



SACRAMENTO STATE
COLLEGE OF ENGINEERING & COMPUTER SCIENCE



SACRAMENTO
STATE

Masoud Ghodrat Abadi

COVID-19 Related Content in Engineering Courses

Redefine the Possible™

Design Speed and Quarantine Period!

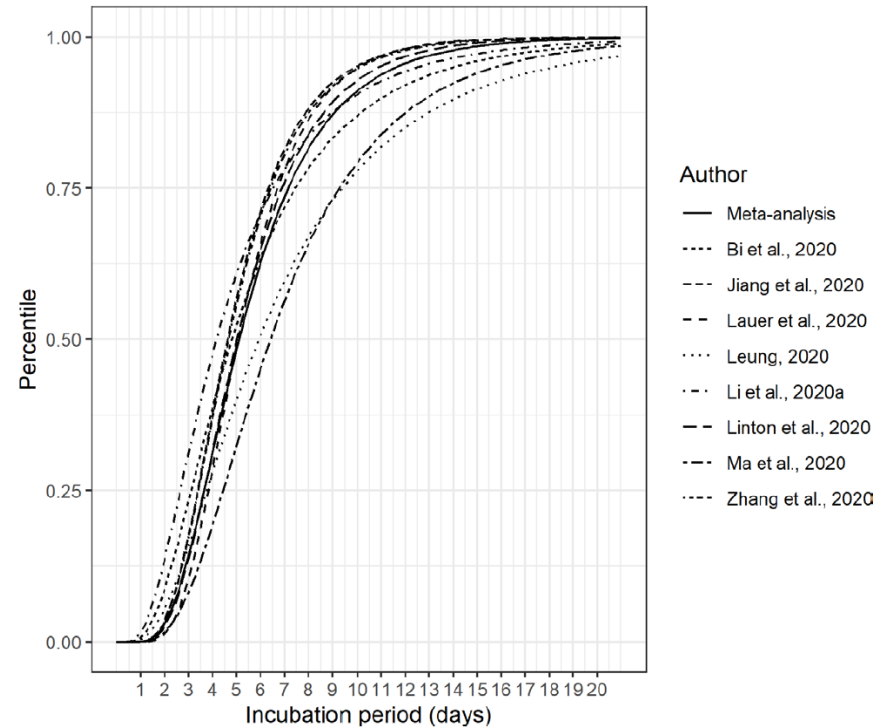
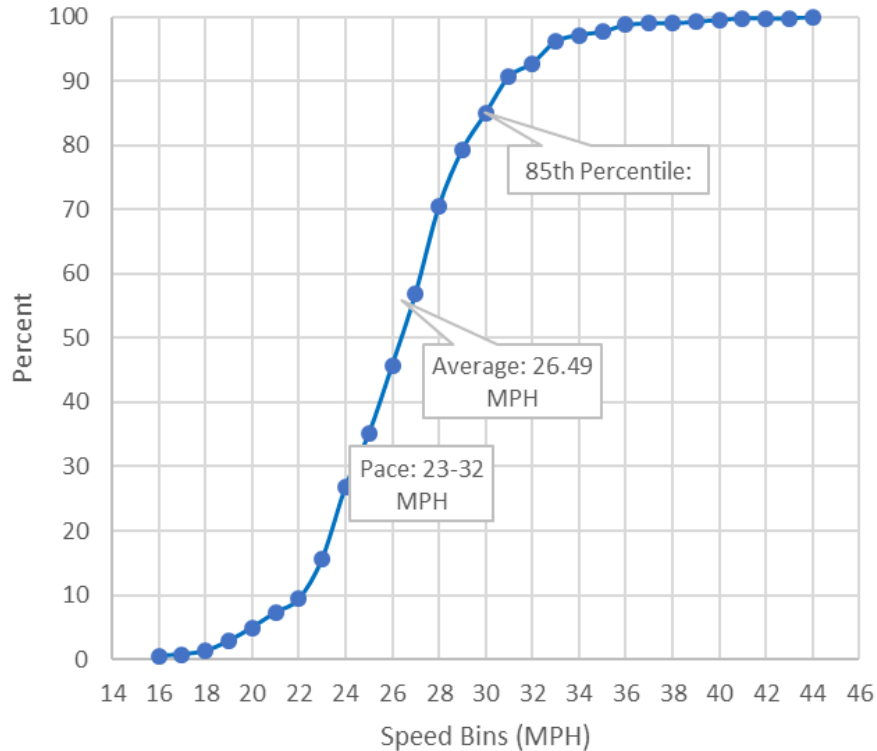


Figure 5 Cumulative distribution function of pooled lognormal distribution for incubation period and original input studies.

McAloon C, et al. *BMJ Open* 2020;**10**:e039652. doi:10.1136/bmjopen-2020-039652

Mode Choice in Travel Demand Modeling

CE 142 – Transportation Systems

❖ In-Class Problem #8 | Mode Choice

A calibration study resulted in the following utility functions for public transit and auto:

$$\text{Transit: } U_T = -0.1 - 0.025X_1 - 0.032X_2 - 0.015X_3 + 0.002X_4$$

$$\text{Auto: } U_A = -0.3 - 0.020X_3 + 0.003X_4$$

Where:

X_1 = Access Time (min)

X_2 = Waiting Time (min)

X_3 = Travel Time (min)

X_4 = Level of Comfort

The trip distribution forecast for a particular interchange was a target-year volume of $T_{ij} = 5000$ person-trips per day. The target-year service attributes of the two competing modes have been estimated to be:

| Attribute | X_1 | X_2 | X_3 | X_4 |
|-----------|-------|-------|-------|-------|
| Transit | 10 | 15 | 40 | 50 |
| Auto | - | - | 20 | 100 |

a) Apply the logit model to estimate the target-year market share of the two modes.

