Bayes Exercise

For all data required refer to this website: https://covidnow.moh.gov.my/
Objective:
From the data available estimate the probability of dying due to Covid-19 after being fully vaccinated – this would be the probability of P(CD|V). Fully vaccinated means at least 2 innoculations.
We can obtain this probability by using the Bayes Theorem:

$$P(CD|V)=[P(V|CD)P(CD)]/P(V)$$

At the same calculate the probability of dying due to Covid-19 if not fully vaccinated. And from this obtain how much more protection is offered by the vaccination.

data time 2021/10/21

		CD		
		Y	N	
VAC	Y	2,821	23,262,627	23,265,448
	N	25,317	9,366,635	9,391,952
		28,138	32,629,262	32,657,400

V is fully vaccinated. P(V)=23265448/32657400=0.7124

CD is dying due to Covid-19. P(CD)=28138/32657400=0.0009

$P(CD \cap V)$ = 2821/32657400

the probability of dying due to Covid-19 if not fully vaccinated.
P(CD|V) =[P(V|CD)P(CD)]/P(V)
= $P(CD \cap V)$/P(V)
= (2821/32657400)/(23265448/32657400)
= 2821/23265448= 0.0001212528