

Statistics Using GeoGebra

Spoken Tutorial Project

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

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Learning Objectives



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How to use GeoGebra to perform,



Learning Objectives

How to use GeoGebra to perform,

- **One Variable Analysis** to calculate statistical parameters



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How to use GeoGebra to perform,

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- Two Variable Regression Analysis to estimate best fit line



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How to use GeoGebra to perform,

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- Multiple Variable Analysis to calculate statistical parameters



System Requirement



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- **Ubuntu Linux OS v 16.04**



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- **GeoGebra 5.0.481.0-d**



Pre-requisites



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- **GeoGebra interface**



Pre-requisites

- **GeoGebra interface**
- **Statistics**



Statistics



Statistics

- **Data analysis and interpretation**



Statistics

- Data analysis and interpretation
- Measures of Central Tendency



Statistics

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- Measures of Dispersion



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- Measures of Central Tendency
- Measures of Dispersion
- Comparing variability of data series



Statistics

- Data analysis and interpretation
- Measures of Central Tendency
- Measures of Dispersion
- Comparing variability of data series
- Additional material



Fish Feed



Fish Feed



Fish Feed

A fishery is testing 4 feed formulations on its fish:
A, B, C and D

- Length (mm)



Fish Feed

A fishery is testing 4 feed formulations on its fish:
A, B, C and D

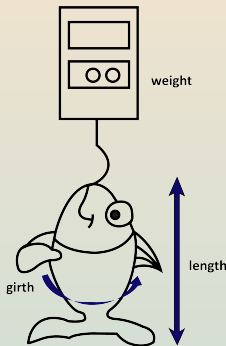
- Length (mm)
- Weight (lbs)



Fish Feed

A fishery is testing 4 feed formulations on its fish:
A, B, C and D

- Length (mm)
- Weight (lbs)
- Girth (mm)



Fish Feed Data



Fish Feed Data

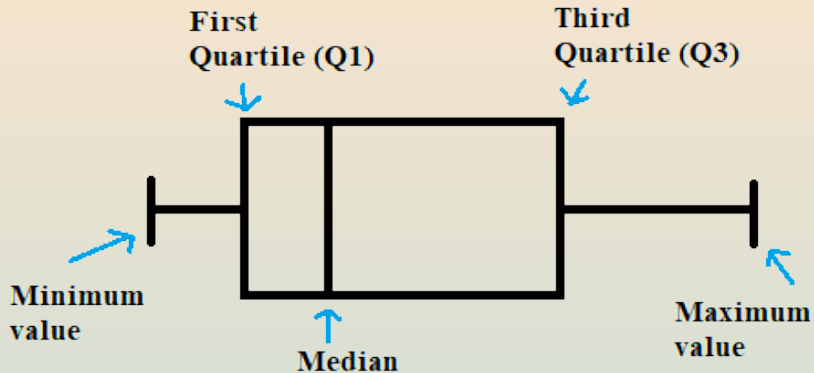
	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Fisheries											
2		Feed A			Feed B			Feed C			Feed D		
3		Length (mm	Weight (lbs	Girth (mm)	Length (mm)	Weight (lb	Girth (mm)	Length (m	Weight (lb	Girth (mm)	Length (m	Weight (lb	Girth (mm)
4	1	690	10.6	470	805	10.9	395	840	18	505	835	17.5	460
5	2	725	18.6	377	815	9.6	350	850	18.3	515	850	19.6	480
6	3	760	11.4	383	825	12	400	860	17.9	465	855	18.7	495
7	4	770	15.7	445	825	13.8	435	870	19.4	503	860	17.9	465
8	5	770	13.1	405	765	13.6	425	880	18.8	456	875	21	525
9	6	790	14.4	440	770	13.7	425	900	23.5	527	895	23.8	531
10	7	720	14.2	410	780	13.9	438	925	24.7	539	910	24.4	541
11	8	720	14.1	435	800	12.9	435	940	20.4	517	930	22.3	554
12	9	750	14.1	422	810	14.2	447	955	25.9	539	950	30	595
13	10	760	15.2	443	820	14.3	410	970	29.8	603	995	31.6	585
..													



Box Plot



Box Plot



Least Squares Linear Regression (LSLR)



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- **Changing an independent variable x changes the dependent variable y**



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- **LSLR predicts y based on x value**



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Least Squares Linear Regression (LSLR)

- Changing an independent variable x changes the dependent variable y
- LSLR predicts y based on x value
- LSRL (best fit line) $y = b_0 + b_1x$
- Coefficient of determination R^2



Summary

How to use GeoGebra to perform,

- **One Variable Analysis to calculate statistical parameters**
- **Two Variable Regression Analysis to estimate best fit line**
- **Multiple Variable Analysis to calculate statistical parameters**



Assignment



Assignment

- Perform statistical analyses for weight and girth data
- Is any of the oils absorbed more than the others?

	A	B	C	D	E
1	Oils for frying--Absorption by chips				
2	Chips	Oil A	Oil B	Oil C	Oil D
3	1	66	76	97	54
4	2	74	89	91	63
5	3	70	86	89	59
6	4	79	80	78	72
7	5	58	83	91	59
8	6	73	75	87	62



About the Spoken Tutorial Project

- Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- It summarizes the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to contact@spoken-tutorial.org



Forum for specific questions

- Do you have questions in **THIS Spoken Tutorial?**
- Please visit <http://forums.spoken-tutorial.org>
- Choose the minute and second where you have the question
- Explain your question briefly
- Someone from our team will answer



Acknowledgements

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- It is supported by the National Mission on Education through ICT, MHRD, Government of India
- More information on this Mission is available at

<http://spoken-tutorial.org /NMEICT-Intro>

