)



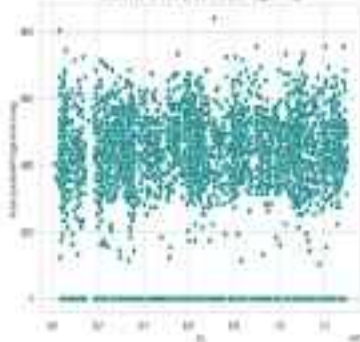
Scatter Plot of $\log_{10}(\text{Density})$ vs $\log_{10}(\text{Area})$



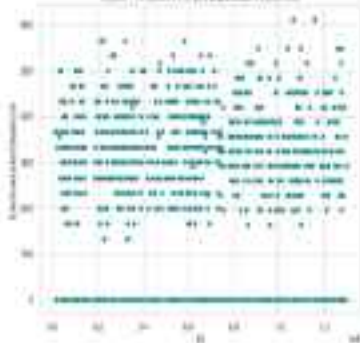
Scatter Plot of $\log_{10}(\text{Density})$ vs $\log_{10}(\text{Area})$



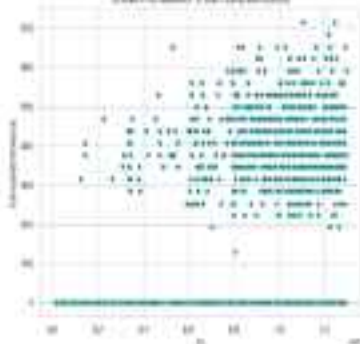
Subitization of Small Number of Objects



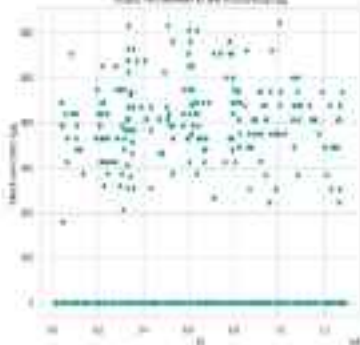
Subitization of Large Number of Objects



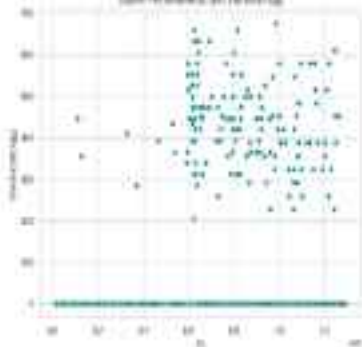
Scatterplot of T versus $\log_{10}(\text{time})$



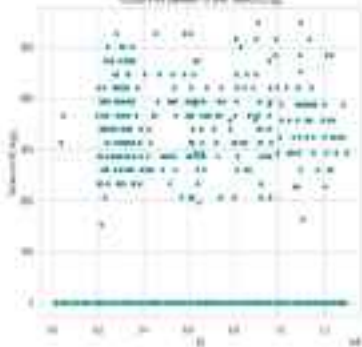
Scatterplot of T versus $\log_{10}(\text{time})$



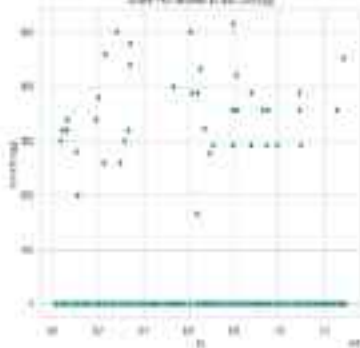
Scatter Plot between Q_1 and Q_2 (Weighting)



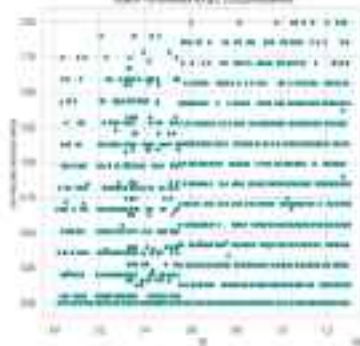
Scatter Plot between Q_1 and Q_3 (Weighting)



Study 1: The number of participants



Study 2: The number of participants



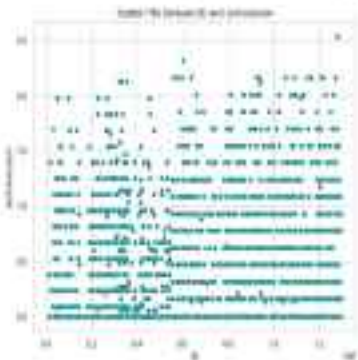
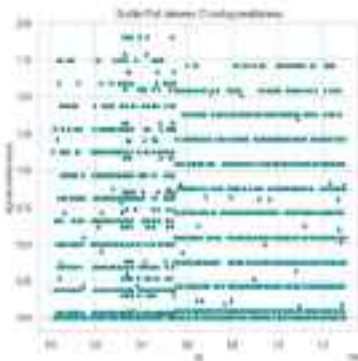


Figure 1: Histogram of the distribution of the number of clusters

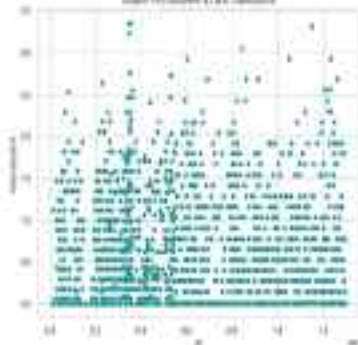
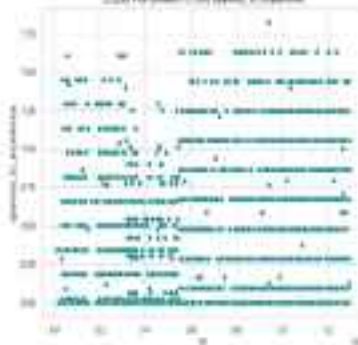
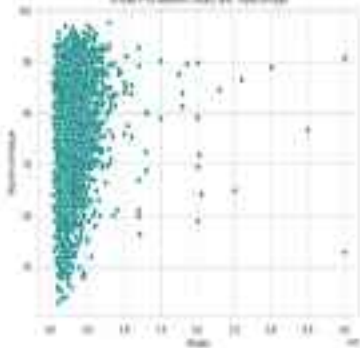


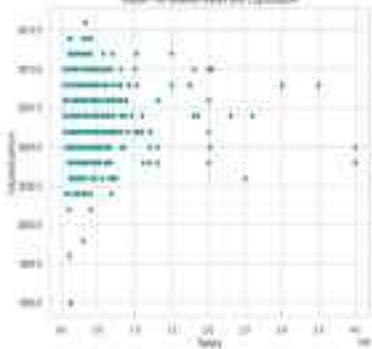
Figure 2: Histogram of the distribution of the number of clusters



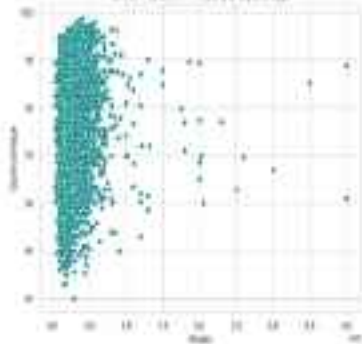
Scatter Plot of Sales and Quantity



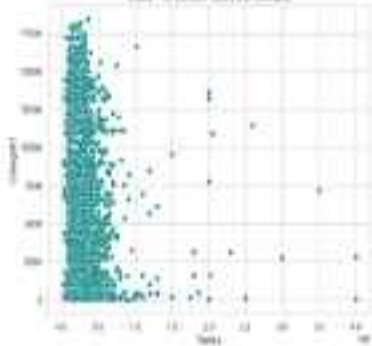
Scatter Plot of Sales and Quantity



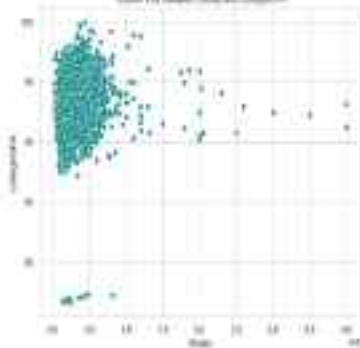
Scatter Plot between Salary and Experience



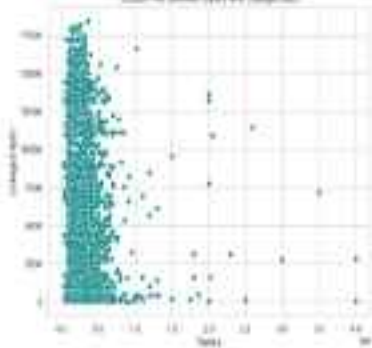
Scatter Plot between Salary and Company



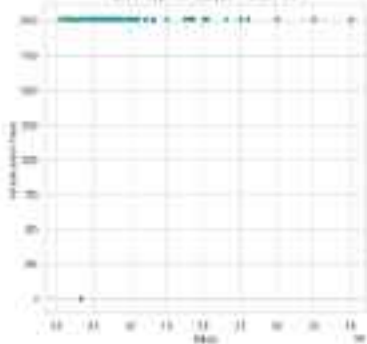
Scatter Plot of values (Time and Length)



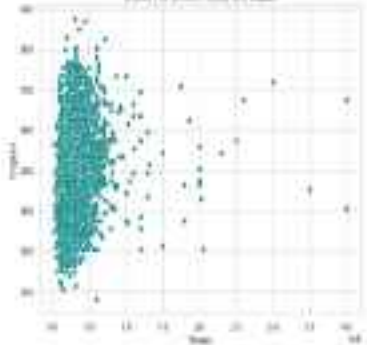
Scatter Plot of values (Length and Weight)



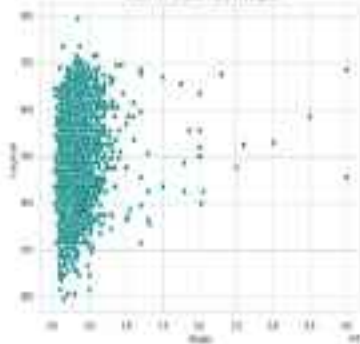
Scatter Plot between Salary and Education



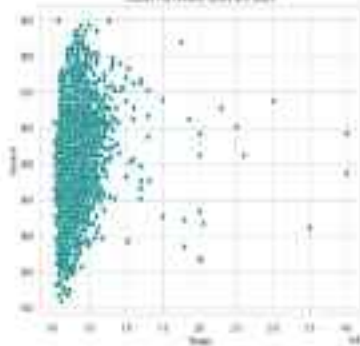
Scatter Plot between Salary and Experience



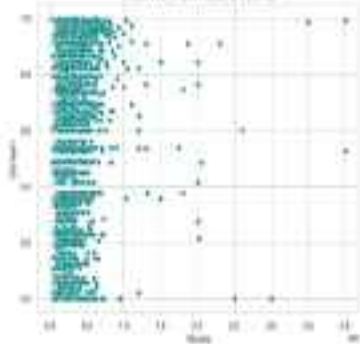
Scatter Plot between Time and Length



Scatter Plot between Time and Depth



Scatter Plot: Volume of Sales and Density



Scatter Plot: Volume of Sales and Logarithmic Density

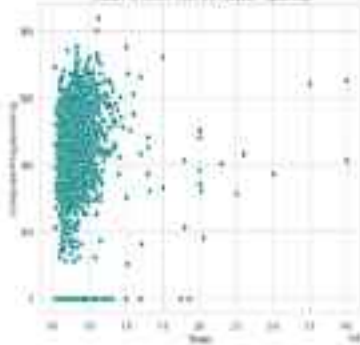


Table 1: Mean and Standard Deviation

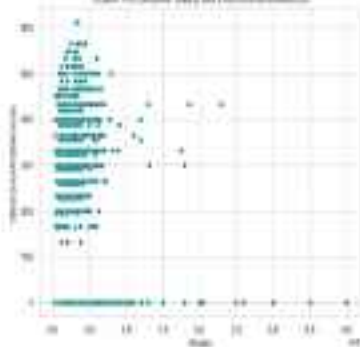
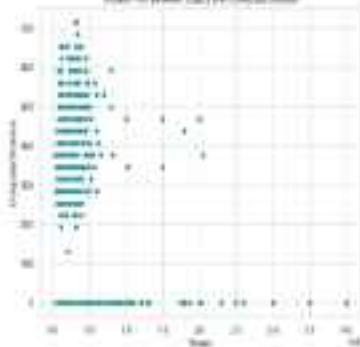
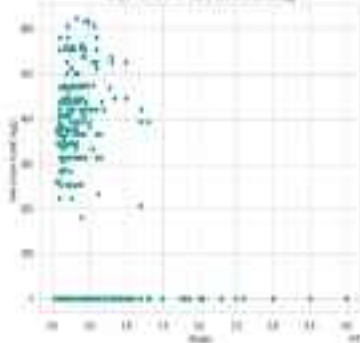


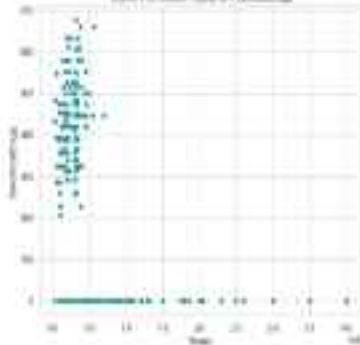
Table 2: Mean and Standard Deviation



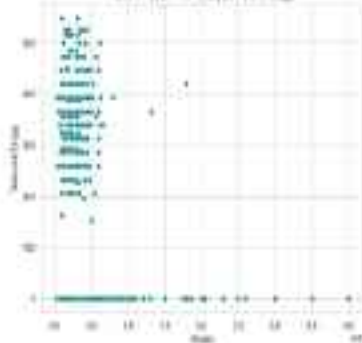
Scatter Plot between Status and Medication Dose



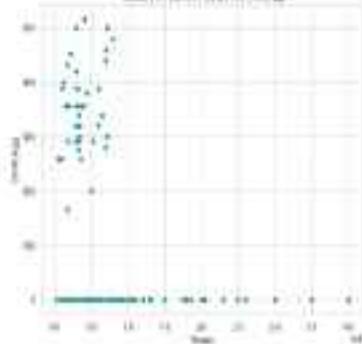
Scatter Plot between Status and Hemoglobin



Scatter Plot between Salary and Education



Scatter Plot between Salary and Gender



Scatter Plot showing Delay and Distance

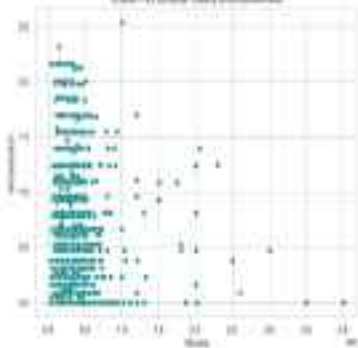


Table 1: Parameters of the β_1 distribution

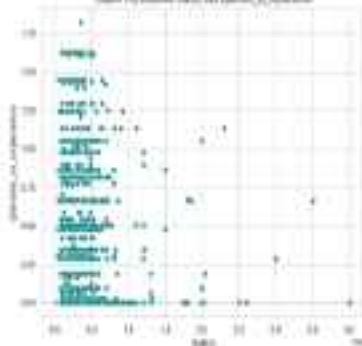
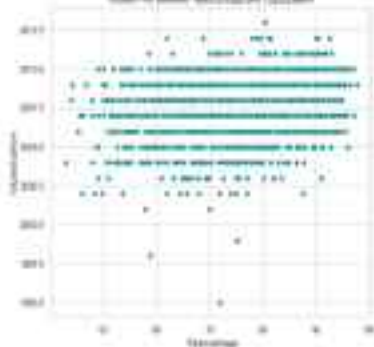
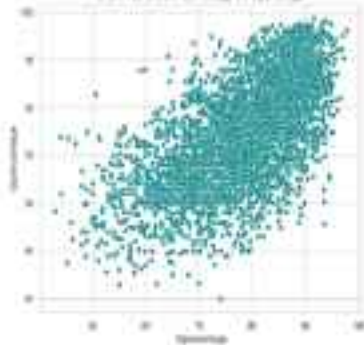


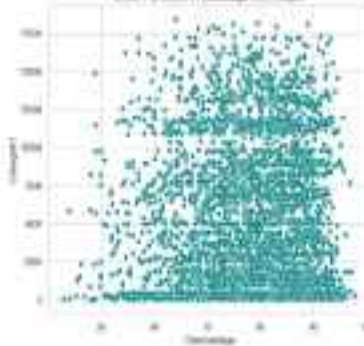
Table 2: Parameters of the β_2 distribution



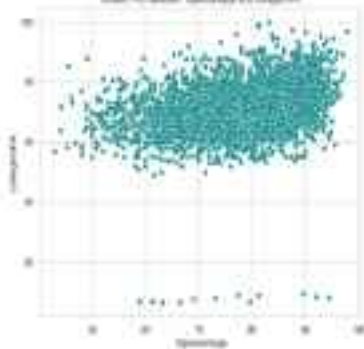
Scatter Plot: Average Clustering and Coverage



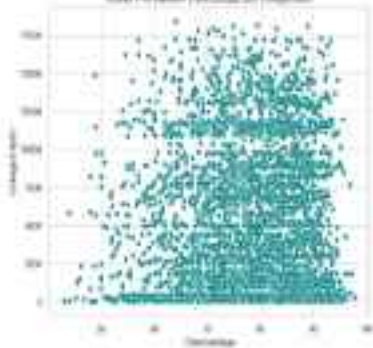
Scatter Plot: Average Homogeneity and Coverage



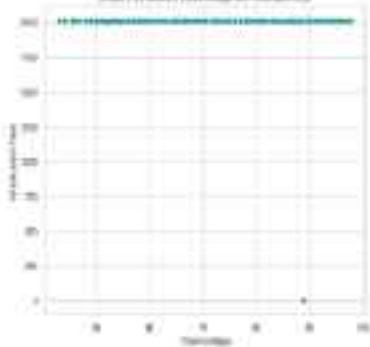
Scatter Plot: Average Temperature and Average Rainfall



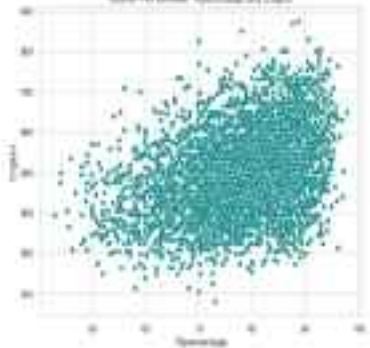
Scatter Plot: Average Temperature and Average Rainfall



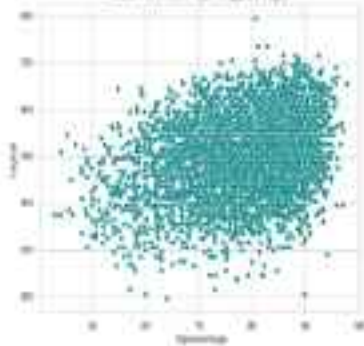
Scatter Plot showing Class and Test Accuracy



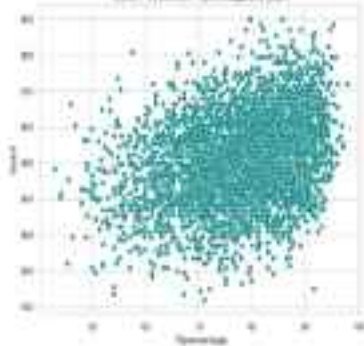
Scatter Plot showing Top Accuracy and Class 0



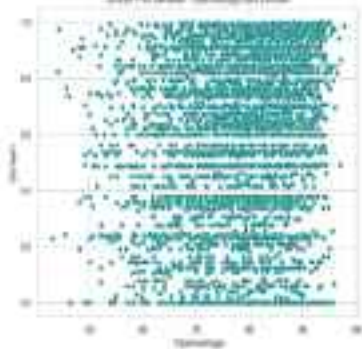
Scatter Plot between Turnover and Capital



Scatter Plot between Turnover and Capital



Scatter Plot between Temperature and Gender



Scatter Plot between Temperature and Computer Programming

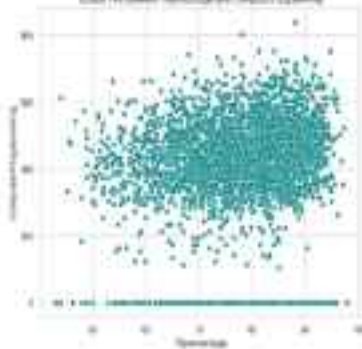


Table 1: Pearson's Chi-square test of the independence between

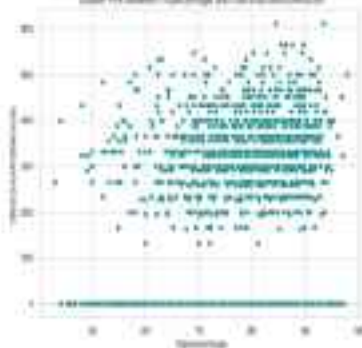


Table 2: Pearson's Chi-square test of the independence between

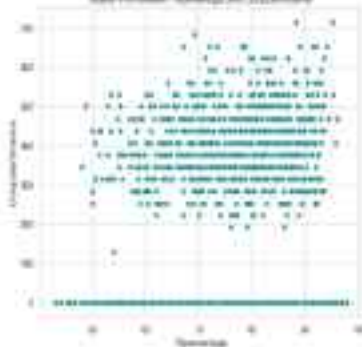


Table Properties (Open to not defined log)

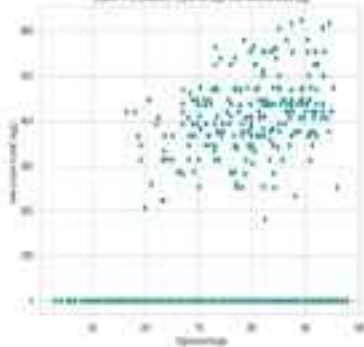
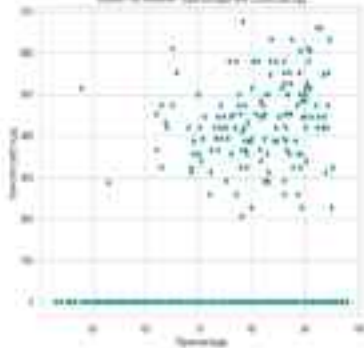
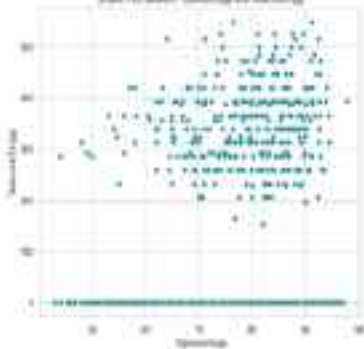


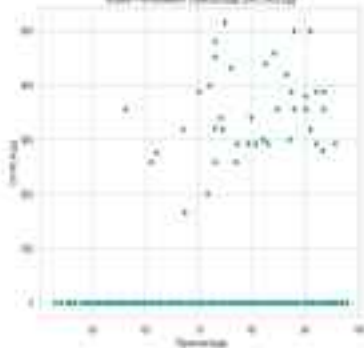
Table Properties (Open to not defined log)



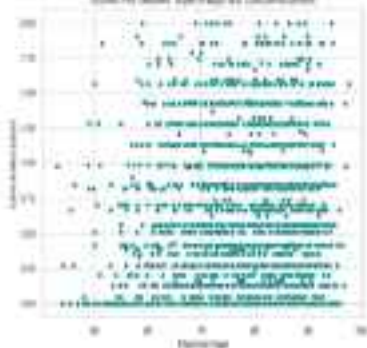
Scatter Plot showing Frequency and Time (top)



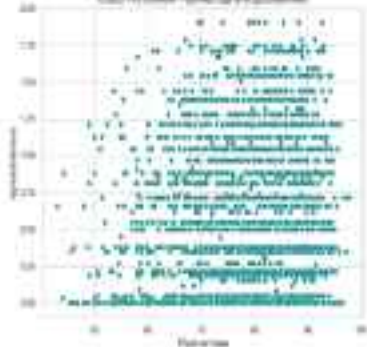
Scatter Plot showing Frequency and Time (bottom)



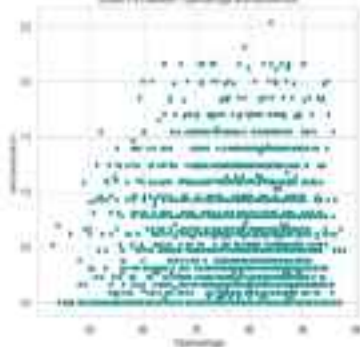
Scatter Plot (Density: Spearman's rho correlation)



Scatter Plot (Density: Spearman's rho correlation)