Engineering Statistics

- Probability of Success in Binomial Distribution



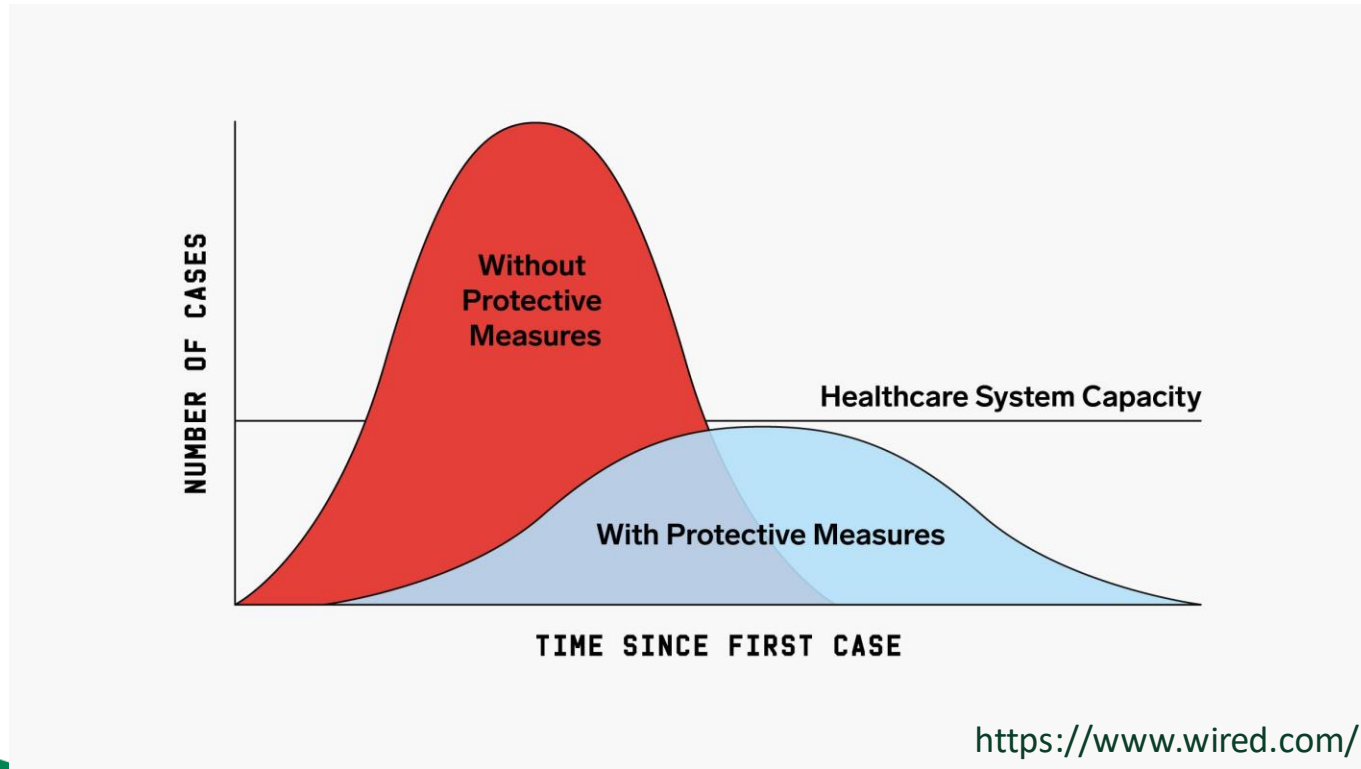
ENGR 115 – Statistics for Engineers

❖ In-Class Problem #15 | Binomial to Normal

The probability that a patient recovers from COVID 19 without any hospitalization is 0.8. If 100 people are known to have contracted this disease, what is the probability that at most 75 would not require hospital admission?

Engineering Statistics

- Flattening the Curve!



Engineering Statistics

- Null vs. Alternative Hypothesis

| | H_0 rejected | Fail to reject H_0 |
|-------------|----------------|----------------------|
| H_0 false | Correct | Type II error |
| H_0 true | Type I error | correct |

Alpha (α) = Prob (Type I error)

Beta (β) = Prob (Type II error)

Power = $1 - \beta$

Recent Studies



Transportation Research
Interdisciplinary Perspectives

Volume 5, May 2020, 100121



The effect of COVID-19 and subsequent social distancing on travel behavior

Jonas De Vos

[Show more](#)

[+ Add to Mendeley](#) [Share](#) [Cite](#)

<https://doi.org/10.1016/j.trip.2020.100121>

[Get rights and content](#)

Under a Creative Commons license

[open access](#)



Transportation Research
Interdisciplinary Perspectives

Volume 7, September 2020, 100181



Travel behavior changes during the COVID-19 pandemic in Japan: Analyzing the effects of risk perception and social influence on going-out self-restriction

Giancarlos Parady^a, Ayako Taniguchi^b, Kiyoshi Takami^a

[Show more](#)

[+ Add to Mendeley](#) [Share](#) [Cite](#)

<https://doi.org/10.1016/j.trip.2020.100181>

[Get rights and content](#)

Under a Creative Commons license

[open access](#)