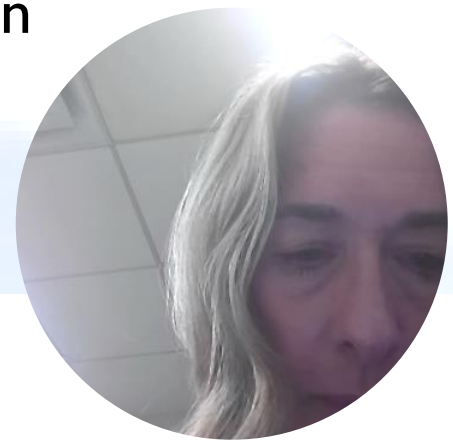
V35 - Hypothesis Testing – Part 11

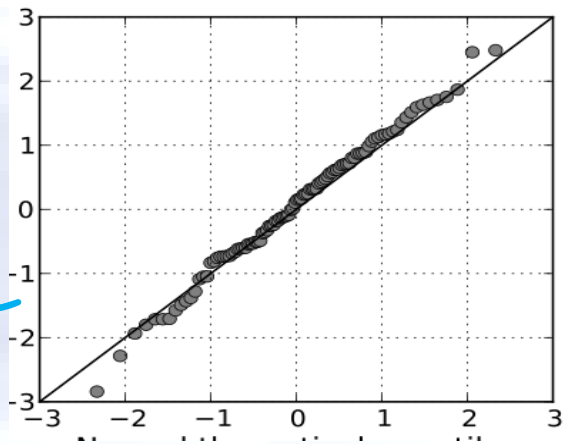
- Q-Q Plot
- Empirical Cumulative Distribution Function (ECDF)

Course: Statistical Testing & Regression
Dr. Renee Clark
Swanson School of Engineering
Industrial Engineering
University of Pittsburgh



Q-Q Plot

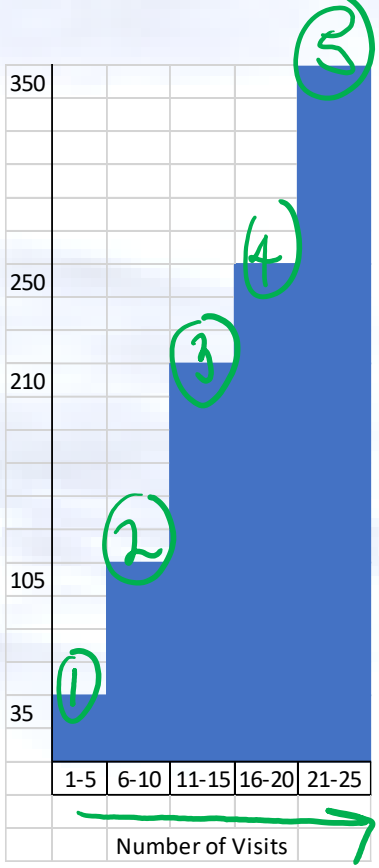
- Quantile-Quantile Plot
- Often used to visually determine normality of a dataset (*Is my dataset normally distributed?*)
  - Can assess for any distribution
- With normal Q-Q plot (determine by software), points will lie perfectly on a straight line (45°) if data normally distributed

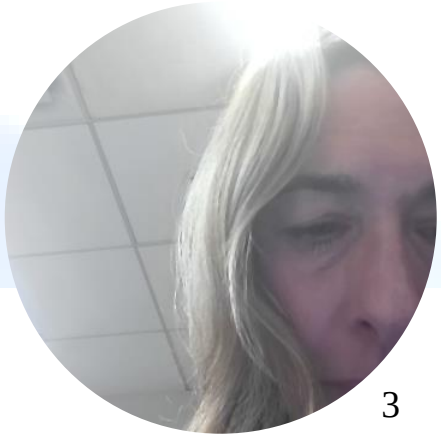


ECDF

cumulative frequency graph

- Empirical cumulative distribution function
- *Empirical:* distribution of actual/observed data
- *Cumulative*: frequency/relative frequency accumulates





How to Generate ECDF for Testing a Distribution

1. List observed data (to test) ascending
2. Assign order number (k) to each row
3. Specify sample size (n)
4. Divide k by n
   - empirical cumulative distribution ECDF
   - Step function jumps by 1/n

x (empirical/ observed data)	k	n	k/n (ECDF)
0.00	1	20	0.05
0.05	2	20	0.1
0.07	3	20	0.15
0.07	4	20	0.2
0.09	5	20	0.25
0.10	6	20	0.3
0.13	7	20	0.35
0.15	8	20	0.4
0.18	9	20	0.45
0.19	10	20	0.5
0.23	11	20	0.55
0.23	12	20	0.6
0.25	13	20	0.65
0.25	14	20	0.7
0.26	15	20	0.75
0.32	16	20	0.8
0.33	17	20	0.85
0.36	18	20	0.9
0.40	19	20	0.95
0.42	20	20	1

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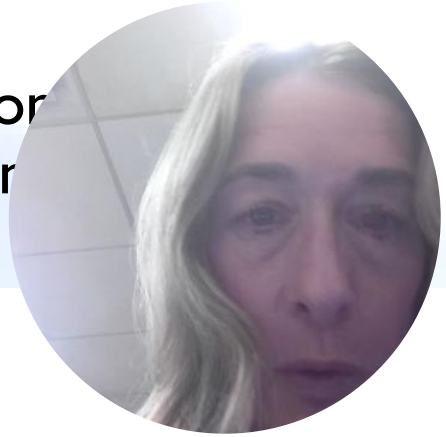

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