Scatter Plot of Average Temperature and Precipitation



Scatter Plot of Average Temperature and Precipitation

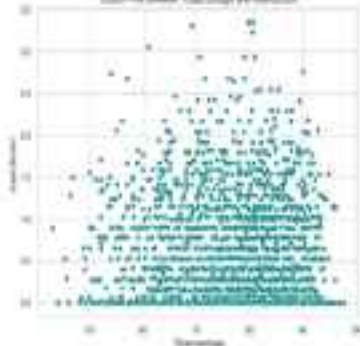


Table 1: Estimated Effect of the 2008 Financial Crisis on the Demand for Health Insurance

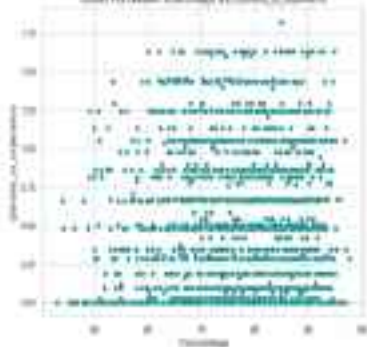


Table 2: Estimated Effect of the 2008 Financial Crisis on the Demand for Health Insurance

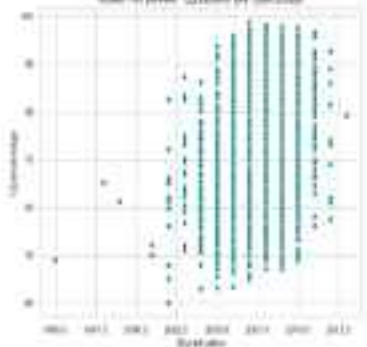


Table 10: Average Temperature and Precipitation

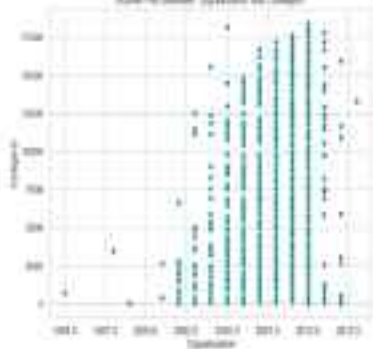
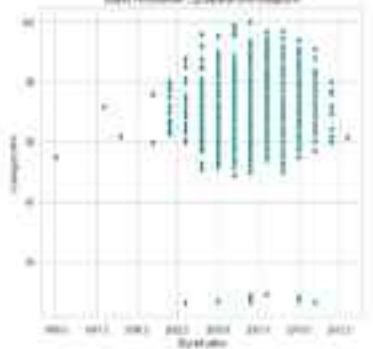
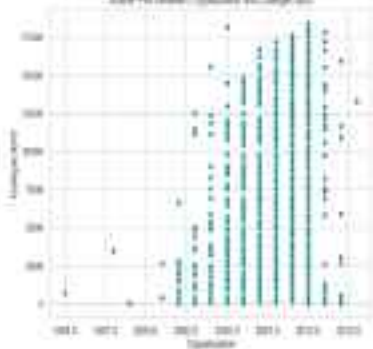


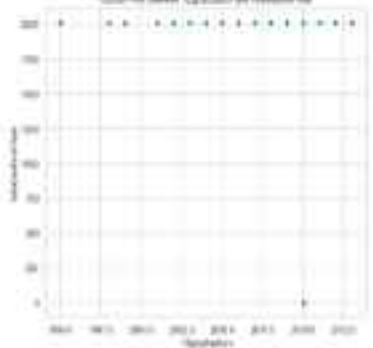
Table 11: Average Temperature and Precipitation



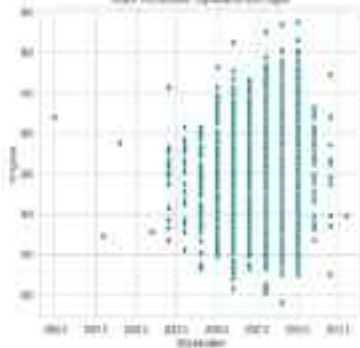
State-Perceived Transparency and College GPA



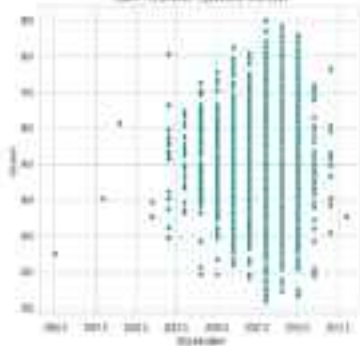
State-Perceived Transparency and College GPA



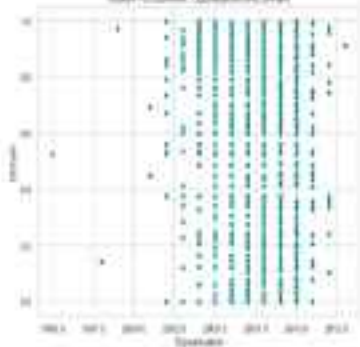
Daily Fluorescence (µg chlorophyll/mg protein)



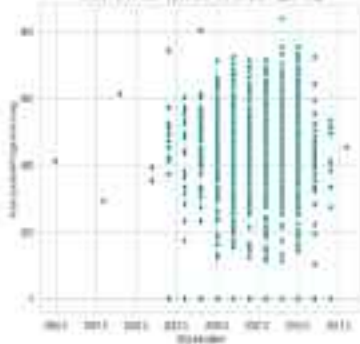
Global Performance: Topicality and Depth



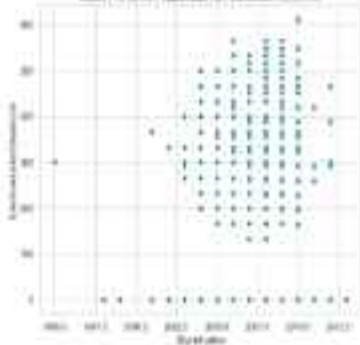
Global Performance: Topicality and Depth



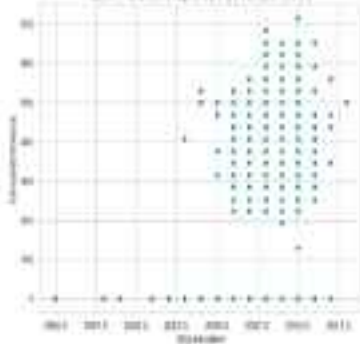
Scatter Plot between Graduation in Computer Programming



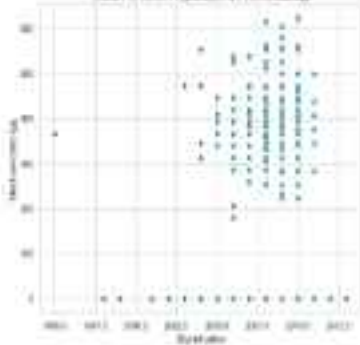
Scatter Plot between Graduation in Communication



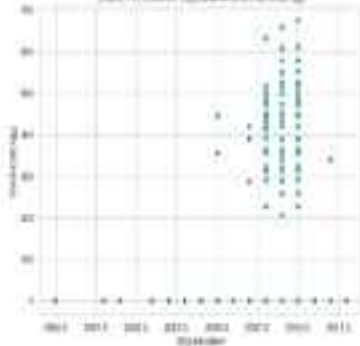
Global Fisheries Tonnage and Concentration



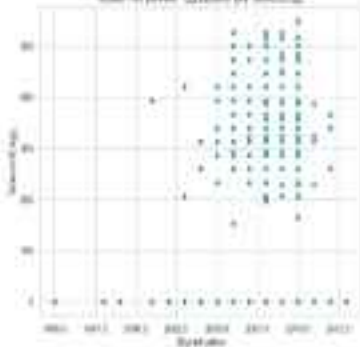
Global Fisheries Tonnage and Concentration



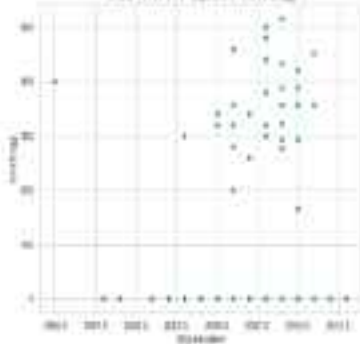
Scatter Plot between "Speed (km/h)" and "Time (days)"



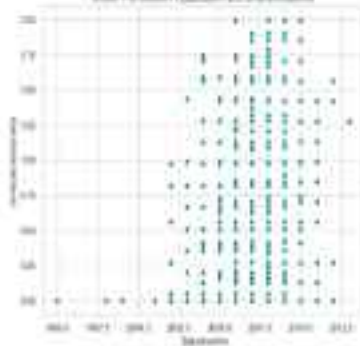
Scatter Plot between "Distance (km)" and "Time (days)"



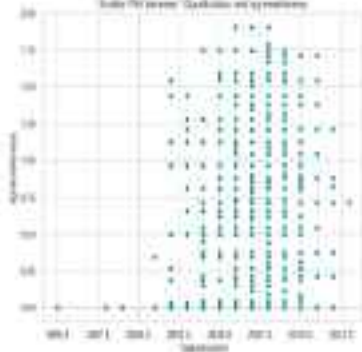
Scale Parameters: Spatial autocorrelation



Scale Parameters: Lagrange multiplier



Scatter Plot showing 'Qualitative' and 'Quantitative'



Scatter Plot showing 'Quantitative' and 'Qualitative'

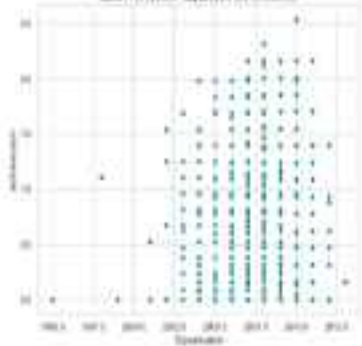


Figure 19: Crossover: Crossover and mutation

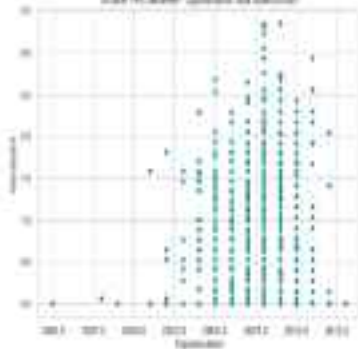
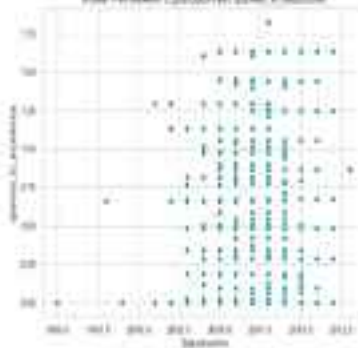
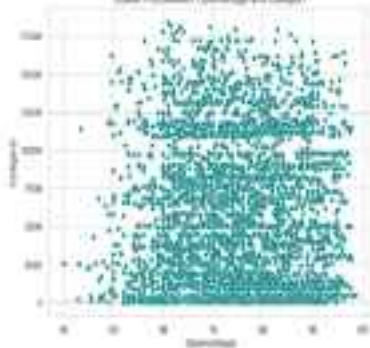


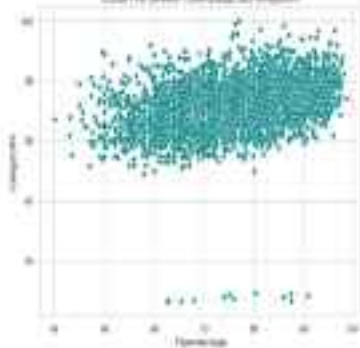
Figure 20: Crossover: Crossover and mutation



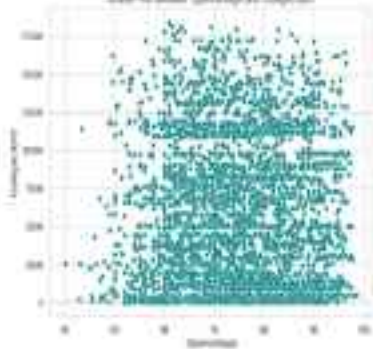
Scatter Plot: Number of Downloads vs CollegeGPA



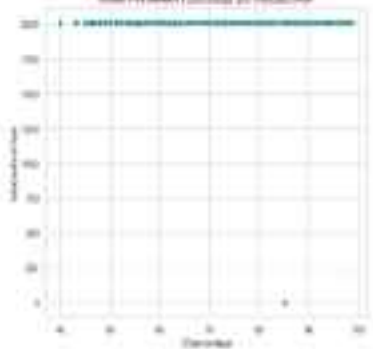
Scatter Plot: Number of Downloads vs Age



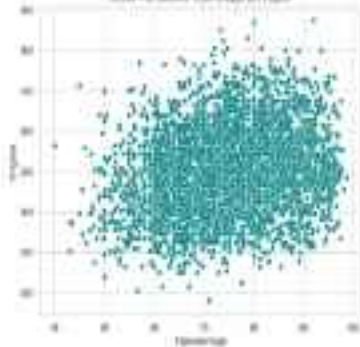
Scatter Plot: Average Gene Expression vs. Gene Length



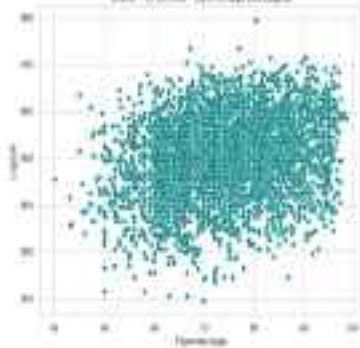
Scatter Plot: Average Gene Expression vs. Gene Length



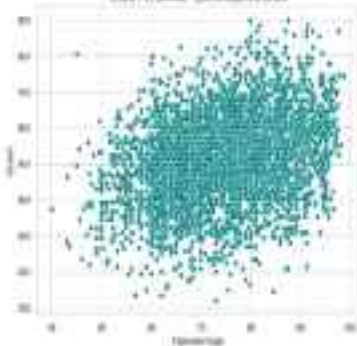
Scatterplot: Number of Employees vs. Turnover



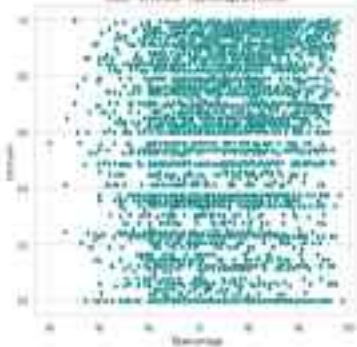
Scatterplot: Number of Employees vs. Turnover



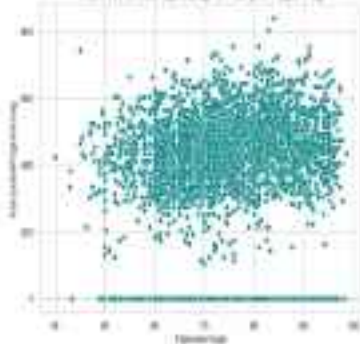
Scatter Plot: Number of Species vs. Depth



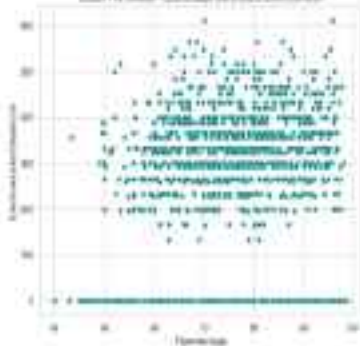
Scatter Plot: Number of Species vs. Depth



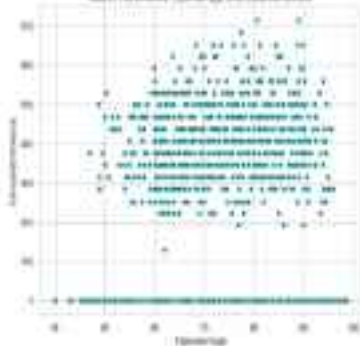
Scatter Plot (Density: 0.0001) and Histogram (Frequency)



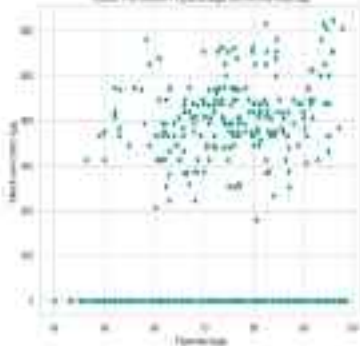
Scatter Plot (Density: 0.0001) and Histogram (Frequency)



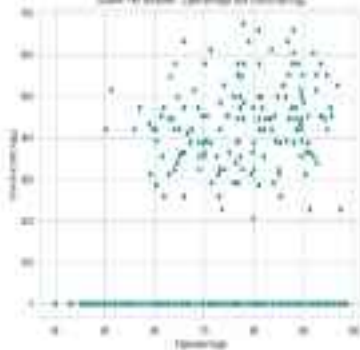
Scatter Plot: Income (Percentage) and Gender (Female)



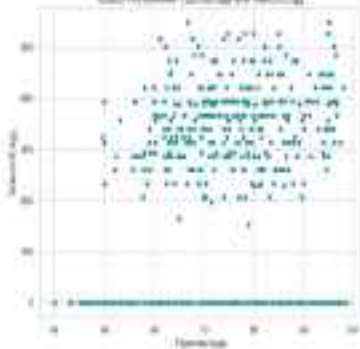
Scatter Plot: Income (Percentage) and Gender (Male)



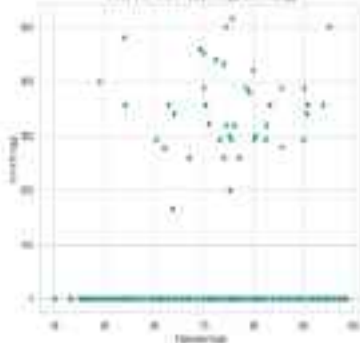
Scatter Plot between Temperature and Humidity



Scatter Plot between Humidity and Rainfall



Scatter Plot: Sales (Percentage of Sales)



Scatter Plot: Sales (Percentage of Sales) vs. Time (Year)

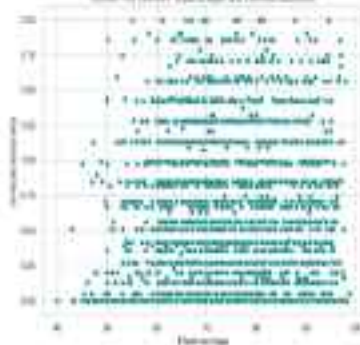


Table 10: (continued) Descriptive and inferential

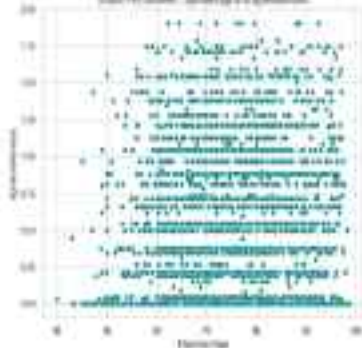


Table 11: (continued) Descriptive and inferential

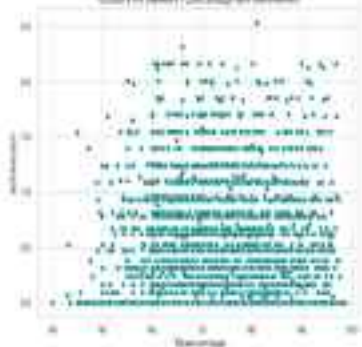


Table 10: Linear Correlation coefficients

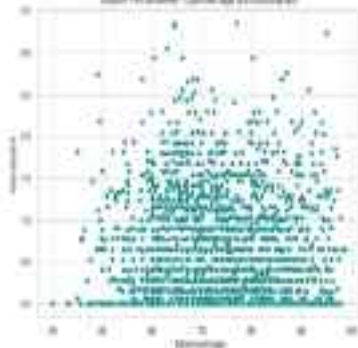
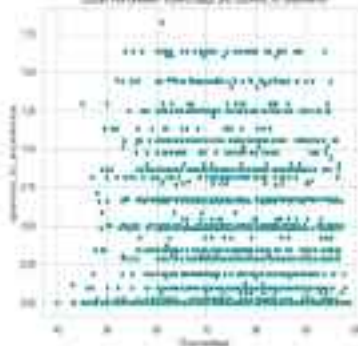
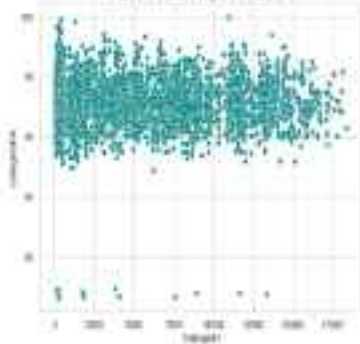


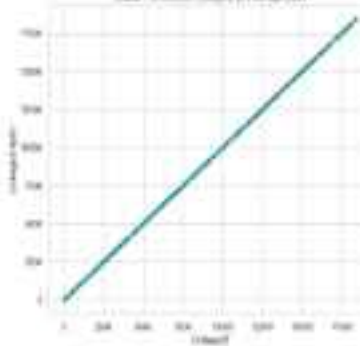
Table 11: Linear Correlation coefficients by position



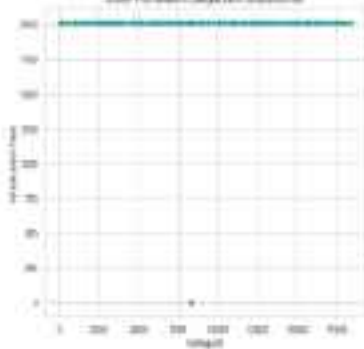
Scatter Plot: Number of Tweets per User (Y) vs User ID (X)



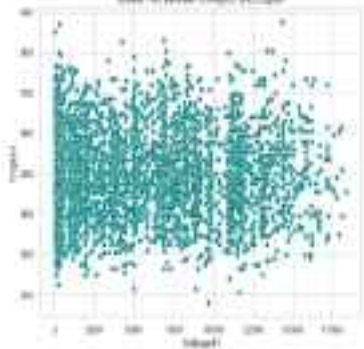
Scatter Plot: Number of Retweets (Y) vs User ID (X)



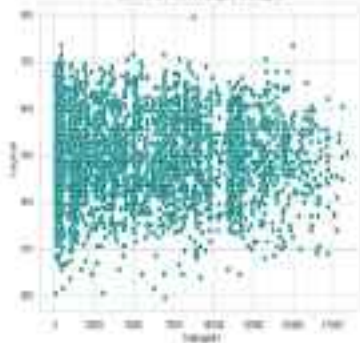
Scatter Plot of Sales (Colleges) and Salesperson's Age



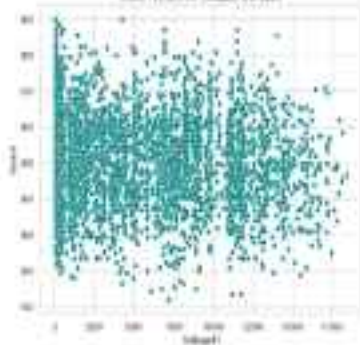
Scatter Plot of Sales (All persons) and Age

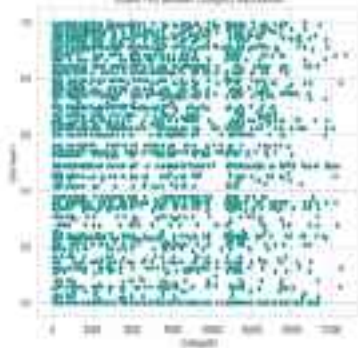
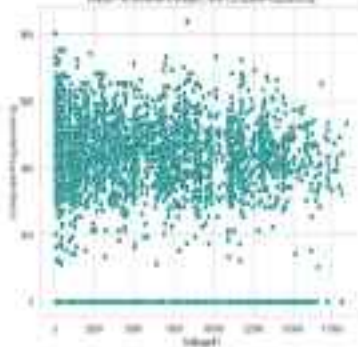


Scatter Plot between Colored and Height

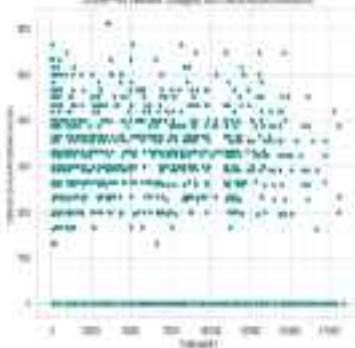


Scatter Plot between Height and Colored

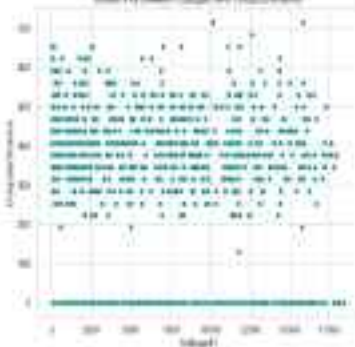


Scatter Plot between $\log_{10}(C)$ and $\log_{10}(D)$ Scatter Plot between $\log_{10}(C)$ and $\log_{10}(D)$ with $\log_{10}(D)$ transformed

