

# Discussion Section 1

1(a).  
 $Y_{1985}$  = # cancer  
in U.S.  
deaths in 1985

STAT 7  
30 Sep 19

①

$Y_{1970}$  =                      1970

$Y_{1985} = 462,000$

$Y_{1970} = 331,000$

absolute  
comparison =  $Y_{1985} - Y_{1970} = Y_{new} - Y_{old}$

=  $462,000 - 331,000$

= +131,000

there were

131,000 more cancer deaths in U.S.

in 1985 than in 1970

relative  
comparison:

$Y_{new} - Y_{old}$

                     =                       
 $Y_{old}$

(rough)  
= 33%

= 39.6%

+131,000

331,000

= 40%

there was a 40% increase in the <sup>(2)</sup>  
number of cancer deaths in U.S.  
from 1970 to 1985.

u.s. population

growth from 1970 to 1985 was  
positively, but not a 40% increase

another thing: we get better over  
time at correctly identifying  
each person's actual reason

for dying

better measure:

5-year survival  
rate:

$\frac{\# \text{ people still alive } 5 \text{ yrs. after diagnosis}}{\# \text{ patients}}$

1 (a) ① 39 beats in 30 seconds ③

② it took 65 sec to get 80 beats

---

$$\frac{39 \text{ beats}}{30 \text{ sec}} \Bigg| \frac{60 \text{ sec}}{1 \text{ min}} = \frac{78 \text{ beats}}{\text{min}}$$

$$\frac{80 \text{ beats}}{65 \text{ sec}} \Bigg| \frac{60 \text{ sec}}{1 \text{ min}} \approx \frac{74 \text{ beats}}{\text{min}} \approx 72$$

---

② was more informative than ①  
↔ ② gives 45 ~~more~~ <sup>more</sup> good data  
about pulse rate ↔ accuracy  
↑ ↔ uncertainty ↓

good data = measurement process <sup>(4)</sup>

unbiased

bias: systematic

tendency to over- or

under-estimate truth

intelligent guess = estimate

≈ 0.33

$\frac{131,000}{331,000} \approx 0.395 \approx 39.6\% \approx 40\%$

①

39 beats	60 sec	= 78 $\frac{\text{beats}}{\text{min}}$
<del>30 sec</del>	1 min	

②

80 beats	60 sec	= 73.8 $\frac{\text{beats}}{\text{min}}$
<del>65 sec</del>	1 min	

≈ 72

↑ more info (more time)  
 ↓ good

data = info ↑ accuracy ↑ uncertainty ↓