



## DATA SCIENCE

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**Dr. Karthik Chandrasekhar**

Department of Science and Humanities

**[karthikchandrasekhar@pes.edu](mailto:karthikchandrasekhar@pes.edu)**

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## Types of Transformations

**Karthik Chandrasekhar**

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## Types of Transformations

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When we see a plot of  $y$  vs  $x$  that does not admit a linear model, we transform the data in one of the many ways as follows, including but not limited to...

- $\ln y$  vs  $x$
- $\ln y$  vs  $\ln x$
- $y^b$  vs  $x^a$
- etc

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## Types of Transformations – In more generality

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The earlier mentioned transformations can also be generalized to for a more exhaustive list of transformations that can be used.

- $(\ln y)^a$  vs  $x^b$
- $(\ln y)^a$  vs  $(\ln x)^b$
- $y^b$  vs  $x^a$
- etc

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## Types of Transformations – In more generality

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- When seeing a heteroscedastic residual plot, using  $\ln y$  or  $y^a$  instead of  $y$  where  $0 < a < 1$  can be useful and is worth trying!
- When you see a trend or curve in the residual plot using  $y^2$  vs  $x$  or  $y$  vs  $x^{-1}$  can be useful and is worth trying.
- There is however no formula that can determine which transformation to use.



THANK YOU

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**Karthik Chandrasekhar**  
Department of Science and Humanities  
**[karthikchandrasekhar@pes.edu](mailto:karthikchandrasekhar@pes.edu)**