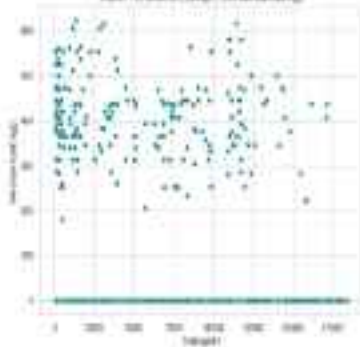
Scatter Plot between CollegeGPA and Section of Difference



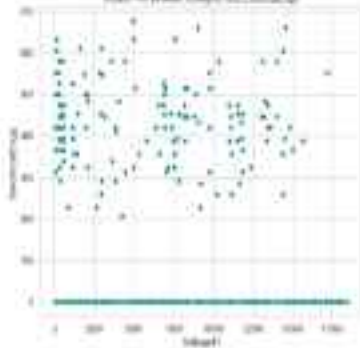
Scatter Plot between CollegeGPA and Section of Difference



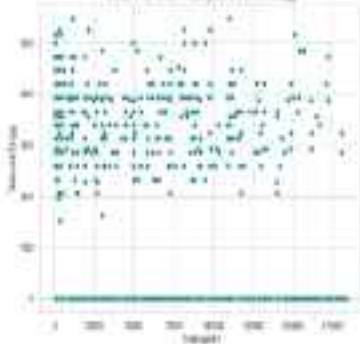
Scatter Plot: average Coverage/Time Ratio vs. age



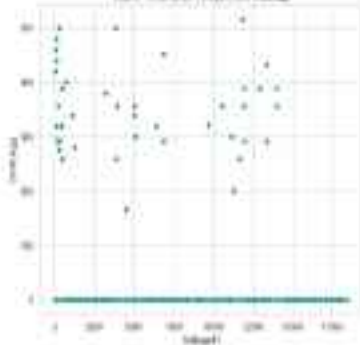
Scatter Plot: average Coverage/Time Ratio vs. subject



Scatter Plot between Callup and Demand (Top)



Scatter Plot between Callup and Demand (Bottom)



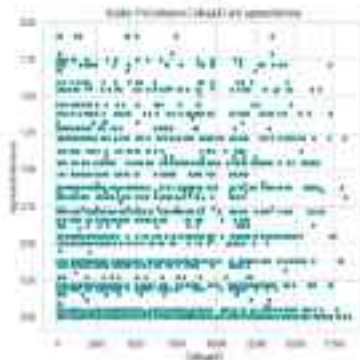
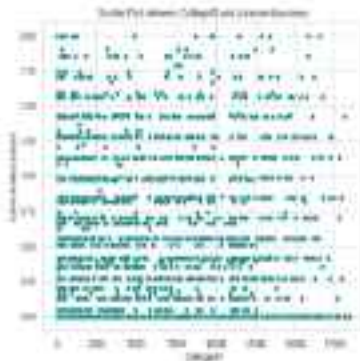
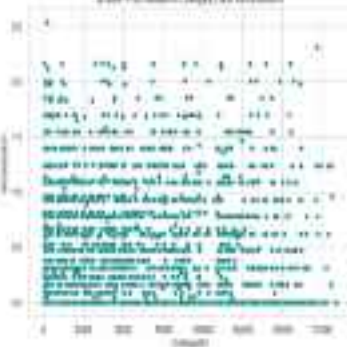
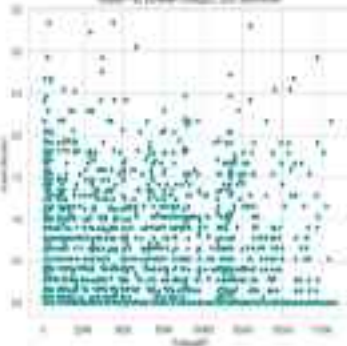
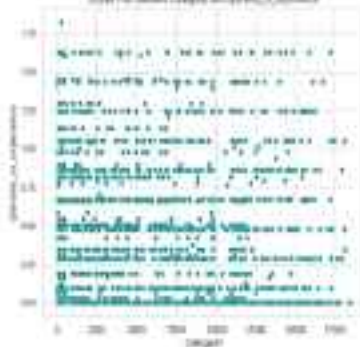
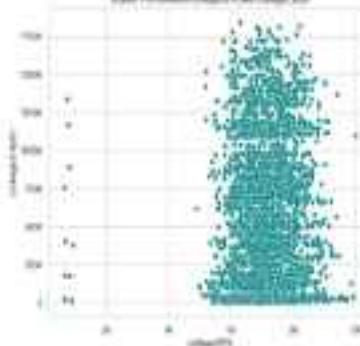


Table 1: The number of points in the set S_n Table 2: The number of points in the set S_n 

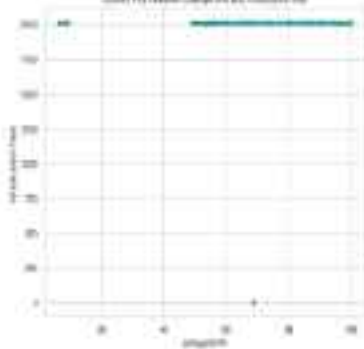
Scatter Plot of Sales Volume (Y-axis) vs. Price (X-axis)



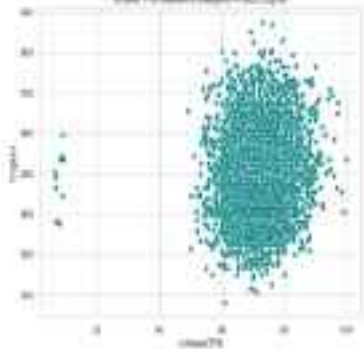
Scatter Plot of Sales Volume (Y-axis) vs. Price (X-axis)



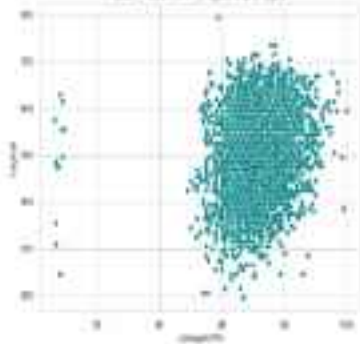
Quilley T50 random-collapse T50 and Quilley's map



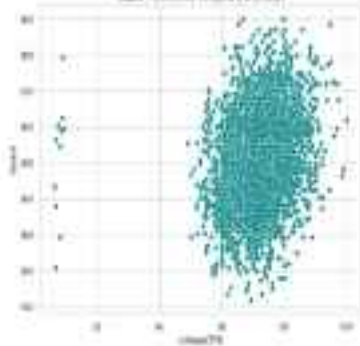
Scale Transformation collapse T50 and Quilley's map



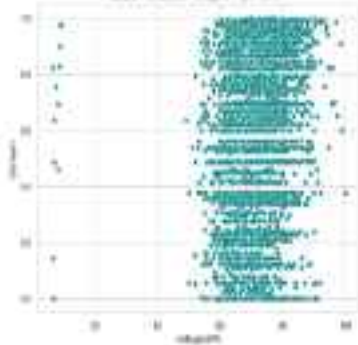
Quake 1905: seismicity 1905-01-01 to 1905-01-01



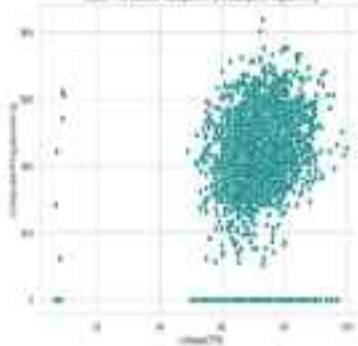
Quake 1905: seismicity 1905-01-01 to 1905-01-01



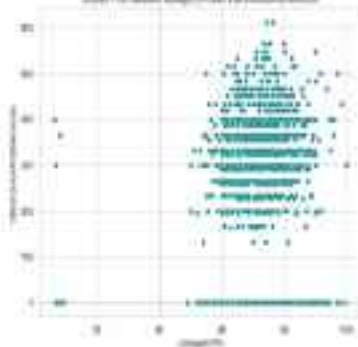
Scatter Plot between $\log(\text{length})$ vs $\log(\text{mass})$



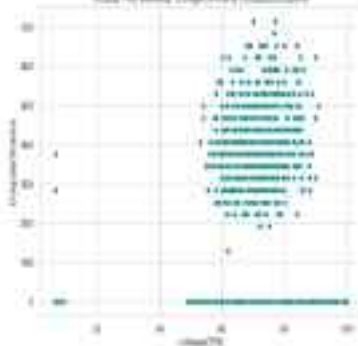
Scatter Plot between $\log(\text{length})$ vs $\log(\text{mass})$ with $\log(\text{mass})$ on the y-axis



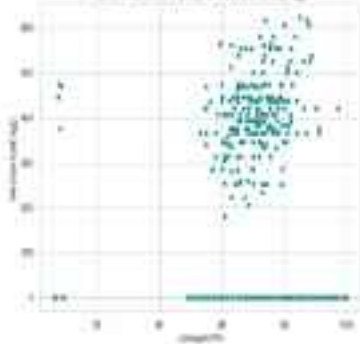
Stacked Plot (columns: column1, column2) vs. The (column3) Dimension



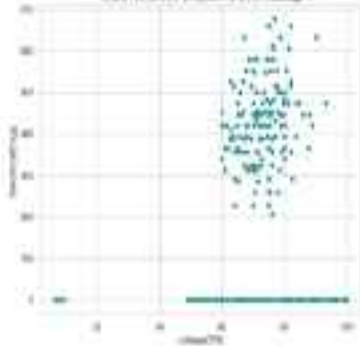
Stacked Plot (columns: column1, column2) vs. The (column3) Dimension



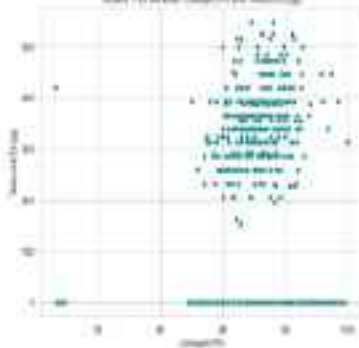
Scatter Plot between length and weight



Scatter Plot between length and weight



Scatter Plot between length and abundance



Scatter Plot between abundance and growth

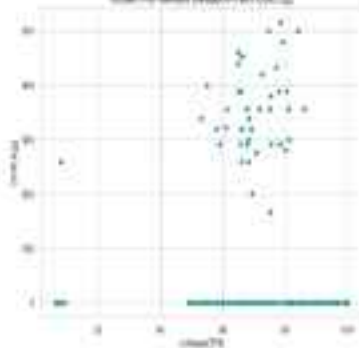


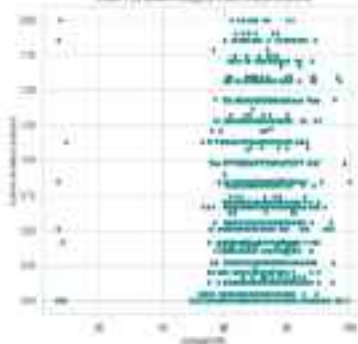
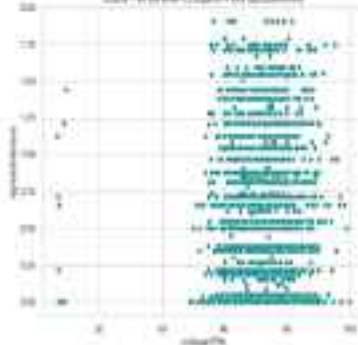
Table 1: Parameters of the \mathcal{H}_2 norm of the systemTable 2: Parameters of the \mathcal{H}_2 norm of the system

Table 1: Correlation coefficients and p-values

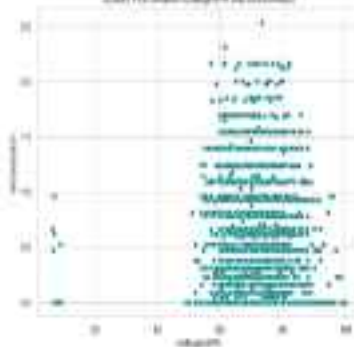
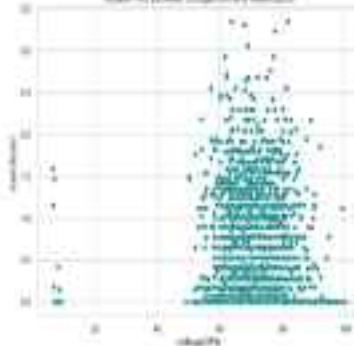
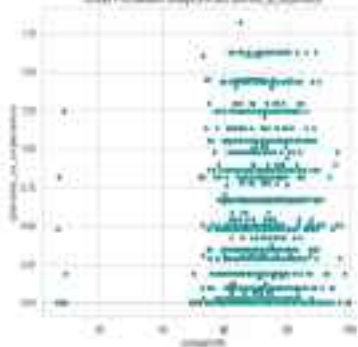


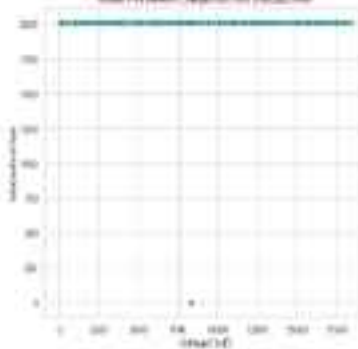
Table 2: Correlation coefficients and p-values



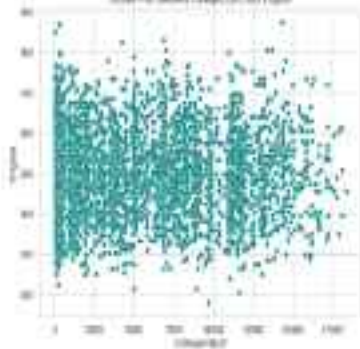
Study 1: Polymers of 2,2,2-trifluoroethyl acrylate (TFEA) and 2,2,2-trifluoroethyl methacrylate (TFEMA)



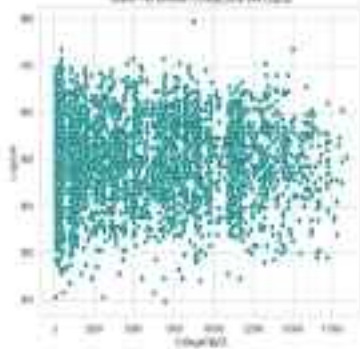
Study 2: Polymers of 2,2,2-trifluoroethyl acrylate (TFEA) and 2,2,2-trifluoroethyl methacrylate (TFEMA)



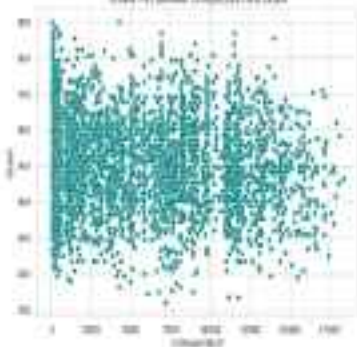
Scatter Plot showing College GPA vs. Freshman



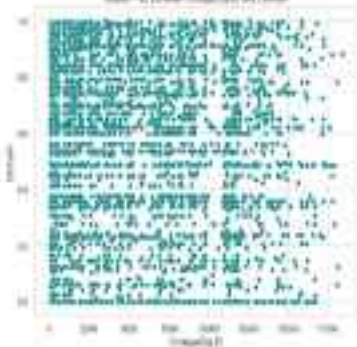
Scatter Plot showing College GPA vs. SAT Score



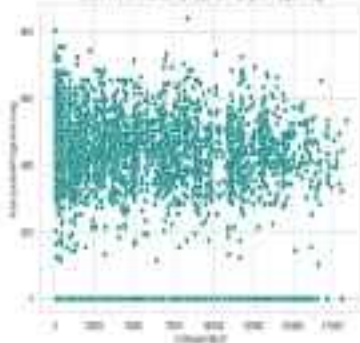
Scatter Plot Between College GPA and Demand



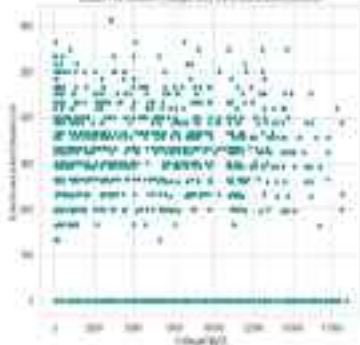
Scatter Plot Between College GPA and Demand



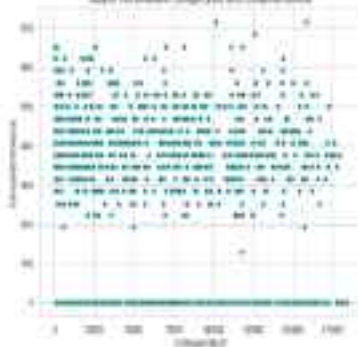
Scatter Plot (Density: 0.02) of Age and Height



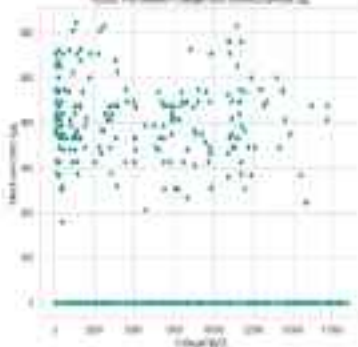
Scatter Plot (Density: 0.02) of Age and Weight



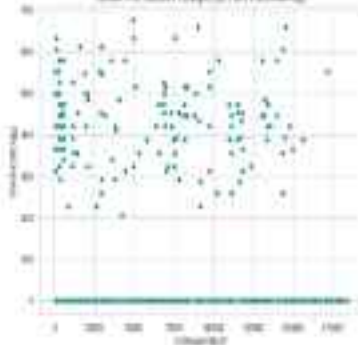
Scatter Plot between College GPA and Computer Science



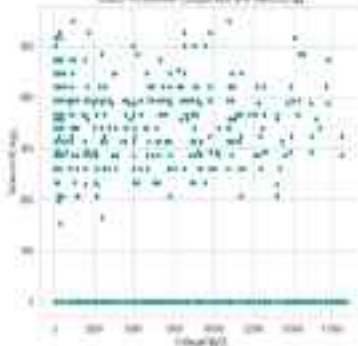
Scatter Plot between College GPA and Computer Science



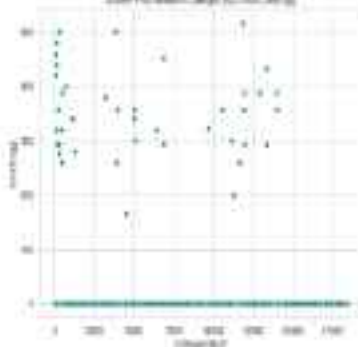
Scatter Plot: Number of Collections vs. Time (Days)



Scatter Plot: Number of Collections vs. Time (Days)



Scatter Plot between College GPA and GRE Score



Scatter Plot between College GPA and GRE Score with Regression Line

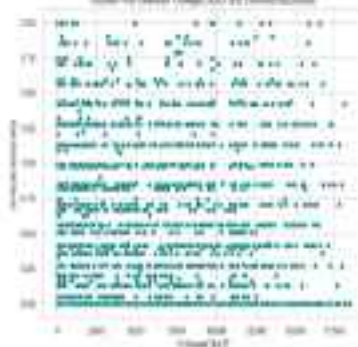


Table 1: The proposed (Gauged) GUT and supersymmetry

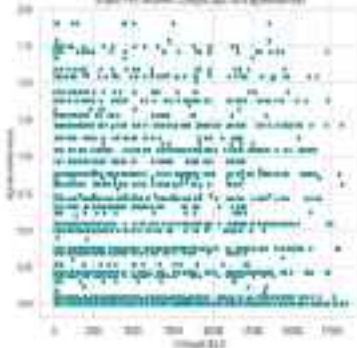
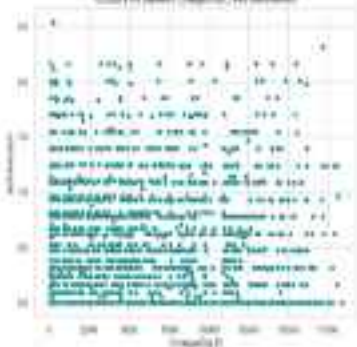
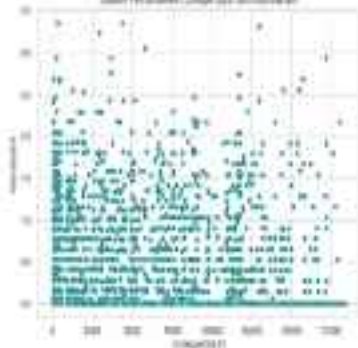


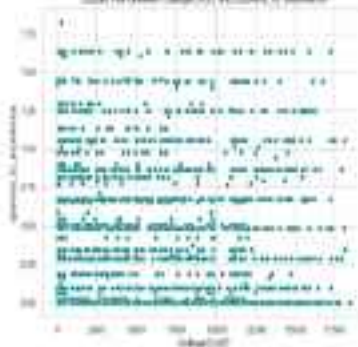
Table 1: The proposed (Gauged) GUT and supersymmetry



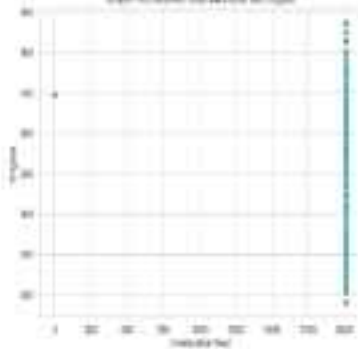
Scatter Plot (Density Group) of $\ln(\text{Density})$ vs $\ln(\text{Density})$



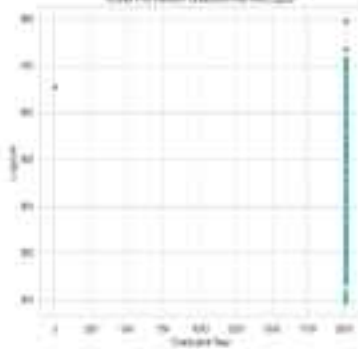
Scatter Plot (Density Group) of $\ln(\text{Density})$ vs $\ln(\text{Density})$



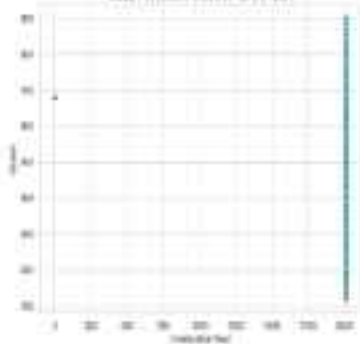
Scatter Plot between Total job tenure and Height



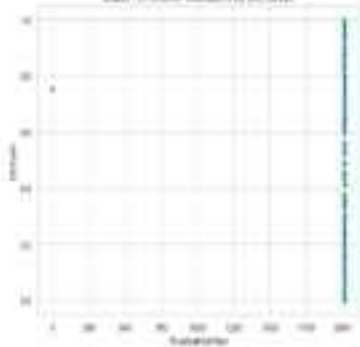
Scatter Plot between Gender and Height



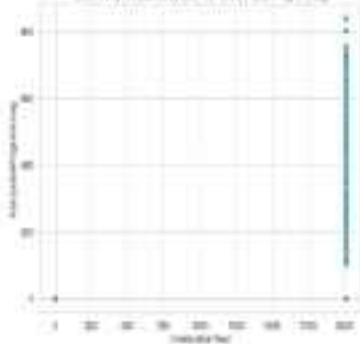
Water Parameters: Temperature and Dissolved Oxygen



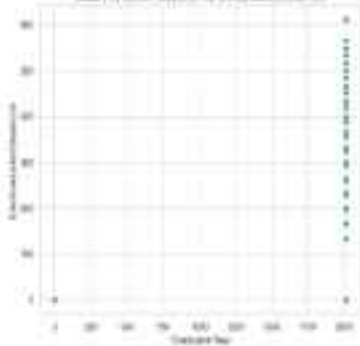
Water Parameters: Conductivity and pH



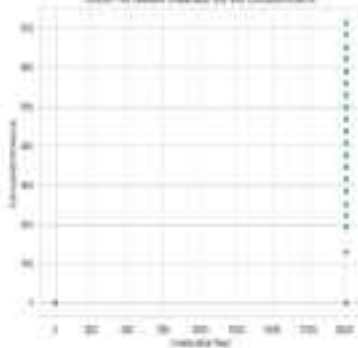
Scatter Plot between Study about Time and Computer Programming



