Neyman Allocation

- $N = 319{,}795 \mid n = 5{,}000$
- $N_1 = 156{,}571 \quad N_3 = 11{,}234$

  $N_2 = 135{,}851 \quad N_4 = 16{,}139$
- $\sigma_{y_1} = 6.7832 \quad \sigma_{y_3} = 6.2559$

  $\sigma_{y_2} = 5.7897 \quad \sigma_{y_4} = 5.5883$
- $n_h = n \dfrac{N_h \sigma_{y_h}}{\sum_{k=1}^{H} N_k \sigma_{y_k}}$ | $\sum N_k \sigma_{y_k} = (156571)(6.7832) + (135851)(5.7897) + (11234)(6.2559) + (16139)(5.5883)$

  $\sum N_h \sigma_{y_h} = 2{,}009{,}057.296$

$\rightarrow n_1 = (5000)\dfrac{(156571)(6.7832)}{2{,}009{,}057.296} \approx \boxed{2{,}643.16}$

$n_2 = (5000)\dfrac{(135851)(5.7897)}{2{,}009{,}057.296} \approx \boxed{1957.48}$

$n_3 = (5000)\dfrac{(11{,}234)(6.2559)}{2{,}009{,}057.296} \approx \boxed{174.91}$

$n_4 = (5000)\dfrac{(16{,}139)(5.5883)}{2{,}009{,}057.296} \approx \boxed{224.46}$

$\sum n_h \approx 5{,}000.01 \approx 5{,}000 \Rightarrow$ Similar to what we chose for stratified sampling