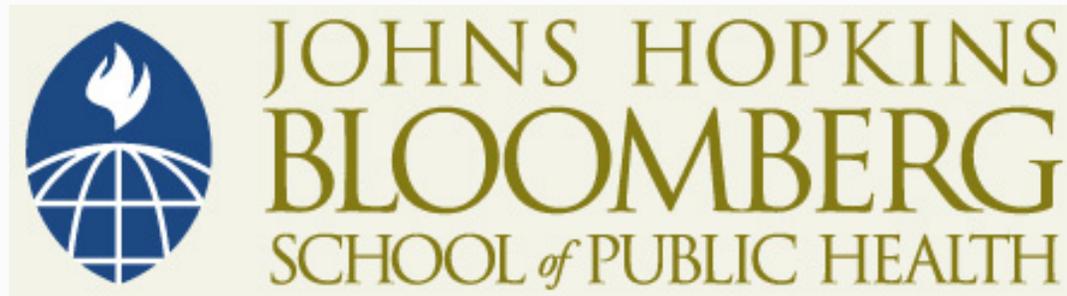


This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike License](https://creativecommons.org/licenses/by-nc-sa/4.0/). Your use of this material constitutes acceptance of that license and the conditions of use of materials on this site.



Copyright 2009, The Johns Hopkins University and John McGready. All rights reserved. Use of these materials permitted only in accordance with license rights granted. Materials provided "AS IS"; no representations or warranties provided. User assumes all responsibility for use, and all liability related thereto, and must independently review all materials for accuracy and efficacy. May contain materials owned by others. User is responsible for obtaining permissions for use from third parties as needed.



JOHNS HOPKINS
BLOOMBERG
SCHOOL *of* PUBLIC HEALTH

Lecture 3h: Practice Problem Solutions

John McGready
Johns Hopkins University

Practice Problems

1. In a study of patients hospitalized after myocardial infarction and treated with streptokinase, 2 of 15 patients died within 12 months.
 - a) Calculate by hand an approximate 95% CI for the one-year mortality rate (proportion) using the CLT based approach.

— Here $\hat{p} = \frac{2}{15} \approx 0.13$. Using the formula $\hat{p} \pm 2 \times \sqrt{\frac{\hat{p} \times (1 - \hat{p})}{n}}$

— yields: $0.13 \pm 2 \times \sqrt{\frac{0.13 \times .87}{15}} \rightarrow 0.13 \pm 2 \times 0.087 \rightarrow$
 $(-0.04, 0.30)$ or $(-4\%, 30\%)$.

Practice Problems

1. In a study of patients hospitalized after myocardial infarction and treated with streptokinase, 2 of 15 patients died within 12 months.
 - b) How does the interval in part a compare to the exact interval estimated by Stata?

```
cii 15 2
```

Variable	Obs	Mean	Std. Err.	-- Binomial Exact -- [95% Conf. Interval]	
	15	.1333333	.0877707	.0165759	.4046027

The exact interval is quite different than the one using the CLT based approach - here is an example of a “small sample” binary situation.

Practice Problems

2. Devise a one sentence “recipe” for calculating an approximate 95% CI for a parameter, whether it be a proportion or a mean (assume a large sample) using results from a single random sample.

— The recipe has consistently been:

“sample estimate $\pm 2 \times SE(\text{sample estimate})$ ”
(of parameter)