Scatter Plot between Study about Time and Communication Research



Cluster Plot between Cluster Size (Size) and Cluster Influence



Cluster Plot between (1) cluster size and (2) cluster influence

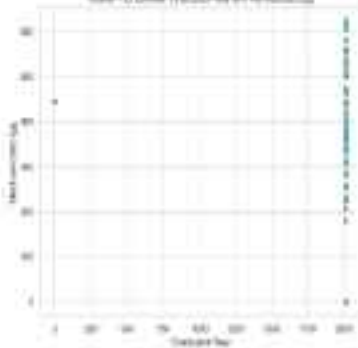


Table 1: Mean and Standard Deviation of the Data

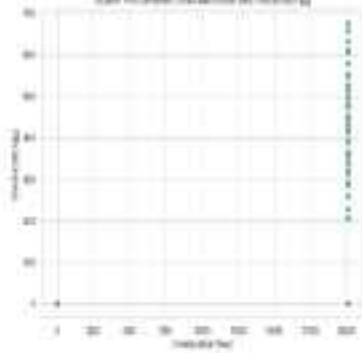
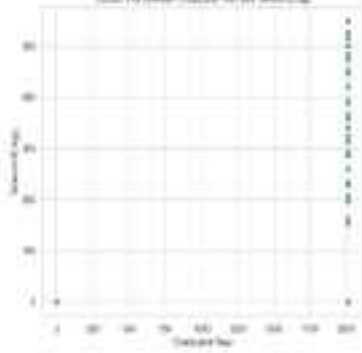
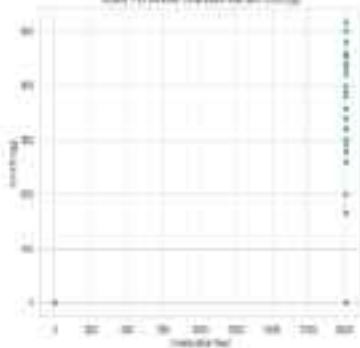


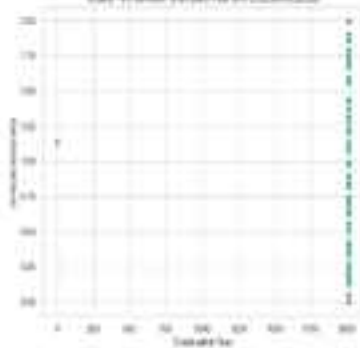
Table 2: Mean and Standard Deviation of the Data



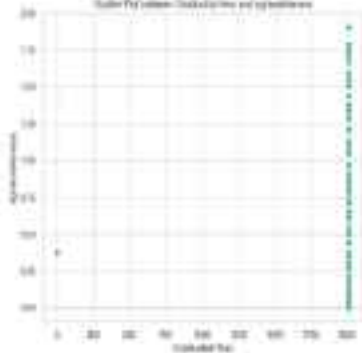
Study the power distribution and cooling



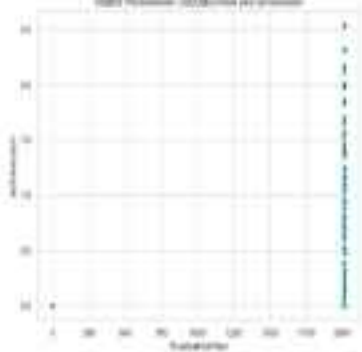
Study the power distribution and concentration



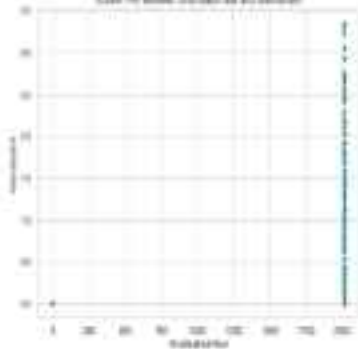
Student Perceptions: Checklist items and responses



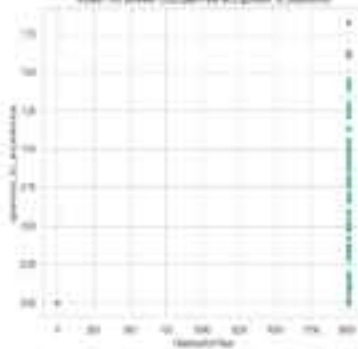
Student Perceptions: Checklist items and responses



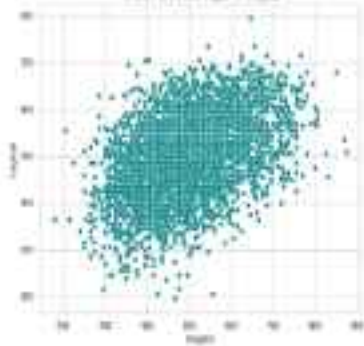
Scatter Plot: Income, Consumption and Investment



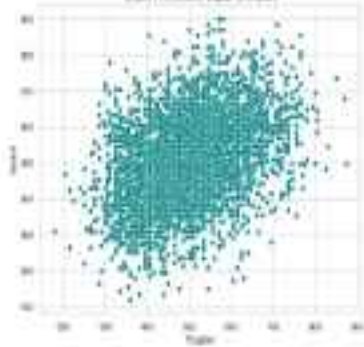
Scatter Plot: Income, Consumption and Investment



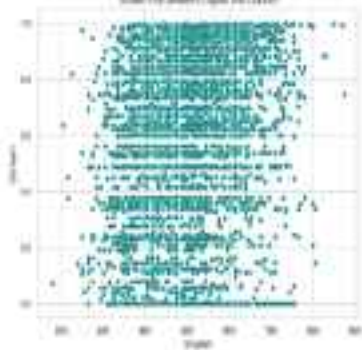
Scatter Plot between Top and Bottom



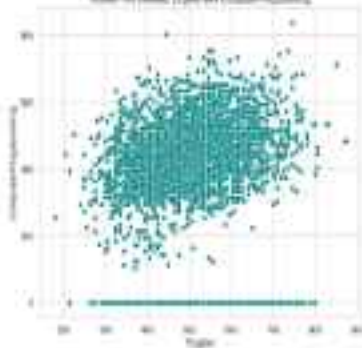
Scatter Plot between Top and Quot



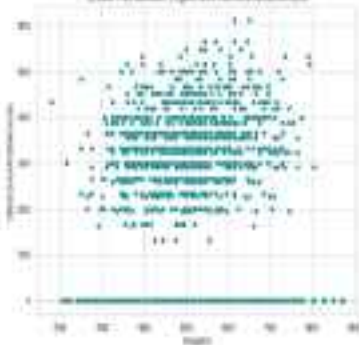
Scatter Plot showing Type and Class



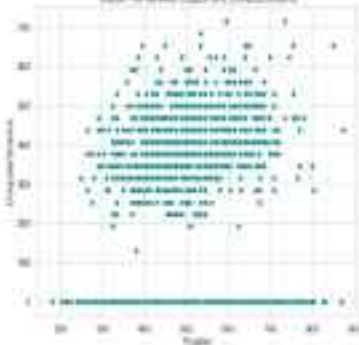
Scatter Plot showing Type and ContinuousProcessing



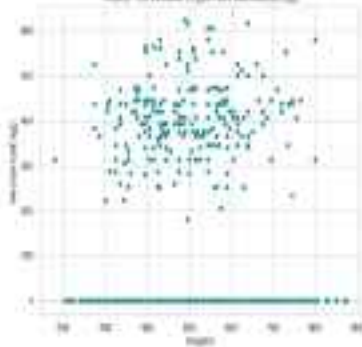
Scatter Plot between PageRank and Average Out-Degrees



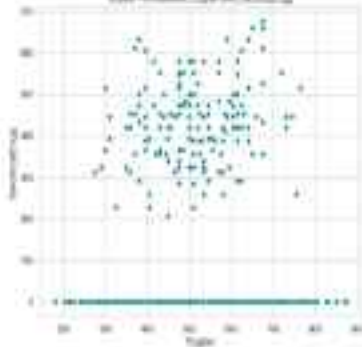
Scatter Plot between PageRank and In-Degrees



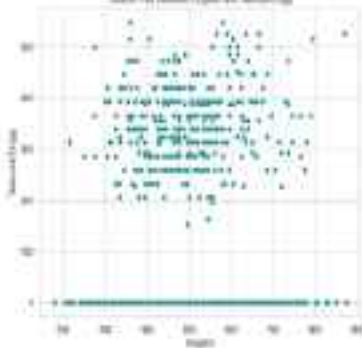
Scatter Plot of Average Degree and Maximum Out-Degree



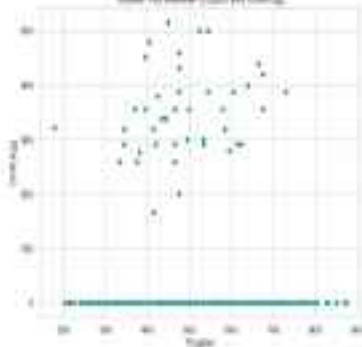
Scatter Plot of Average In-Degree and Maximum In-Degree



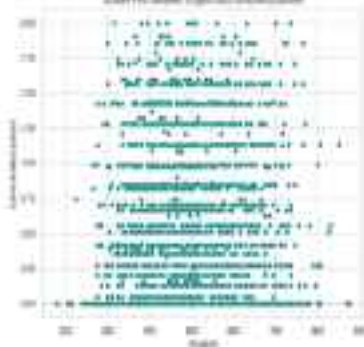
Scatter Plot: Number of people per building



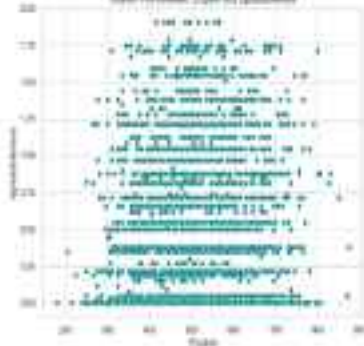
Scatter Plot: Number of people per building



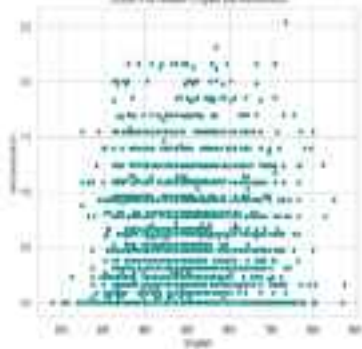
Scatter Plot: Average English Score vs. Mathematics Score



Scatter Plot: Average English Score vs. Mathematics Score



Scatter Plot of Number of Days per week and satisfaction



Scatter Plot of Number of Days per week and satisfaction

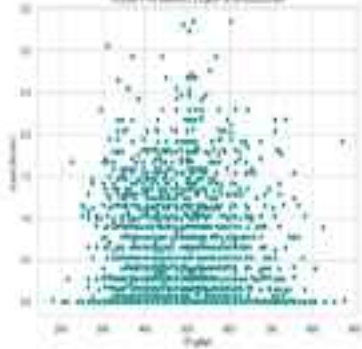


Table 1: Summary Statistics and Descriptive Statistics

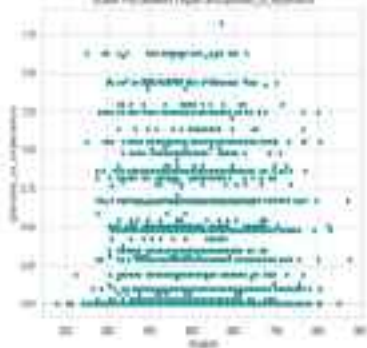


Table 2: Summary Statistics and Descriptive Statistics

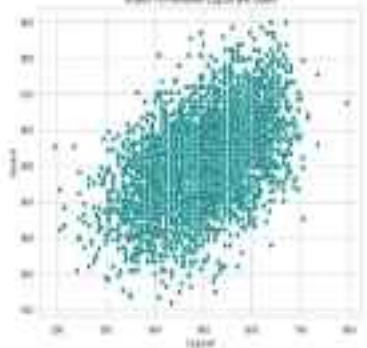


Figure 10: Simulated eigenvalues and eigenvectors

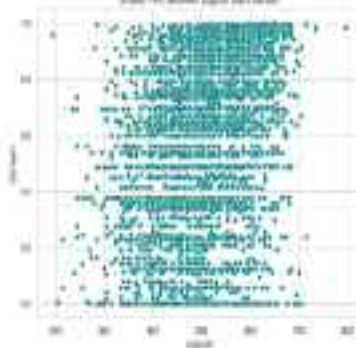


Figure 11: Simulated eigenvalues and eigenvectors

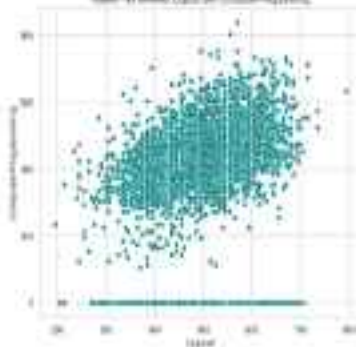


Table 10: primary : approx (1) (continued)

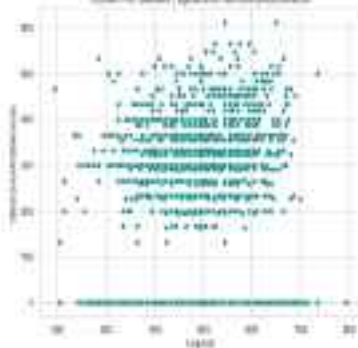
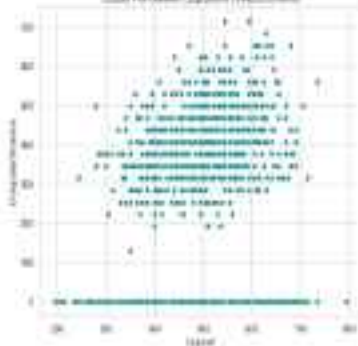
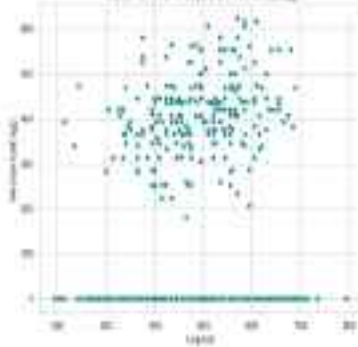


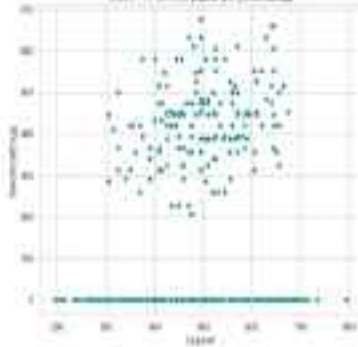
Table 10: primary : approx (2) (continued)



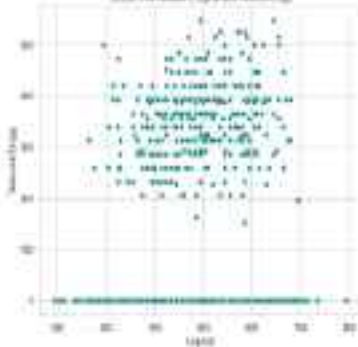
Scatter Plot: Average Length vs. Average Weight



Scatter Plot: Average Length vs. Average Weight



Scatter Plot: Number of species per site (log10)



Scatter Plot: Number of species per site (log10)

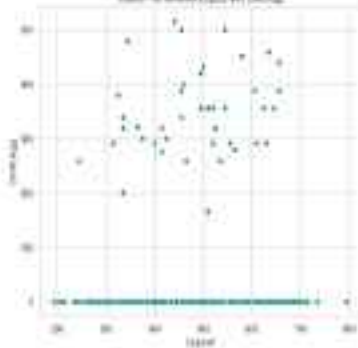


Table 1: Parameters of the $U(1)$ gauge symmetry

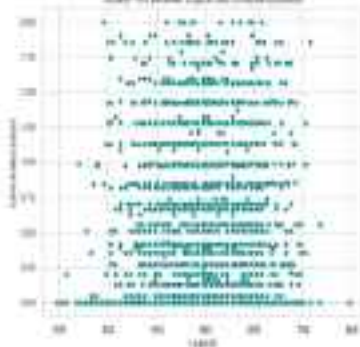


Table 2: Parameters of the $U(1)$ gauge symmetry

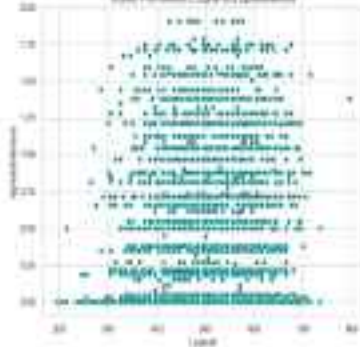


Figure 10: Scatter plot of $\log_{10}(\text{value})$ vs $\log_{10}(\text{value})$

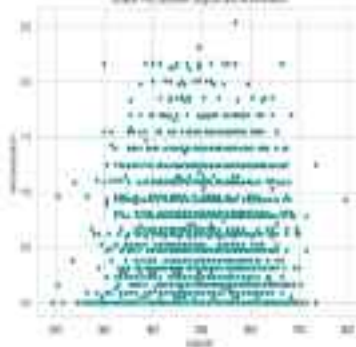
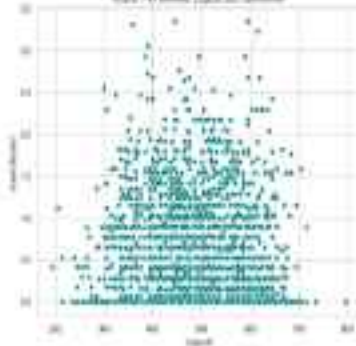
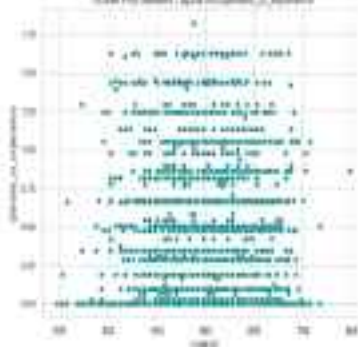


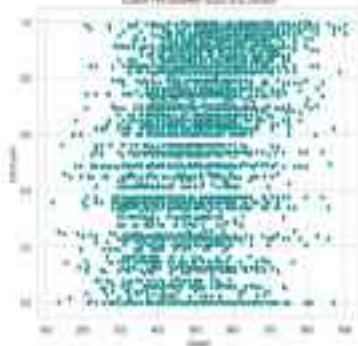
Figure 11: Scatter plot of $\log_{10}(\text{value})$ vs $\log_{10}(\text{value})$



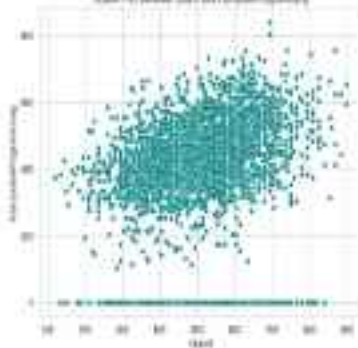
Scatter Plot (Density) of \log_{10} (number of species) vs. \log_{10} (number of individuals)



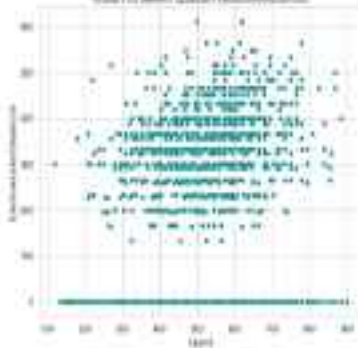
Scatter Plot (Density) of \log_{10} (number of species) vs. \log_{10} (number of individuals)



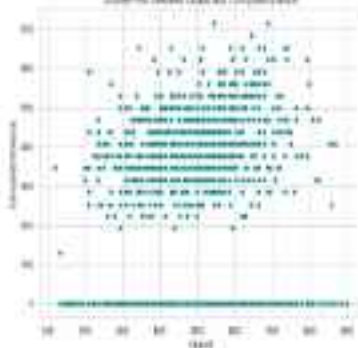
Scatter Plot Between "Year" and "Frequency"



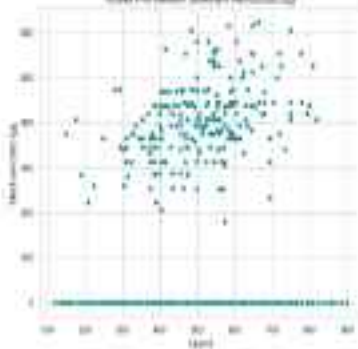
Scatter Plot Between "Year" and "Frequency"



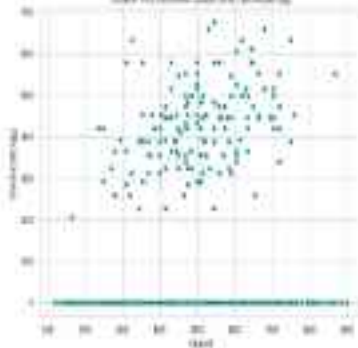
Scatter Plot between Grouped as Discontinued Operation



Scatter Plot between Grouped as Reorganizing



Scatter Plot: Income, Gender and Education



Scatter Plot: Income, Gender and Education

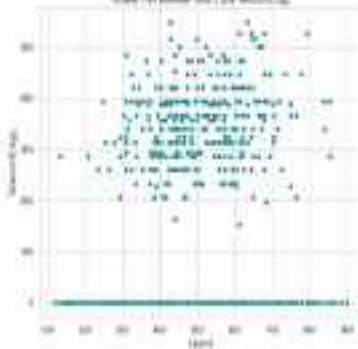


Table 10: Average Gap and Challenge

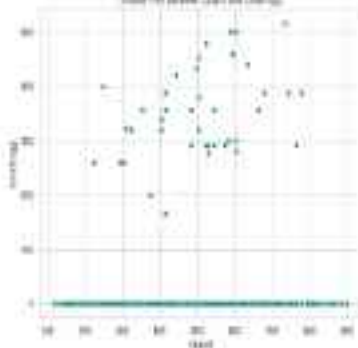


Table 11: Average Gap and Challenge

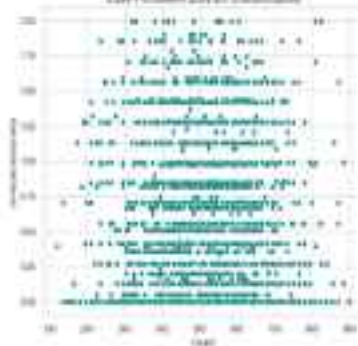


Table 1: Summary of the results of the regression analysis

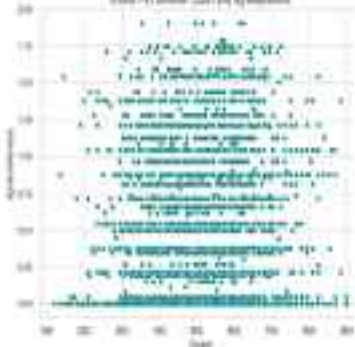


Table 2: Summary of the results of the regression analysis

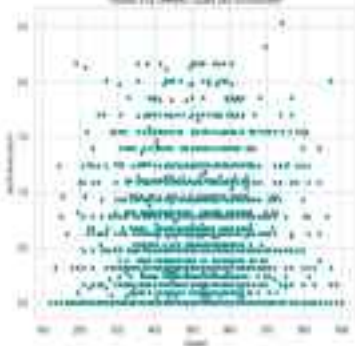


Figure 17: Scatter plot of $\log_{10}(\text{mean})$ vs $\log_{10}(\text{var})$

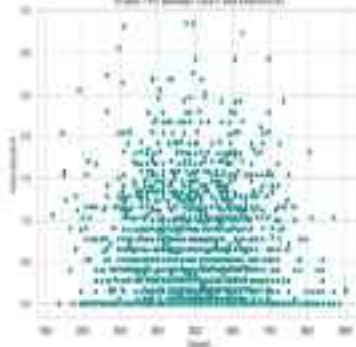


Figure 18: Scatter plot of $\log_{10}(\text{mean})$ vs $\log_{10}(\text{var})$

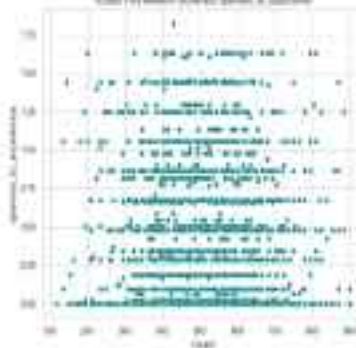


Table 7: Average Scores and Standard Deviations

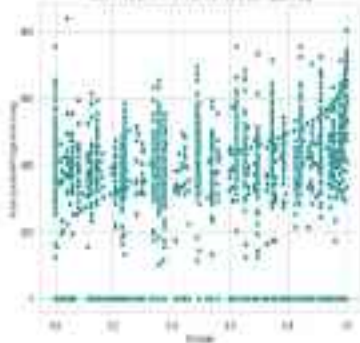
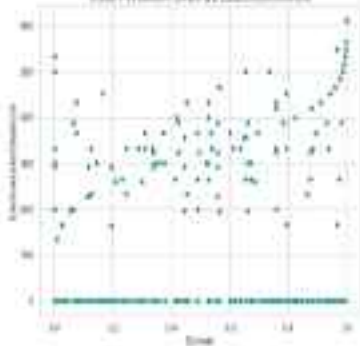
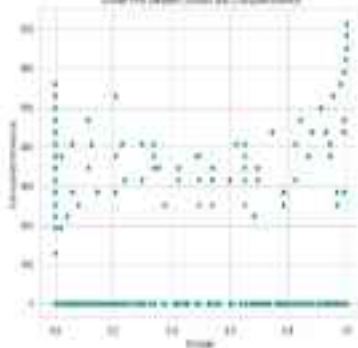


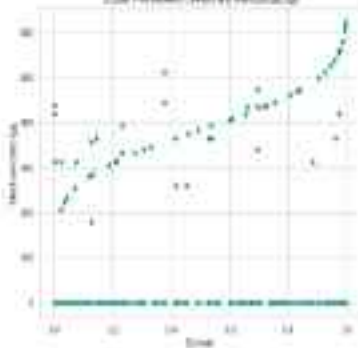
Table 8: Average Scores and Standard Deviations



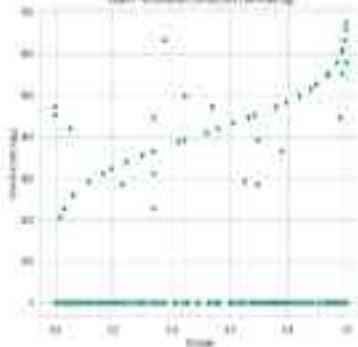
Scatter Plot between Degree and Computer Science



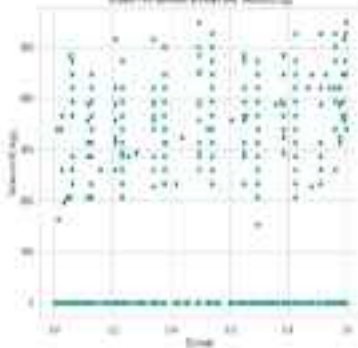
Scatter Plot between Degree and Mathematics



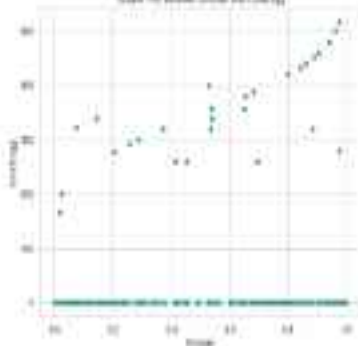
Scatter Plot (Randomly Generated Time Series Data)



Scatter Plot (Randomly Generated Time Series Data)



Scatter Plot: Income (Income) vs College



Scatter Plot: Income (Income) vs College

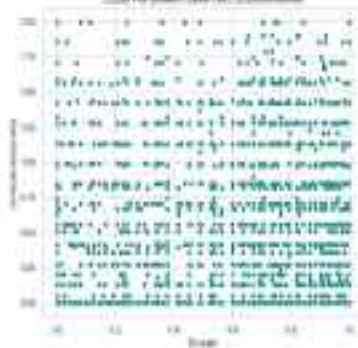


Figure 19: General Theorem on approximation

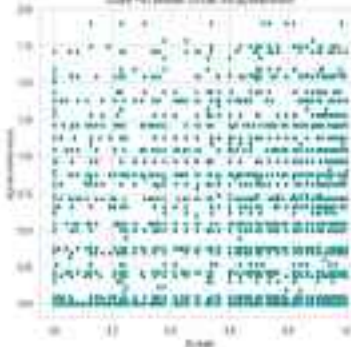
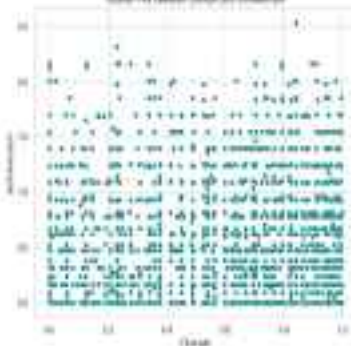
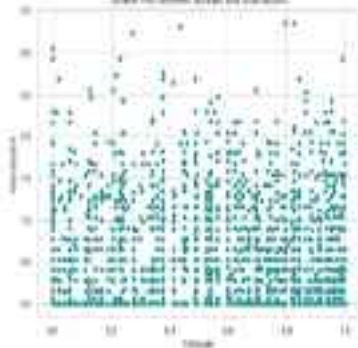


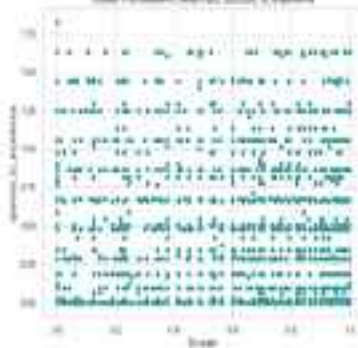
Figure 20: General Theorem on approximation



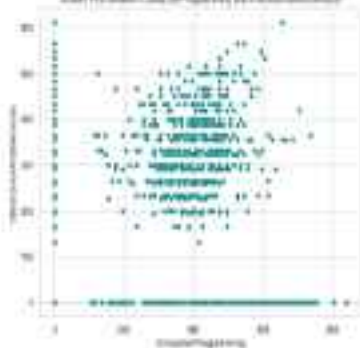
Scatter Plot (Random, Discrete and Continuous)



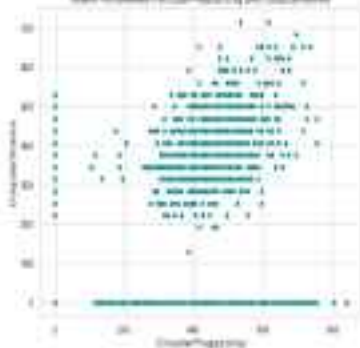
Scatter Plot (Random, Discrete and Continuous)



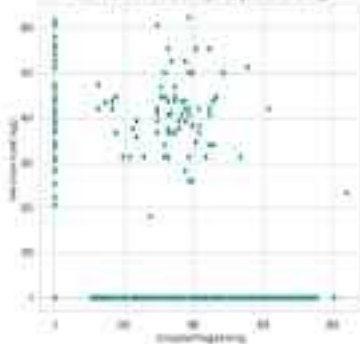
Scatter Plot of Mean Days off Property vs. The Number of Days



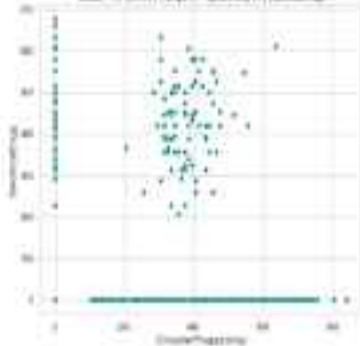
Scatter Plot of Mean Days off Property vs. The Number of Days



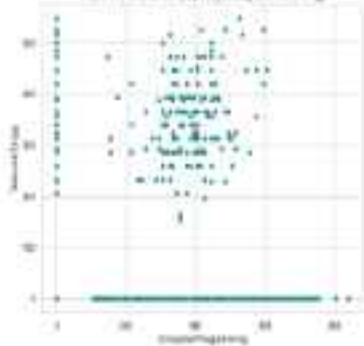
Scatter Plot of Sales (log transformed) vs Advertising



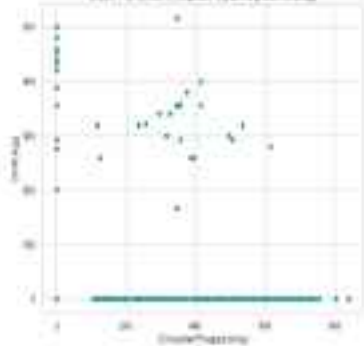
Scatter Plot of Sales (log transformed) vs Advertising



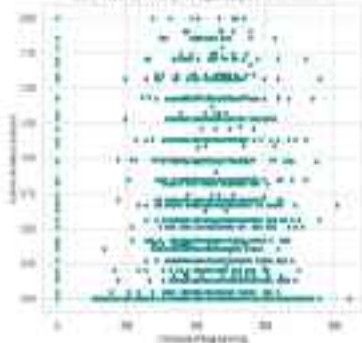
Scatter Plot of Average Group Performance and Standard Deviation



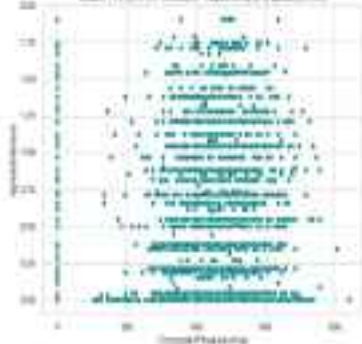
Scatter Plot of Average Group Performance and Standard Deviation



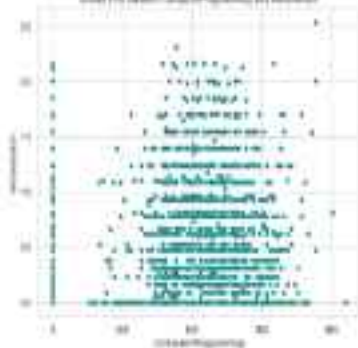
Staller, P. G. (2004). *Disruptive Technology: The Remarkable Power of Simple, Cheap Solutions to Destroy Markets—and How to Survive Them*. New York: Free Press.



Estimating the number of people in the population



Scatter Plot of Number of Programmers and Software



Scatter Plot of Number of Programmers and Software

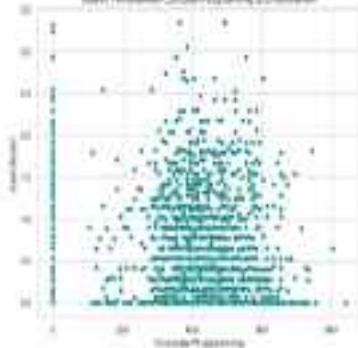


Table 11: Values of \mathcal{C}_{eff} for various parameters in experiment

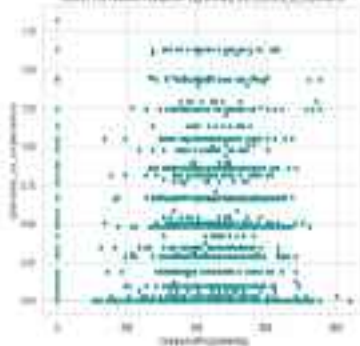


Table 12: Values of \mathcal{C}_{eff} for various parameters in experiment

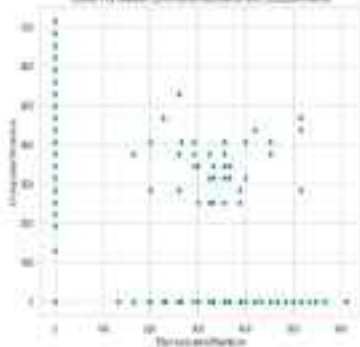


Figure 17: Scatter Plot of $\log_{10}(\text{mean}(\text{log}_2(\text{CPM})))$ vs $\log_{10}(\text{mean}(\text{log}_2(\text{CPM})))$

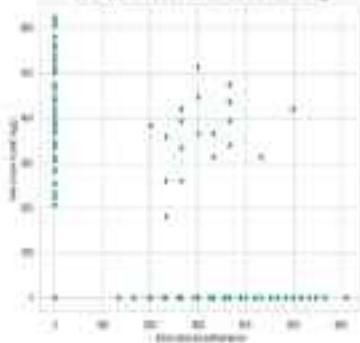


Figure 18: Scatter Plot of $\log_{10}(\text{mean}(\text{log}_2(\text{CPM})))$ vs $\log_{10}(\text{mean}(\text{log}_2(\text{CPM})))$

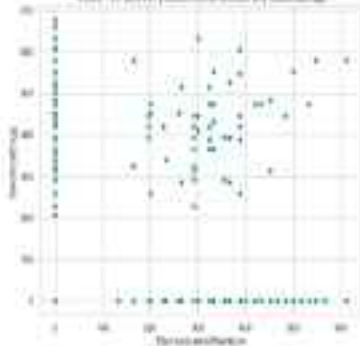


Table 14: Linear Regression coefficients and Threshold

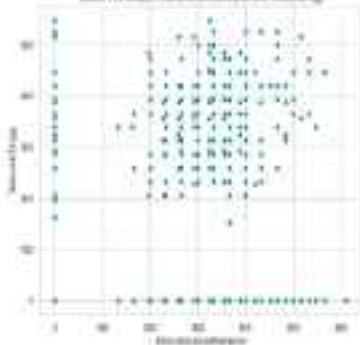
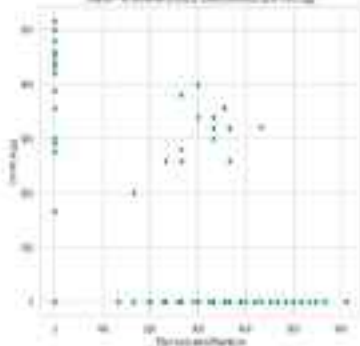
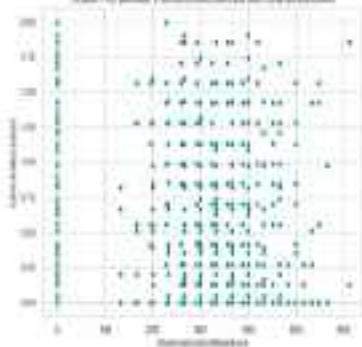


Table 15: Linear Regression coefficients and Threshold



Scatter Plot between *Thermotolerant Coliforms* and *colony forming units*



Scatter Plot between *Thermotolerant Coliforms* and *colony forming units*

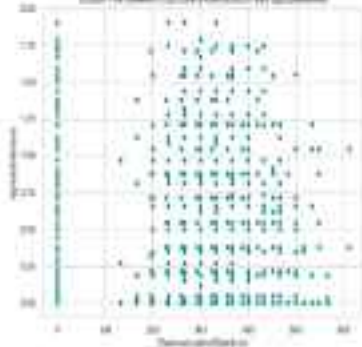


Table 10: Average True Losses (standard errors and estimates)

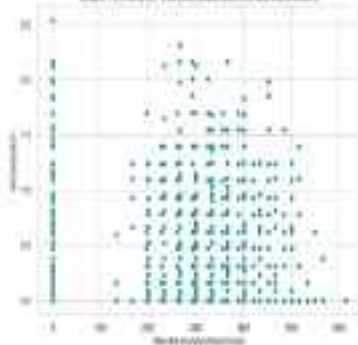
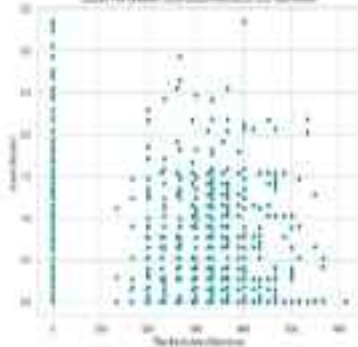
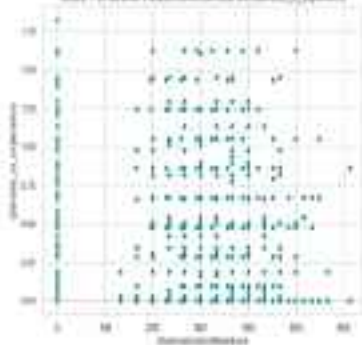


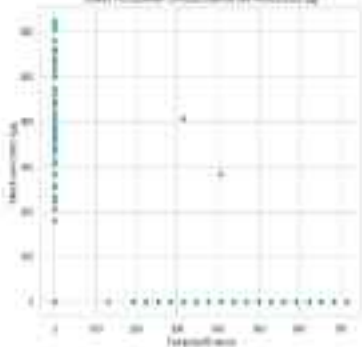
Table 11: Average True Losses (standard errors and estimates)



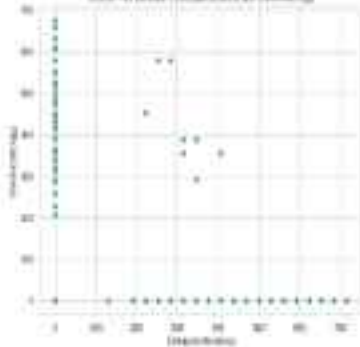
Scatter Plot of Average Test Score (score) versus Number of Days (days)



Scatter Plot of Average Test Score (score) versus Number of Days (days)



Scatter Plot between Consideration and Technical Skill



Scatter Plot between Importance and Interest

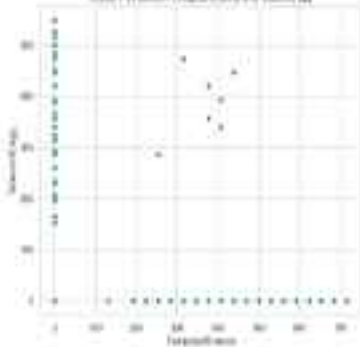


Figure 10: Relative Concentration of ^{137}Cs and ^{134}Cs

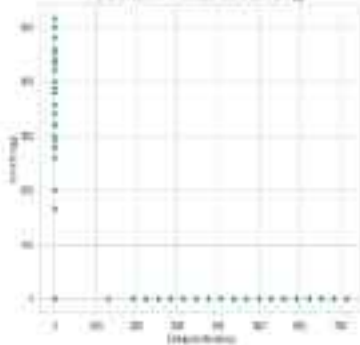


Figure 11: Relative Concentration of ^{137}Cs and ^{134}Cs

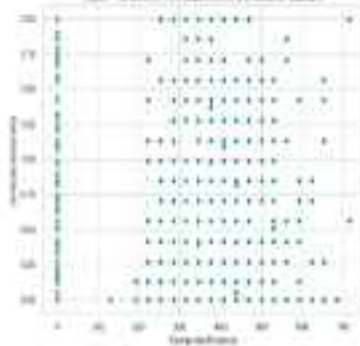


Table 1: The number of points in the xy -plane

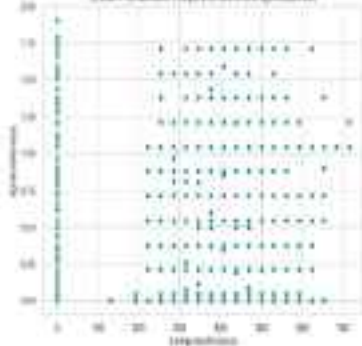


Table 2: The number of points in the xy -plane

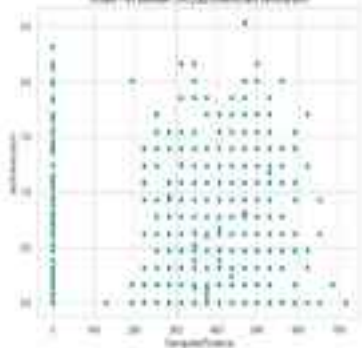


Figure 10: (upper) Cumulative distribution function

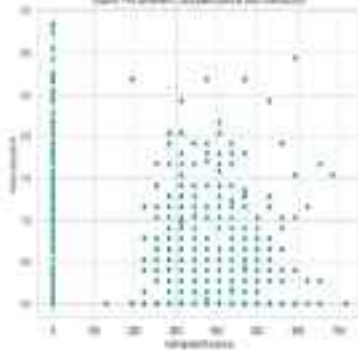
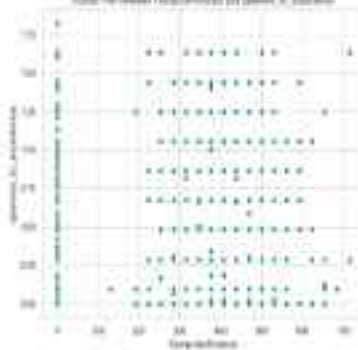
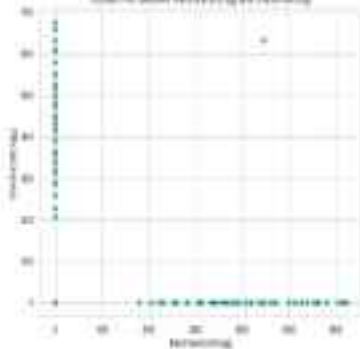


Figure 10: (lower) Empirical distribution function



Scatter Plot: Average Metrics (offlog and Onboardlog)



Scatter Plot: Average Metrics (offlog and Onboardlog)

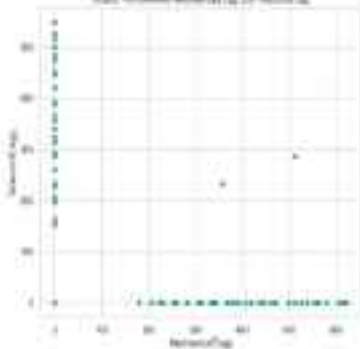


Table 1: Values of Relative Fog and Cloud Fog

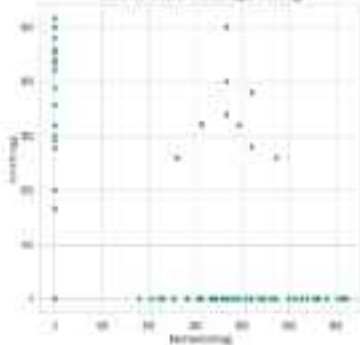
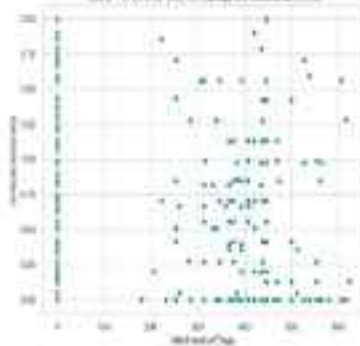
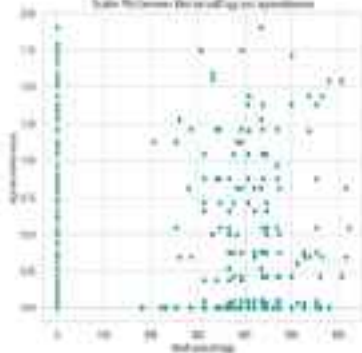


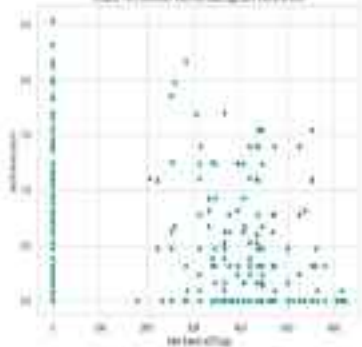
Table 2: Linear Regression of Cloud Fog and Relative Fog



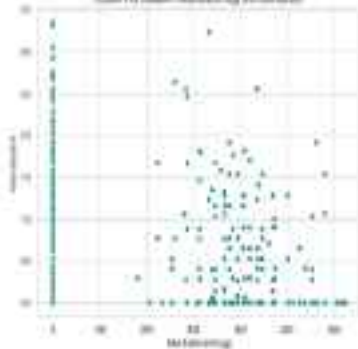
Scatter Plot: Number of words (log scale) vs. number of words



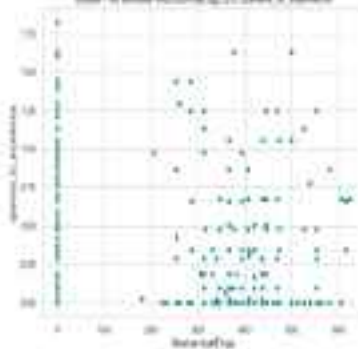
Scatter Plot: Number of words (log scale) vs. number of words



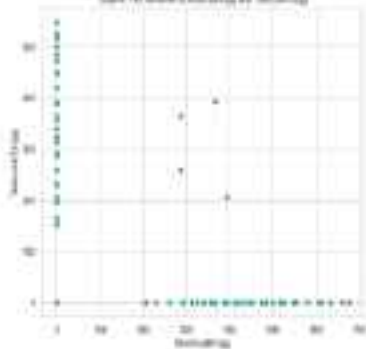
Scatter Plot of Sales (Millions of Dollars) vs. Advertising (Millions of Dollars)



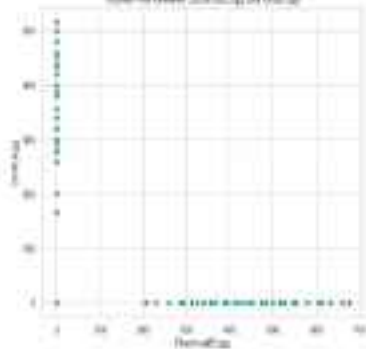
Scatter Plot of Sales (Millions of Dollars) vs. Advertising (Millions of Dollars)



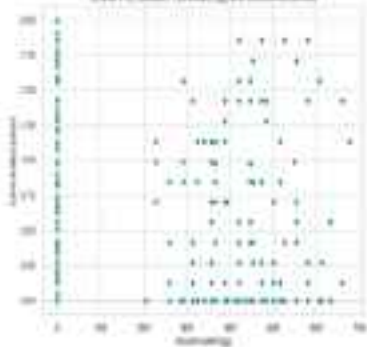
Scatter Plot between Normalizing and Normalizing



Scatter Plot between Normalizing and Normalizing



Scatter Plot between The Good Things and economic anxiety



Scatter Plot between (The Good Things) and depression

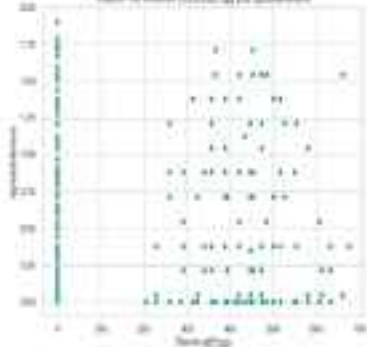


Table 1: Values of α and β of the system

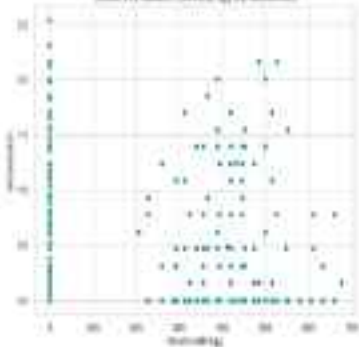


Table 1: Values of α and β of the system

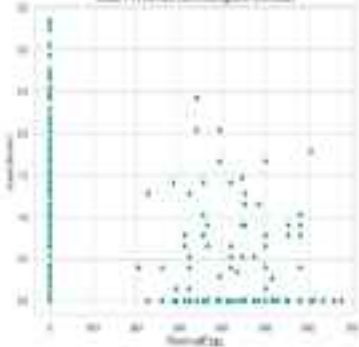


Table 1: Column of Actual Log Likelihoods, \hat{L}_n , and \hat{L}_n^*

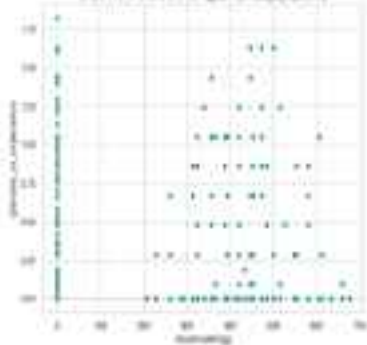
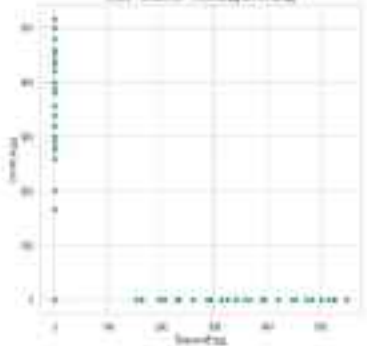
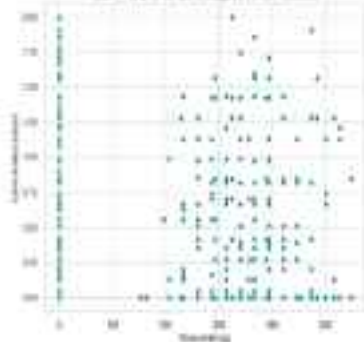


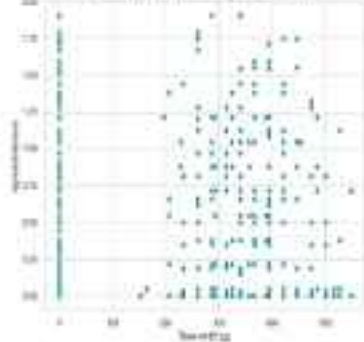
Table 2: Column of Actual Log Likelihoods, \hat{L}_n , and \hat{L}_n^*



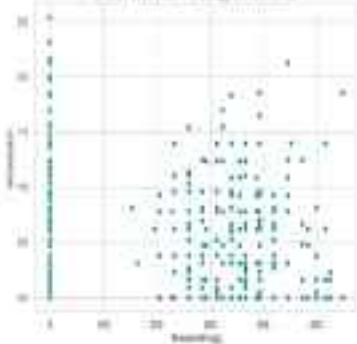
Scatter Plot (approximate) showing the relationship between the number of hours worked and the number of hours slept.



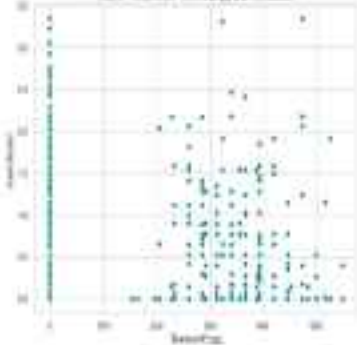
Scatter Plot (approximate) showing the relationship between the number of hours worked and the number of hours slept.



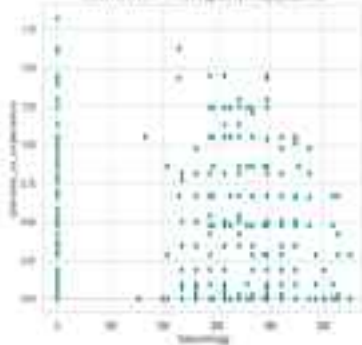
Scatter Plot of $\ln(\text{Sales})$ versus $\ln(\text{Advertising})$ and $\ln(\text{Sales})$ versus $\ln(\text{Sales})$



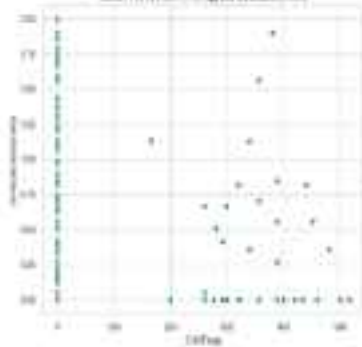
Scatter Plot of $\ln(\text{Sales})$ versus $\ln(\text{Sales})$ and $\ln(\text{Sales})$ versus $\ln(\text{Sales})$



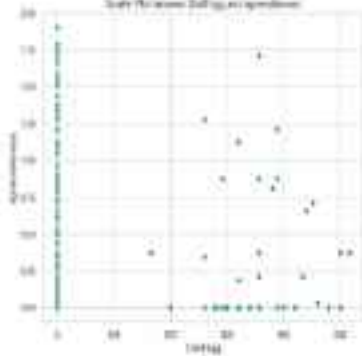
Scatter Plot (Histogram: Number of eggs per square, λ , exponential)



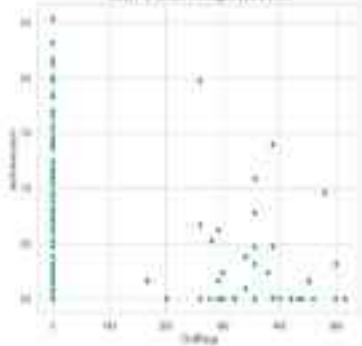
Scatter Plot (Histogram: Number of eggs per square, λ , normal)



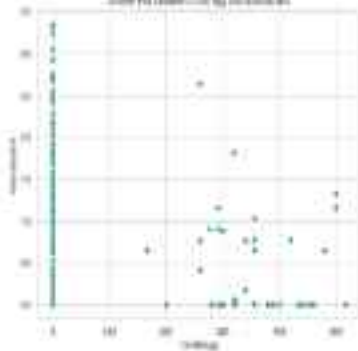
Scatter Plot between Staff type and experience



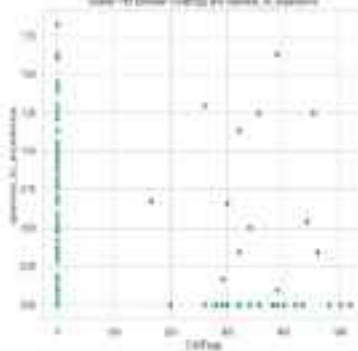
Scatter Plot between Staff type and salary



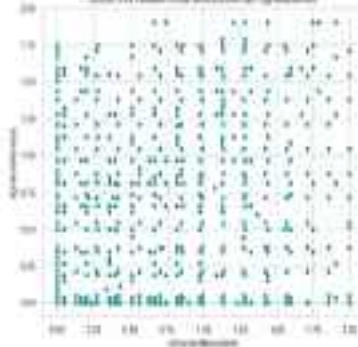
Scatter Plot of $\ln(\text{value})$ vs $\ln(\text{year})$



Scatter Plot of $\ln(\text{value})$ vs $\ln(\text{year})$ with $\ln(\text{year})$ as a covariate



Scatter plot of the values of the variables x_1 and x_2



Scatter plot of the values of the variables x_1 and x_3

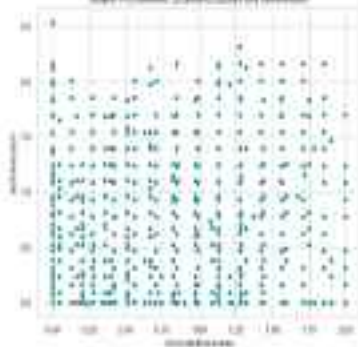


Figure 1(a) Volume concentration of particles, ϕ , as a function of

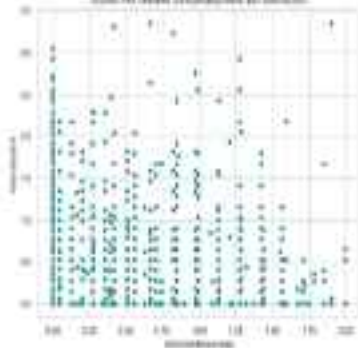
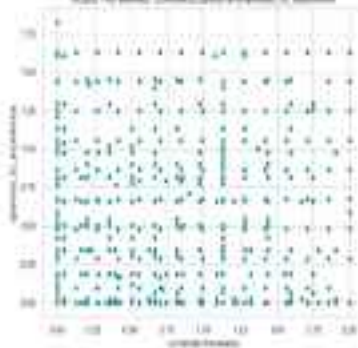
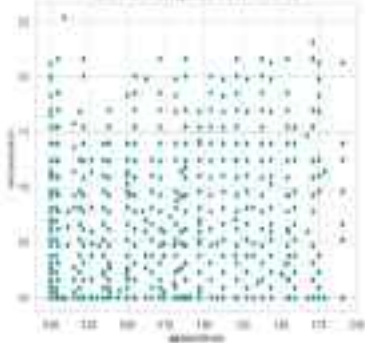


Figure 1(b) Volume concentration of particles, ϕ , as a function of



Scatter Plot: Linear Regression (Approximate)



Scatter Plot: Linear Regression (Approximate)

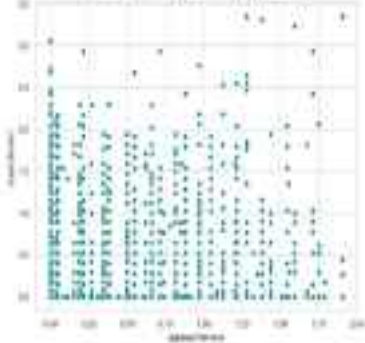


Table 7: The average agreement between α and β for α and β

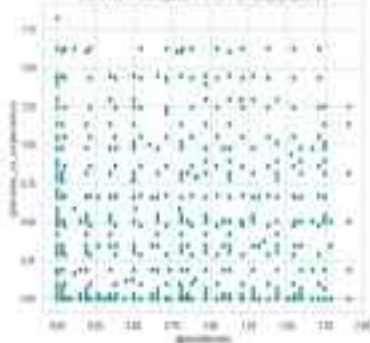


Table 8: The relationship between α and β for α and β

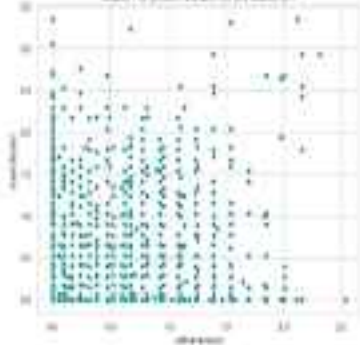


Figure 7(a) shows all elements of \mathbf{A} versus \mathbf{A} (percentage)

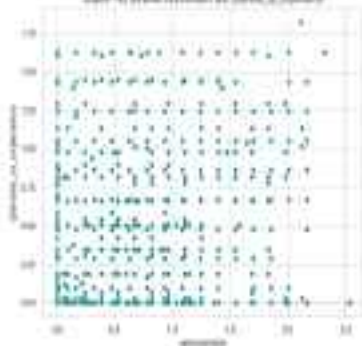
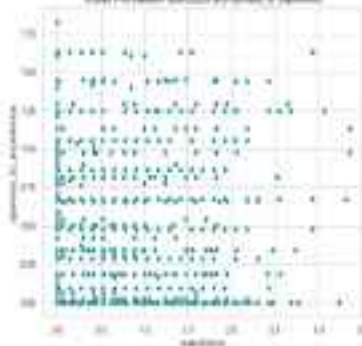
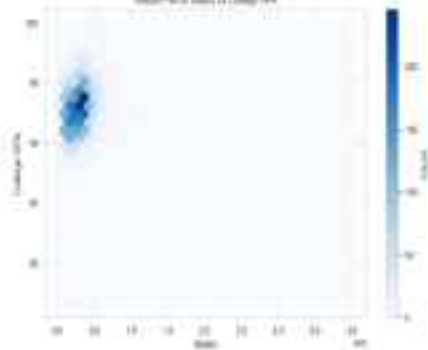
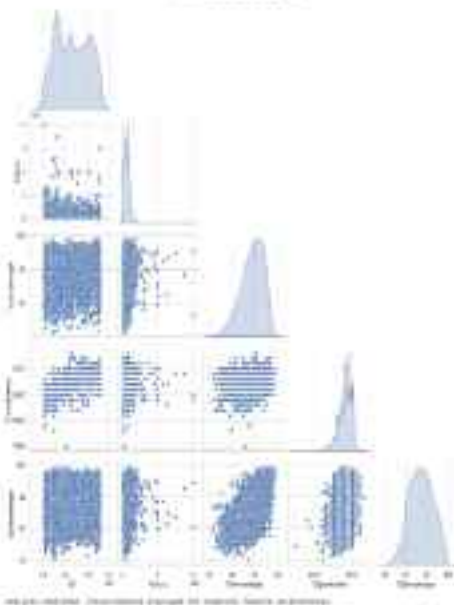


Figure 7(b) shows all elements of \mathbf{A} versus \mathbf{A} (percentage)



Student-Personal Income vs College GPA





In the above code, an explanation:

This code visualizes relationships between numerical features using scatter plots, hexbin plots, and pair plots. Scatter plots analyze pairwise relationships, while hexbin plots represent density distributions for `Salary` and `CollegeGPA`. The pair plot offers a comprehensive overview of multiple numerical variables, incorporating kernel density estimates to enhance insights into correlations.

```
# Pair plot for numerical features
sns.pairplot(data[numerical_features])

# Add marginal histograms and KDEs to the pair plot
sns.pairplot(data[numerical_features], kind='scatter',
              diag_kind='kde', diag_fillcolor='lightblue')

# Save the pair plot as a figure
fig = sns.pairplot(data[numerical_features])
fig.savefig('pair_plot.png')
```

```

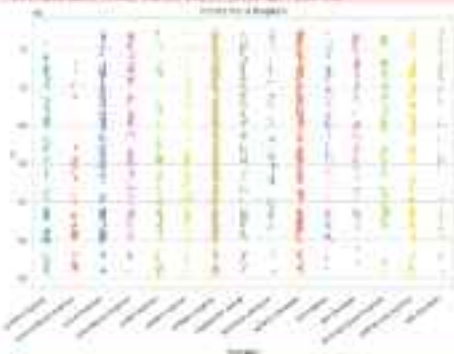
do {
  sample_n(1000) %>% summarise(
    # Estimate the probability of success
    p_hat = sum(success) / 1000,
    # Compute the standard error of the estimate
    se_hat = sqrt(p_hat * (1 - p_hat)),
    # Compute the 95% confidence interval
    ci_lower = p_hat - 1.96 * se_hat,
    ci_upper = p_hat + 1.96 * se_hat,
    # Print the results
    print(p_hat, se_hat, ci_lower, ci_upper)
  }
} while (TRUE)

```

Example 2: Estimating the probability of success using a Bayesian approach

Suppose we have a coin that is biased towards heads. We want to estimate the probability of heads using a Bayesian approach. We will use a beta distribution as the prior distribution for the probability of heads.

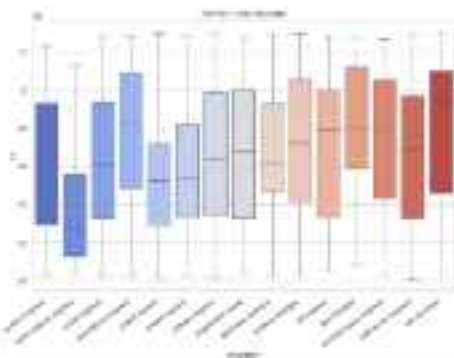
Example 3: Estimating the probability of success using a Monte Carlo approach



Example 4: Estimating the probability of success using a Markov Chain Monte Carlo approach

Suppose we have a coin that is biased towards heads. We want to estimate the probability of heads using a Markov Chain Monte Carlo approach. We will use a beta distribution as the prior distribution for the probability of heads.

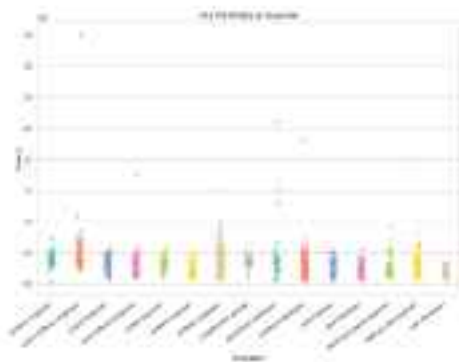
Example 5: Estimating the probability of success using a Variational Bayes approach



Box plot showing the distribution of 'age' across different 'sex' categories. The y-axis represents 'age' from 18 to 80. The x-axis shows 'sex' categories: Female, Male, and Unknown. The plot displays the median, quartiles, and range for each group.

Box plot showing the distribution of 'age' across different 'sex' categories. The y-axis represents 'age' from 18 to 80. The x-axis shows 'sex' categories: Female, Male, and Unknown. The plot displays the median, quartiles, and range for each group.

Box plot showing the distribution of 'age' across different 'sex' categories. The y-axis represents 'age' from 18 to 80. The x-axis shows 'sex' categories: Female, Male, and Unknown. The plot displays the median, quartiles, and range for each group.



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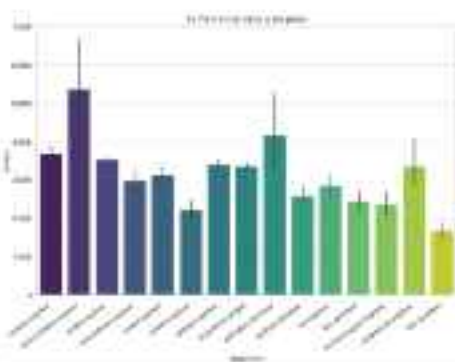
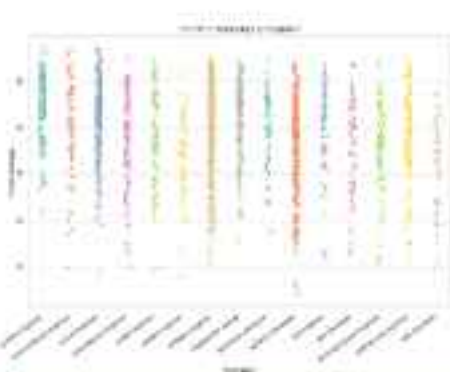


Figure 1: Bar chart showing the distribution of the number of species (Y-axis, 0 to 1000) across different categories (X-axis, labeled 1 to 15). The bars are colored in a gradient from dark purple to yellow. Error bars are present for each bar.

Figure 1: Bar chart showing the distribution of the number of species (Y-axis, 0 to 1000) across different categories (X-axis, labeled 1 to 15). The bars are colored in a gradient from dark purple to yellow. Error bars are present for each bar.

Figure 1: Bar chart showing the distribution of the number of species (Y-axis, 0 to 1000) across different categories (X-axis, labeled 1 to 15). The bars are colored in a gradient from dark purple to yellow. Error bars are present for each bar.



1. The number of species in the category '10 species' is 10. The number of species in the category '9 species' is 9. The number of species in the category '8 species' is 8. The number of species in the category '7 species' is 7. The number of species in the category '6 species' is 6. The number of species in the category '5 species' is 5. The number of species in the category '4 species' is 4. The number of species in the category '3 species' is 3. The number of species in the category '2 species' is 2. The number of species in the category '1 species' is 1.

Figure 4: Correlation matrix (continued)

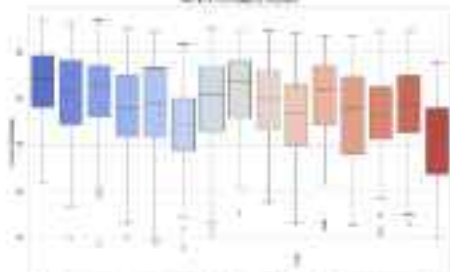


Figure 4: Correlation matrix (continued). Note: Frequency is the number of observations.

Figure 4: Correlation matrix (continued). Note: Frequency is the number of observations. The y-axis represents the frequency of the observations.

Figure 4: Correlation matrix (continued). Note: Frequency is the number of observations. The y-axis represents the frequency of the observations.

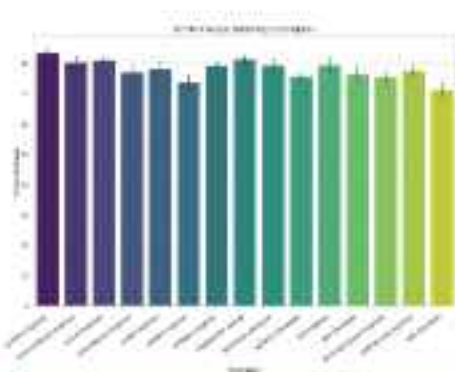
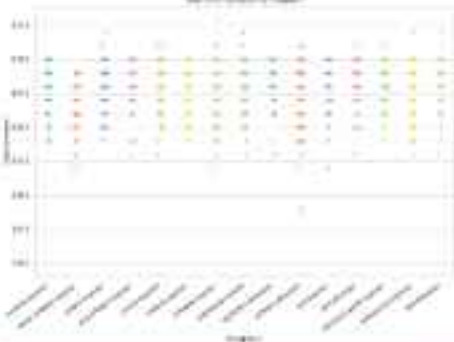


Figure 1. Average number of species per site. The y-axis is the number of species (0-15) and the x-axis is the site number (1-15). The bars are colored in a gradient from dark purple to yellow. The error bars represent the standard deviation.

Figure 1: A plot of the function $f(x)$ versus x .



The function $f(x)$ is a step function, which is 0 for $x \in [0, 1)$ and 1 for $x \in [1, 10]$. The area under the curve is shaded with diagonal lines. The function is defined as:

$$f(x) = \begin{cases} 0 & \text{for } x \in [0, 1) \\ 1 & \text{for } x \in [1, 10] \end{cases}$$

Figure 8: Regulatory Impact

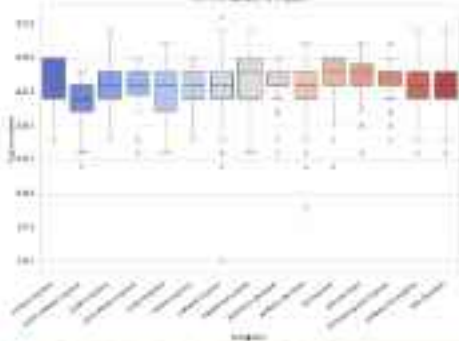


Figure 8: Regulatory Impact. The figure shows the distribution of regulatory impact across 15 categories. The y-axis represents the impact value, ranging from 0.00 to 0.03. The x-axis is labeled 'category' and contains 15 categories. The boxes are colored in a gradient from blue to red. A horizontal line is drawn across the plot at approximately 0.015. A shaded area at the bottom of the plot, below the x-axis, is filled with diagonal lines.

Figure 1: A color scale for the parameter α .

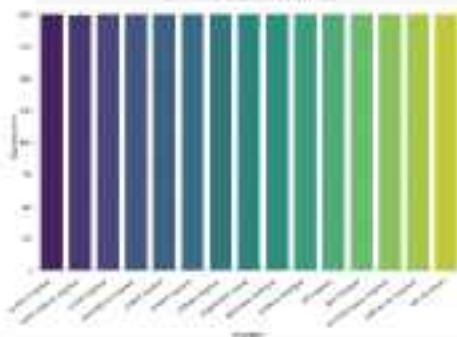


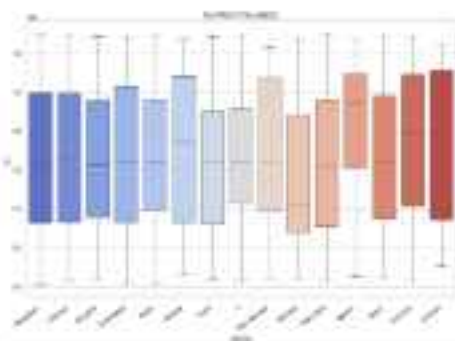
Figure 1: A color scale for the parameter α , ranging from 0.0 to 1.0.

The color scale is used to represent the parameter α in the plots. The color scale is defined by the following values:

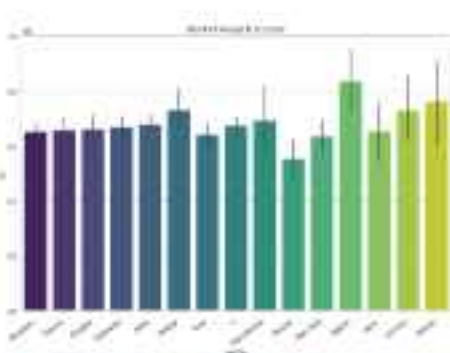
0.0: Dark Purple, 0.1: Dark Purple, 0.2: Dark Purple, 0.3: Dark Purple, 0.4: Dark Purple, 0.5: Dark Purple, 0.6: Dark Purple, 0.7: Dark Purple, 0.8: Dark Purple, 0.9: Dark Purple, 1.0: Dark Purple.



Wiederholungsversuche sind ein wichtiger Bestandteil der statistischen Analyse. Sie ermöglichen es, die Genauigkeit der Messungen zu überprüfen und die Streuung der Daten zu quantifizieren. In der Regel werden mindestens drei Wiederholungen durchgeführt, um die Zuverlässigkeit der Ergebnisse zu gewährleisten.



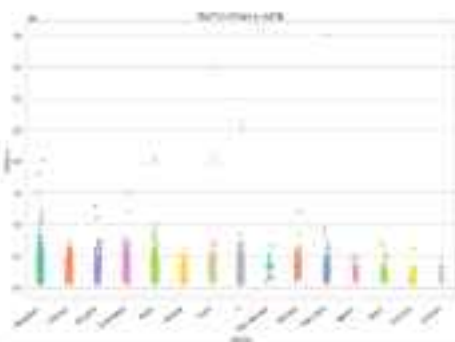
Box plot showing the distribution of 'Rate' for different 'Rate' categories. The y-axis is labeled 'Rate' and ranges from 0 to 100. The x-axis is labeled 'Rate' and shows categories: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. The plot shows that the distribution of 'Rate' is skewed to the right, with most values concentrated between 0 and 100.



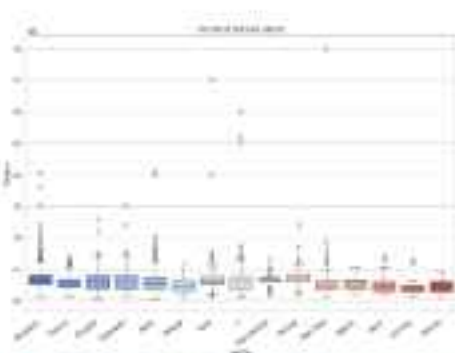
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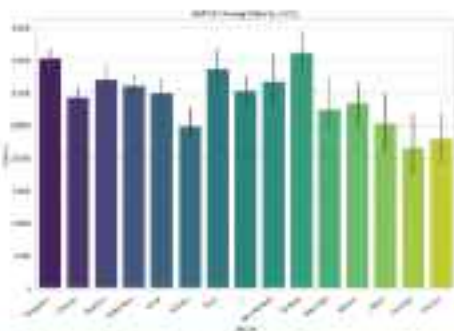


Bar chart showing the distribution of responses for various categories. The y-axis represents the number of responses, ranging from 0 to 10. The x-axis lists 15 categories, each represented by a colored bar. The categories are: 1. Green, 2. Orange, 3. Purple, 4. Blue, 5. Green, 6. Yellow, 7. Green, 8. Grey, 9. Teal, 10. Orange, 11. Blue, 12. Red, 13. Green, 14. Yellow, 15. Grey. The bars show varying heights, with some categories having multiple bars of the same color.



Genomic track visualization of genomic data

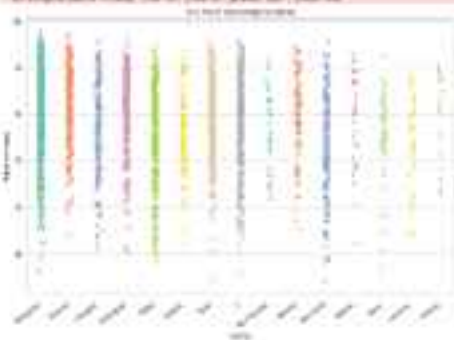
Genomic tracks are used to visualize genomic data, such as gene expression, DNA methylation, and other genomic features. The tracks are organized into a series of rows, each representing a different genomic feature. The tracks are color-coded to represent different data types, such as blue for gene expression, green for DNA methylation, and red for other genomic features. The tracks are also labeled with the names of the genomic features they represent.



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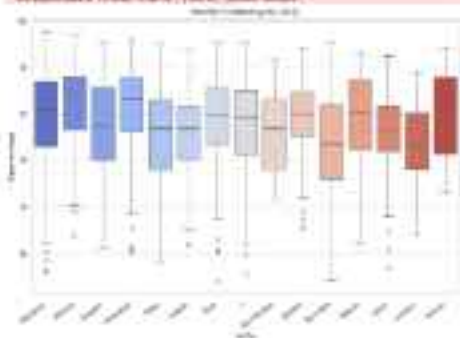
Images are not without meaning, they are interpreted and will be interpreted in a way, which the artist wishes. It is not the responsibility of the viewer to interpret the image.

doi:10.1017/S0022292412001607



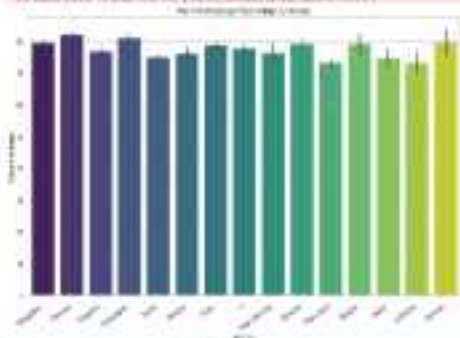
Meaning: "positive" reflects accuracy; that is, is represented as all the measures in a child's category (e.g., accuracy of the test and the "positive" effect for the test effect).

See Appendix Table 1 for details on the test, the test effect, and the test effect.



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See Appendix Table 1 for details on the test, the test effect, and the test effect.



Figure 1: Bar chart showing the distribution of the number of votes for each candidate in the 2019 election. The x-axis represents the number of votes (0 to 1000), and the y-axis represents the frequency (0 to 100). The chart displays the distribution of votes for each candidate, with the highest frequency being for the candidate with 1000 votes.

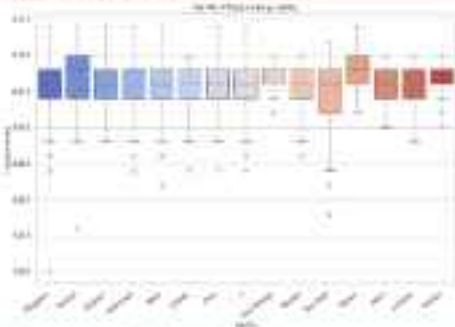
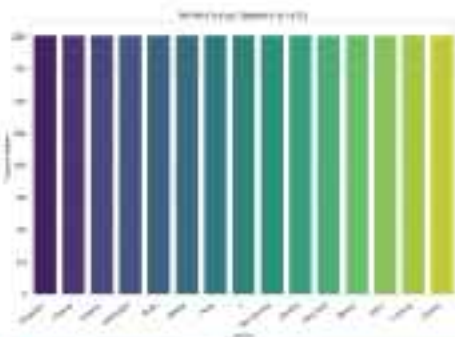


Figure 2: Bar chart showing the distribution of the number of votes for each candidate in the 2020 election. The x-axis represents the number of votes (0 to 1000), and the y-axis represents the frequency (0 to 100). The chart displays the distribution of votes for each candidate, with the highest frequency being for the candidate with 1000 votes.



Number of species (log scale) vs. x (log scale) (log scale)

Using 'x' as the x-axis variable, the y-axis variable is 'Number of species (log scale)'. The y-axis variable is 'Number of species (log scale)'. The x-axis variable is 'x'.



Number of species (log scale) vs. x (log scale) (log scale)

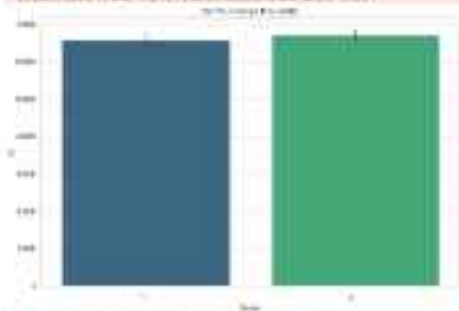
Using 'x' as the x-axis variable, the y-axis variable is 'Number of species (log scale)'. The y-axis variable is 'Number of species (log scale)'. The x-axis variable is 'x'.



Continuity coefficient and marginal distribution of "Kontinuitätskoeffizient"

Group: "Kontinuitätskoeffizient" (yes) is represented by all the values in the "yes" category of "Kontinuitätskoeffizient" for the two groups, A and B.

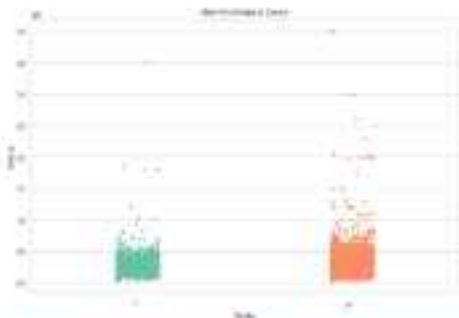
Continuity coefficient (yes) and (no) are calculated as follows: (yes) = (yes) / (yes + no)



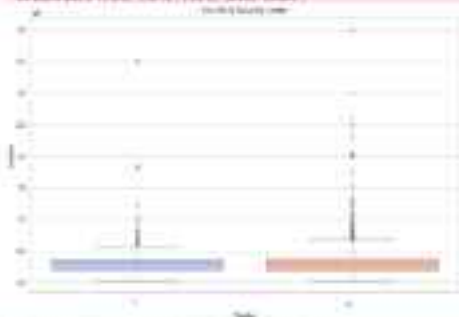
Continuity coefficient and marginal distribution of "Kontinuitätskoeffizient"

Group: "Kontinuitätskoeffizient" (yes) is represented by all the values in the "yes" category of "Kontinuitätskoeffizient" for the two groups, A and B.

Continuity coefficient (yes) and (no) are calculated as follows: (yes) = (yes) / (yes + no)



Bar chart showing the distribution of data across two categories, A and B. The Y-axis represents the frequency or count, ranging from 0 to 80. Category A (green) has a frequency of approximately 45, and Category B (orange) has a frequency of approximately 55. Error bars are present for both categories, indicating variability or confidence intervals. The chart includes a legend at the bottom identifying the categories A and B.



Bar chart showing the distribution of data across two categories, A and B. The Y-axis represents the frequency or count, ranging from 0 to 80. Category A (blue) has a frequency of approximately 35, and Category B (orange) has a frequency of approximately 45. Error bars are present for both categories, indicating variability or confidence intervals. The chart includes a legend at the bottom identifying the categories A and B.

Figure 1: Histogram of the number of visits

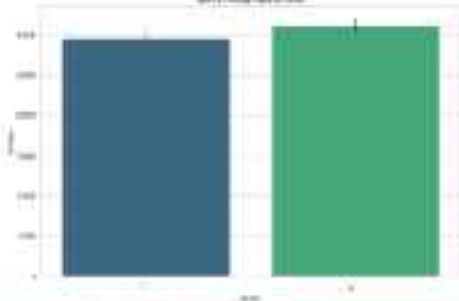


Figure 1: Histogram of the number of visits for the Control and Treatment groups.

The x-axis represents the number of visits, and the y-axis represents the frequency. The Control group is shown in blue, and the Treatment group is shown in green.

The Control group has a higher frequency of visits compared to the Treatment group.

Figure 2: Histogram of the number of visits

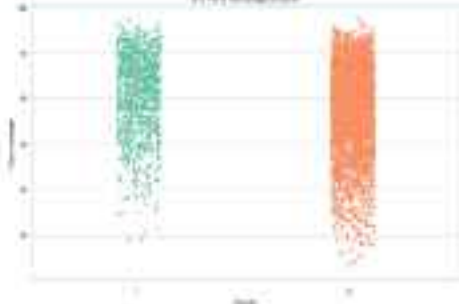
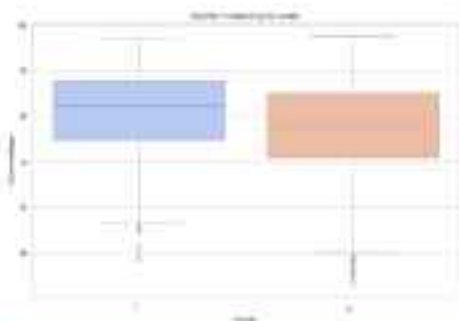


Figure 2: Histogram of the number of visits for the Control and Treatment groups.

The x-axis represents the number of visits, and the y-axis represents the frequency. The Control group is shown in blue, and the Treatment group is shown in green.

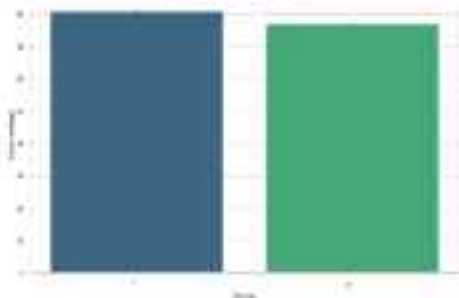
The Control group has a higher frequency of visits compared to the Treatment group.



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Using the data, construct a confidence interval for the difference in the mean number of missing values.

Use the data to construct a confidence interval for the difference in the mean number of missing values.



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Using the data, construct a confidence interval for the difference in the mean number of missing values.

Use the data to construct a confidence interval for the difference in the mean number of missing values.

Figure 1: Comparison of the two groups

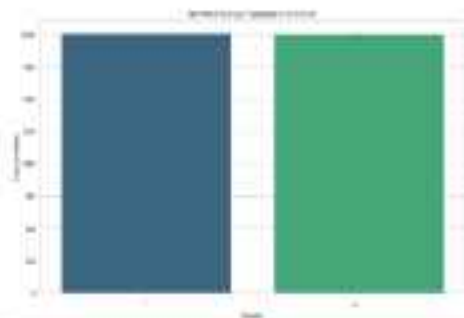


Figure 1: Comparison of the two groups. The chart shows the distribution of the number of children for two groups: Group 1 (n=10) and Group 2 (n=10). The y-axis represents the frequency (0 to 10). Group 1 is represented by green bars and Group 2 by orange bars.

Figure 2: Comparison of the two groups



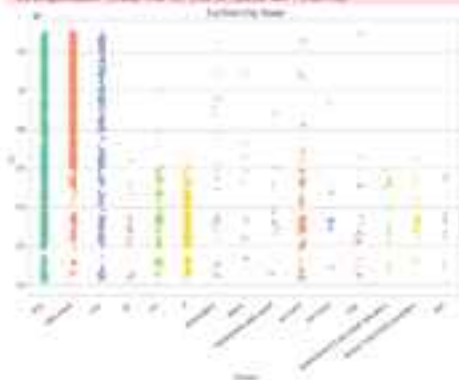
Figure 2: Comparison of the two groups. The chart shows the distribution of the number of children for two groups: Group 1 (n=10) and Group 2 (n=10). The y-axis represents the frequency (0 to 10). Group 1 is represented by blue bars and Group 2 by orange bars.



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During the past several decades, the use of mathematical models to estimate the risk of disease has become an important tool in epidemiology. The use of mathematical models to estimate the risk of disease has become an important tool in epidemiology.

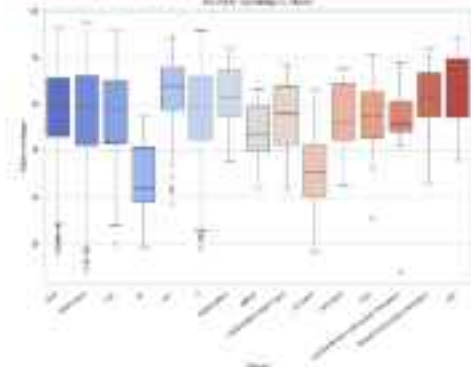
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Continuous regression analysis: regression model with 12 independent variables

Dependent variable: average number of days of absence due to sick leave, regardless of whether the sick leave was approved or not

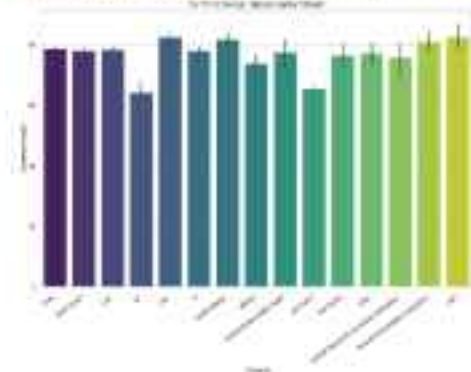
Independent variables: female, marital status, year of birth, number of children, number of children under 6 years old, number of children under 12 years old, number of children under 18 years old, number of children under 24 years old, number of children under 30 years old, number of children under 36 years old, number of children under 42 years old, number of children under 48 years old



Continuous regression analysis: regression model with 12 independent variables

Dependent variable: average number of days of absence due to sick leave, regardless of whether the sick leave was approved or not

Independent variables: female, marital status, year of birth, number of children, number of children under 6 years old, number of children under 12 years old, number of children under 18 years old, number of children under 24 years old, number of children under 30 years old, number of children under 36 years old, number of children under 42 years old, and number of children under 48 years old



Bar chart showing the effect of the treatment on the response. The y-axis represents the response (0 to 100) and the x-axis represents the treatment (0 to 100). The bars are colored by treatment group (0 to 100) and the error bars represent the standard error.

Bar chart showing the effect of the treatment on the response. The y-axis represents the response (0 to 100) and the x-axis represents the treatment (0 to 100). The bars are colored by treatment group (0 to 100) and the error bars represent the standard error.

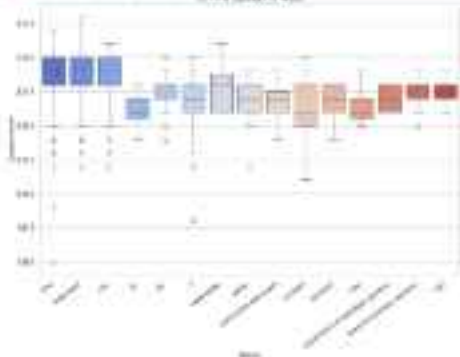
Bar chart showing the effect of the treatment on the response.



Bar chart showing the effect of the treatment on the response. The y-axis represents the response (0 to 100) and the x-axis represents the treatment (0 to 100). The bars are colored by treatment group (0 to 100) and the error bars represent the standard error.

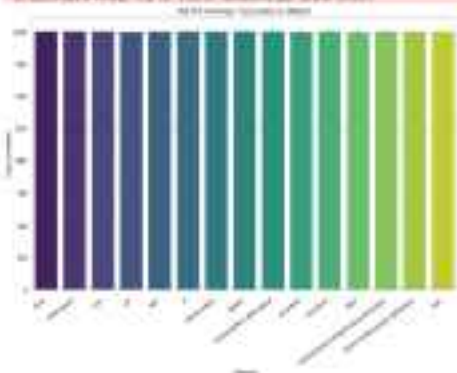
Bar chart showing the effect of the treatment on the response. The y-axis represents the response (0 to 100) and the x-axis represents the treatment (0 to 100). The bars are colored by treatment group (0 to 100) and the error bars represent the standard error.

Bar chart showing the effect of the treatment on the response.



Strip plots, box plots, and bar plots are three different ways to visualize categorical data. Strip plots show individual data points, box plots show the distribution of data, and bar plots show the mean values for each category.

The following code uses the `stripplot` function from the `ggplot2` package to create a strip plot.



In the above code, an explanation:

The code visualizes relationships between categorical and numerical variables using strip plots, box plots, and bar plots. To enhance clarity, it filters the dataset to retain only the top 15 most frequent categories. Strip plots display individual data points, box plots summarize data distributions, and bar plots represent mean values, offering comprehensive insights.

3)Identify relationships between categorical and categorical columns using stacked bar plots

```
1 # Create a categorical variable
2 categorical_variable = ["Category A", "Category B", "Category C", "Category D", "Category E", "Category F", "Category G", "Category H", "Category I", "Category J", "Category K", "Category L", "Category M", "Category N", "Category O", "Category P", "Category Q", "Category R", "Category S", "Category T", "Category U", "Category V", "Category W", "Category X", "Category Y", "Category Z"]
3
4 # Create a numerical variable
5 numerical_variable = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100]
6
7 # Create a stacked bar plot
8 ggplot(data = data.frame(categorical_variable, numerical_variable)) +
9   geom_bar(aes(x = categorical_variable, y = numerical_variable))
10
```

```

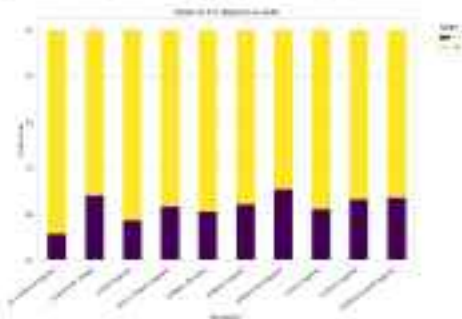
source("https://raw.githubusercontent.com/STANFORD/STANFORD/master/STANFORD.R")
# Load the data
source("https://raw.githubusercontent.com/STANFORD/STANFORD/master/STANFORD.R")

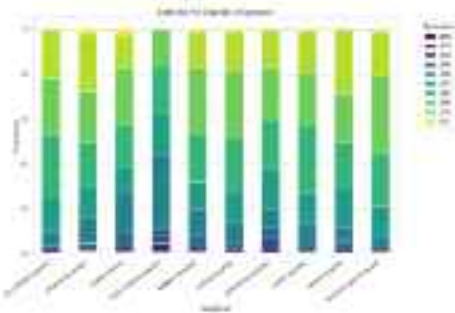
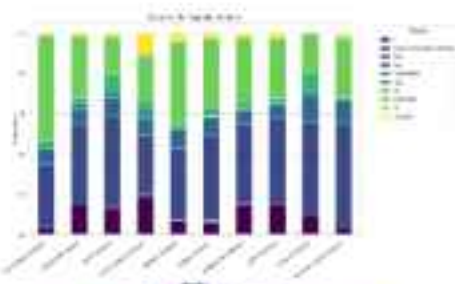
# Set the seed for the random number generator
set.seed(12345)

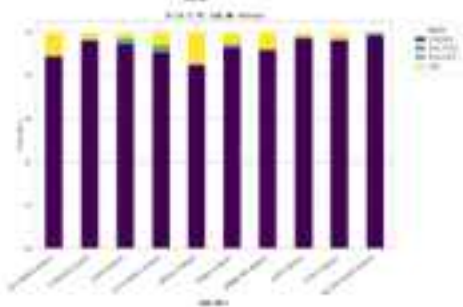
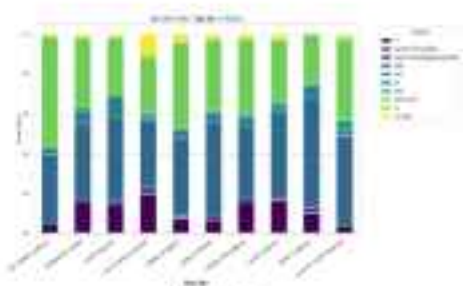
# Create the data
data = create_data(10000, 10000, 10000, 10000, 10000, 10000, 10000, 10000, 10000, 10000)

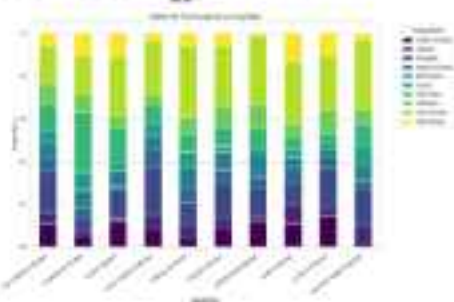
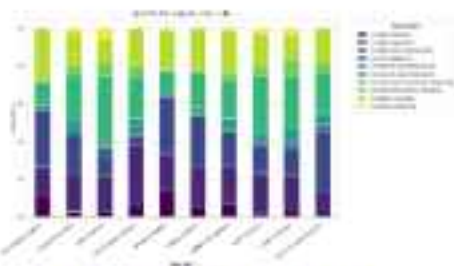
# Plot the data
plot(data)

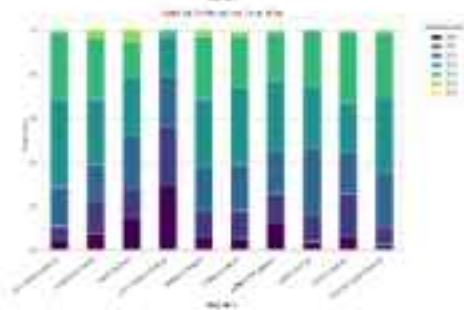
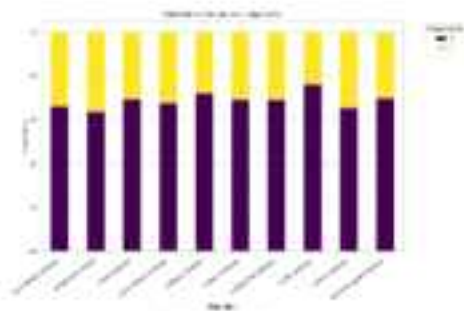
```

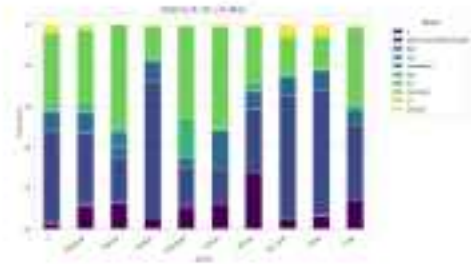
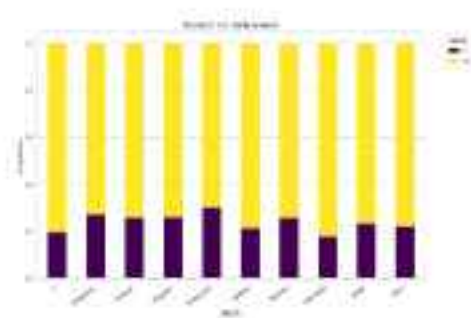


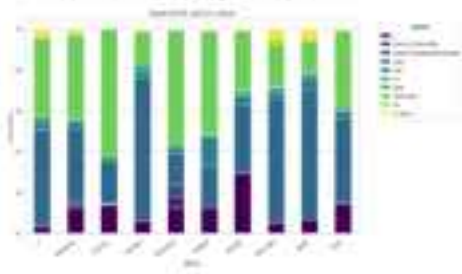
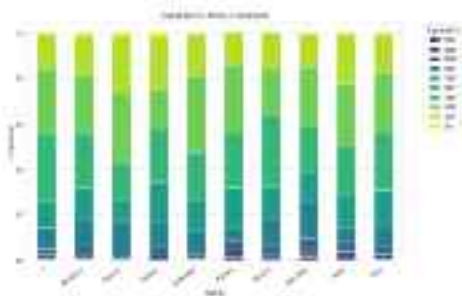


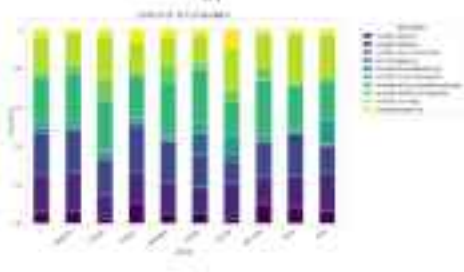
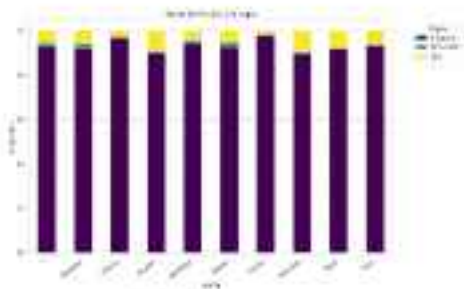


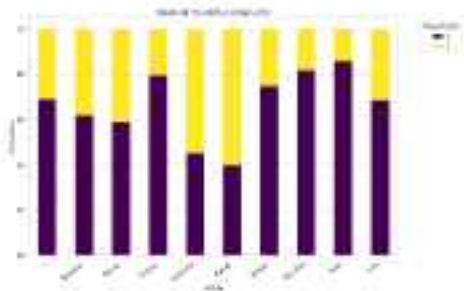
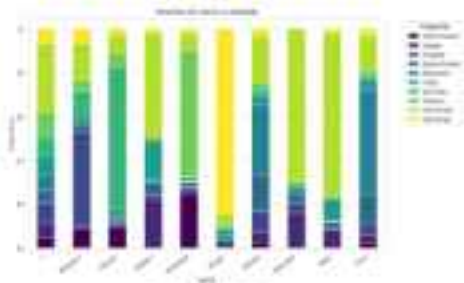


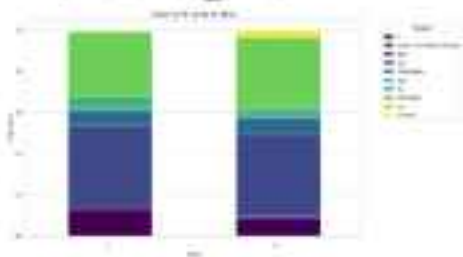
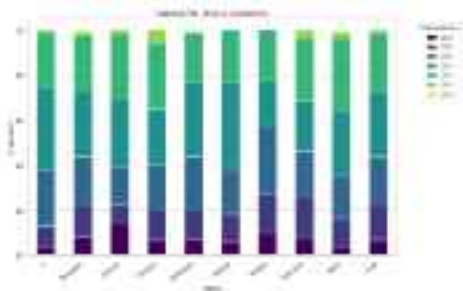


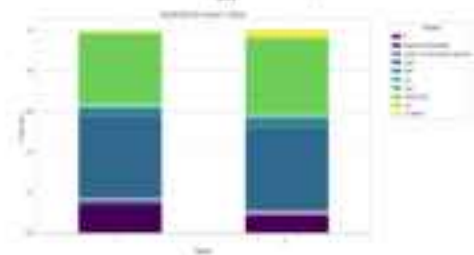
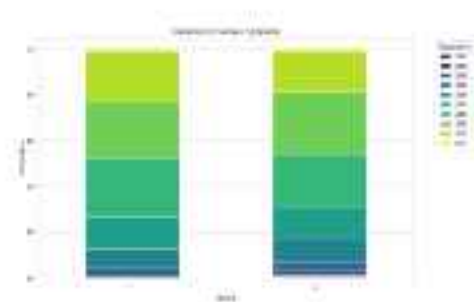


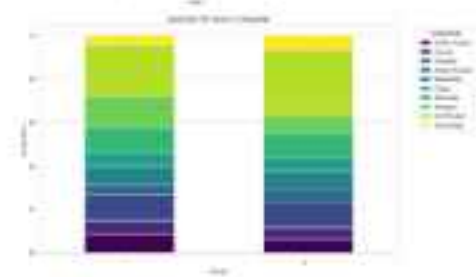
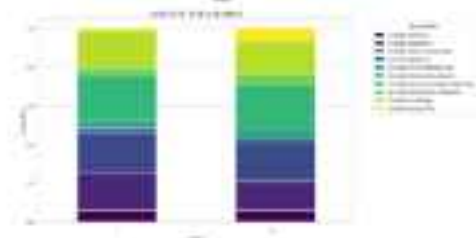
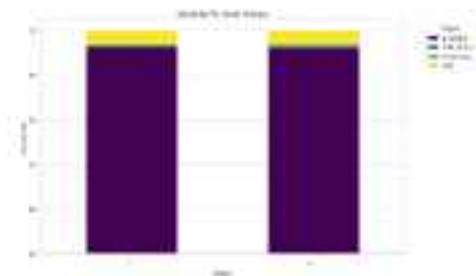


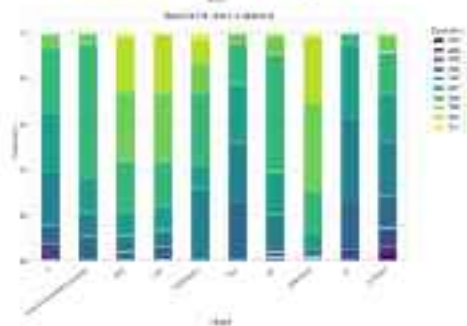
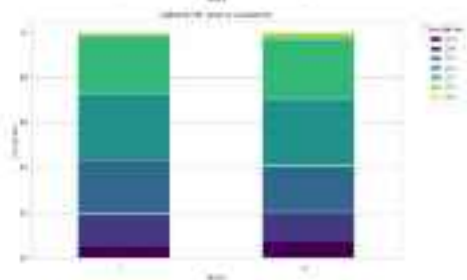
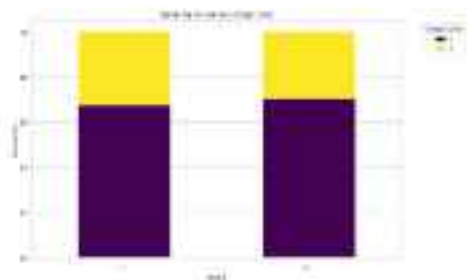


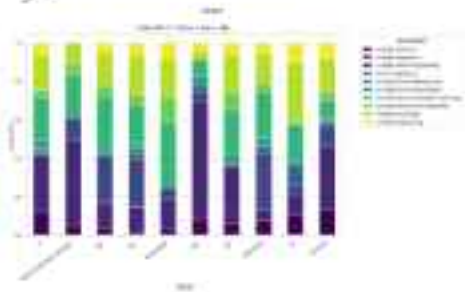
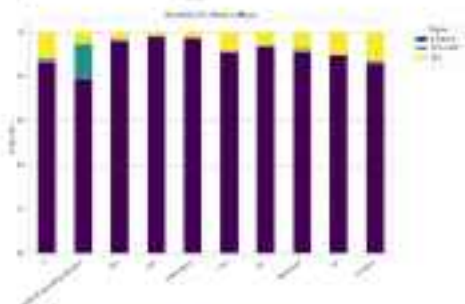


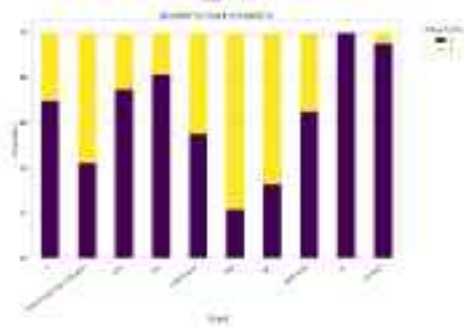
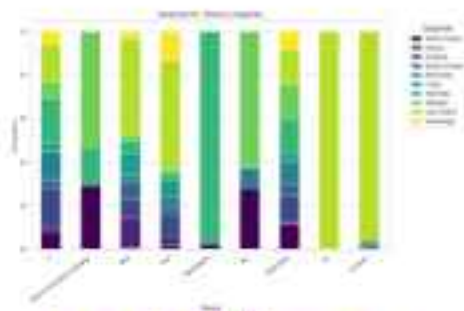


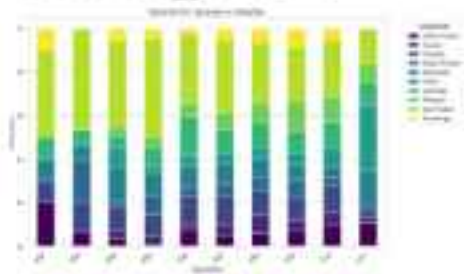
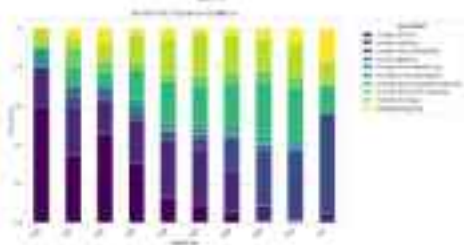
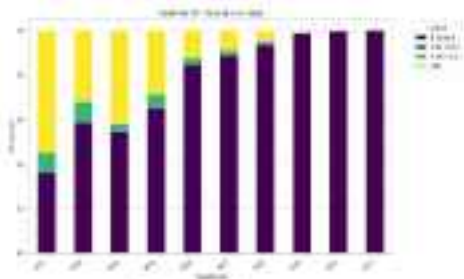


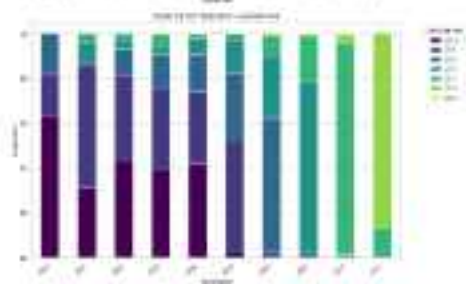


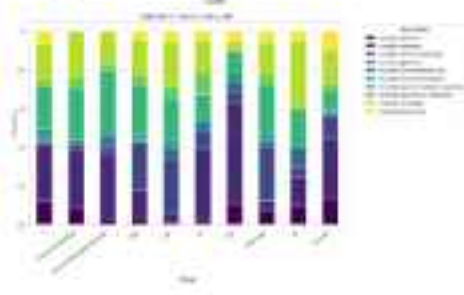
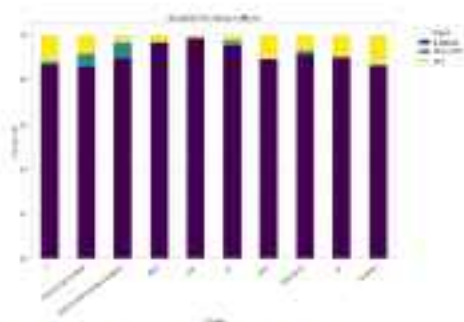


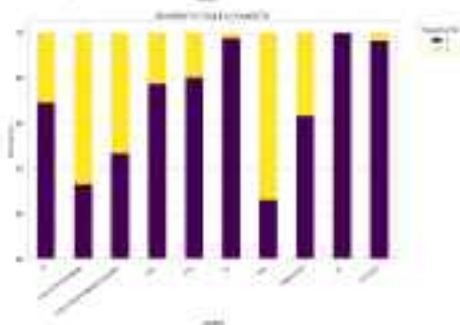
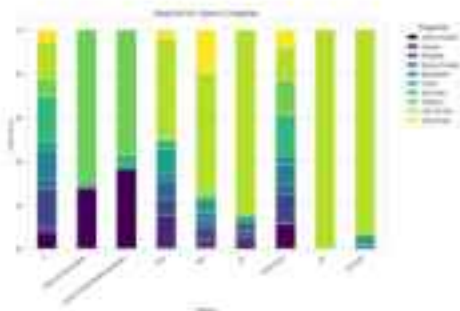


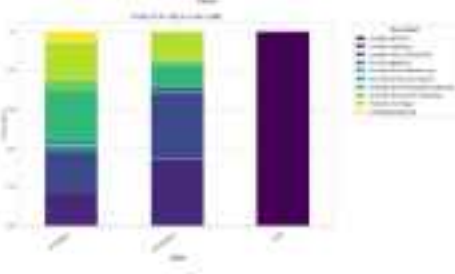
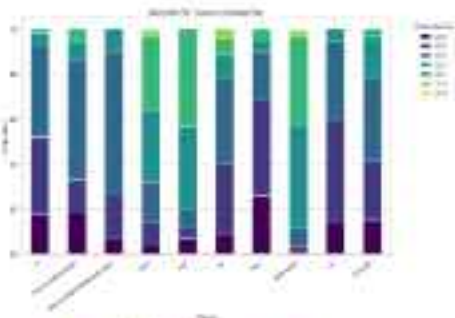


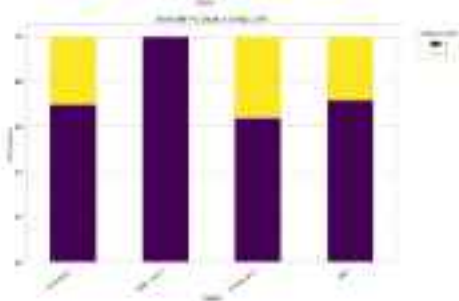
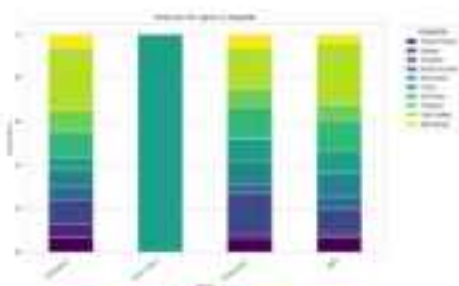


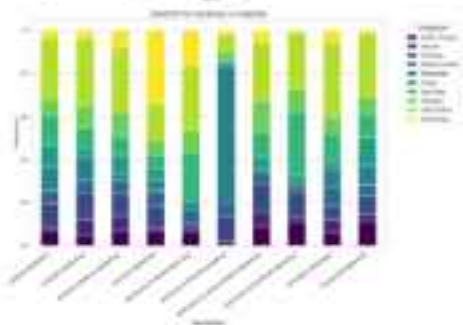
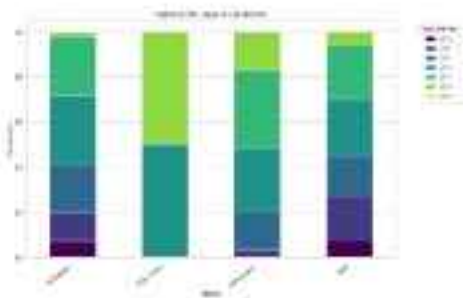


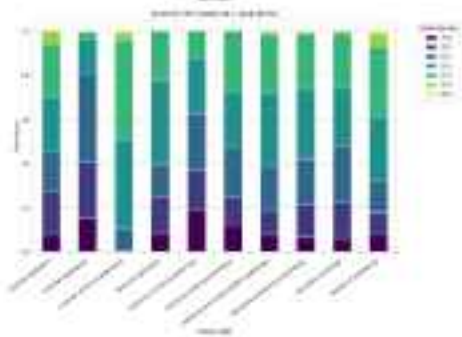
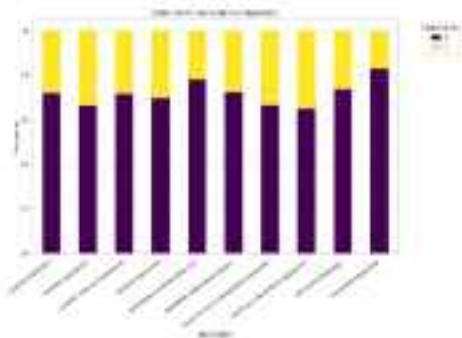


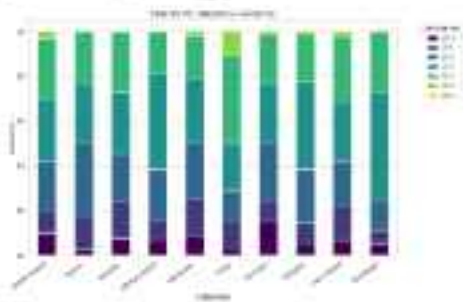
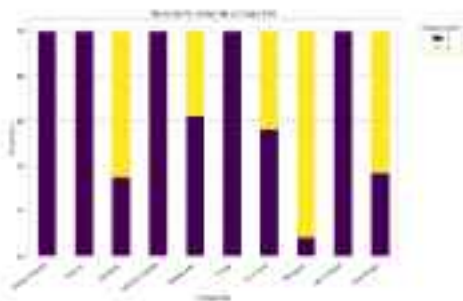












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doi:10.1017/S0007122612000091

Arch. Hist. Sci. 2012, 55(1): 1-17

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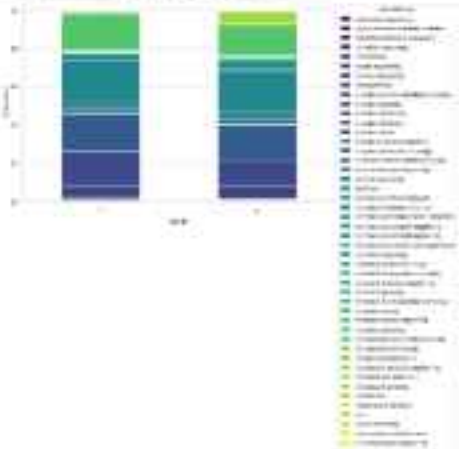
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1. [Download the source code](#) (zip file)
 2. [Extract the source code](#)
 3. [Build the source code](#)
 4. [Run the application](#)

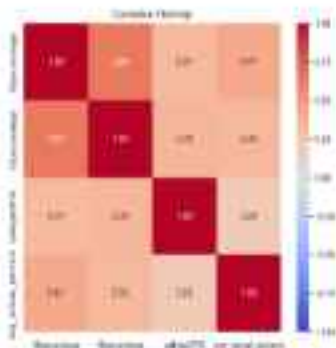
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James Barry, MD, MS
 Director, MS Program
 MS is a rapidly expanding, multidisciplinary field.
 64 years experience. 20,000+ cases. 4,000
 hours MS research. Specialized program design.



in the above code, no explanation:



The code extracts **AMCAT** test scores and calculates the **average AMCAT percentage**. It then selects academic performance metrics (**10th, 12th percentage, and college GPA**) and computes their **correlation matrix**. A **heatmap** visualizes relationships, highlighting potential dependencies between **AMCAT** scores and academic performance.

```

# Import necessary libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

# Load the data
df = pd.read_csv('data.csv')

# Extract AMCAT scores and calculate the average AMCAT percentage
amcat_scores = df['AMCAT_Score']
avg_amcat_percent = amcat_scores.mean()

# Select academic performance metrics (10th, 12th percentage, and college GPA)
academic_metrics = df[['10th_Percentage', '12th_Percentage', 'College_GPA']]

# Compute the correlation matrix
corr_matrix = academic_metrics.corr()

# Create a heatmap to visualize the relationships
plt.figure(figsize=(10, 8))
sns.heatmap(corr_matrix, annot=True, cmap='coolwarm', cbar=True)

# Display the heatmap
plt.show()

# Print the correlation matrix
print('Correlation Matrix:')
print(corr_matrix)

# Print the average AMCAT percentage
print('Average AMCAT Percentage:')
print(avg_amcat_percent)

```

Python Project - AMCAT Data Analysis: Salary Analysis (Part 1)

```
import pandas as pd
from scipy.stats import ttest_1samp
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

# Load the dataset
df = pd.read_csv('AMCAT_2015_Employment_Outcomes.csv')

# Filter for fresh graduates
df_fresh = df[df['Experience'] == 0]

# Remove missing salary values
df_fresh = df_fresh.dropna(subset=['Salary'])

# Calculate the proportion of fresh graduates within the expected range
proportion_in_range = df_fresh['Salary'].between(12.5, 31).sum() / df_fresh['Salary'].count()

# Print the proportion
print(f'Proportion of fresh graduates within the expected range: {proportion_in_range}')

# Visualize the salary distribution
sns.histplot(df_fresh['Salary'], kde=True)
```

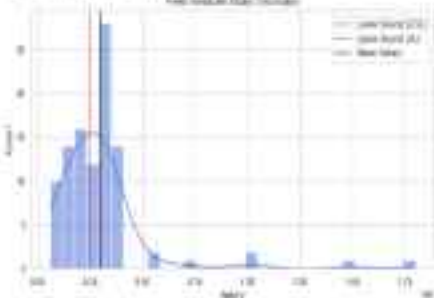
Proportion of fresh graduates within the expected range

Proportion: 0.8000, p-value: 0.000

Proportion of fresh graduates within the expected range: 0.8000

Proportion of fresh graduates within the expected range: 0.8000

Proportion of fresh graduates within the expected range: 0.8000



In the above code, an explanation:

This Python script analyzes fresh graduate salaries using a **one-sample t-test** to compare sample mean with an expected range (12.5-31). It filters recent graduates, removes missing salary values, calculates the proportion within the range, and visualizes the salary distribution using **Seaborn's histplot** with reference lines for key salary thresholds.

Conclusion:

The analysis in **EDA Project - AMCAT Data Analysis** explores employment outcomes of engineering graduates using the **Aspiring Minds Employment Outcomes 2015 (AMEO)** dataset. Through exploratory data analysis (EDA), the study examines salary distribution, job roles, and correlations between skills and employment outcomes. Various statistical tests and visualizations, including *t*-tests, Chi-square tests, histograms, box plots, and scatter plots, provide insights into salary trends, gender specialization, and key factors influencing job placement. The

findings highlight significant patterns in employability, aiding in data-driven decision-making for students, educators, and recruiters. Overall, the analysis offers a comprehensive understanding of employment trends in the engineering sector

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