Problem 1

o Yiz ~ Pois ( Wiz Aid), Aid ~ Gamma (You, Uog)

o county run her

d = oge group.

0 Yiz = death due 10 death stroke

Uiz = population

Til = deelle voite

op(Yiz/ Mid)= e (niz rid) (uiz rid) Yid

(Yid)

op( Nid | Yod, Nod) = Wod of yod of Yod-1(-Not Nid)

T(Yod)

o Dosterior:

P(Nid | Yid) 

e (Nid Aid) 

(Yid) 

(Yid)!

 $\frac{\gamma_{02}}{\Gamma(\gamma_{02})}$   $\frac{\gamma_{02}-\gamma(-n_{02})}{\Gamma(\gamma_{02})}$ e - (7i2) 7i2 7o2-1 (-nox loa) (Yid). 712 - ( nox + nix) 7i2 This Fesenbles a Kernel of a gæmma distrubition, so, cre conclude fuat a posterior distribution of Did is given by Tid ( Yid ~ Comma ( Yod + Yid, Wostwid) So, a fell conditional distribution can be ariten as P(Tiz) Yiz, Yoz, niz, noz) =

 $= (n_{02} + n_{id})^{\gamma_{i2} + \gamma_{02}}$   $= (\gamma_{02} + \gamma_{i2} - 1)^{-1/(n_{02} + n_{ed})} \lambda_{i2}$   $= (\gamma_{i2} + \gamma_{02})^{\gamma_{i2} + \gamma_{02}}$   $= (\gamma_{i2} + \gamma_{02})^{\gamma_{i2} + \gamma_{02}}$   $= (\gamma_{i2} + \gamma_{02})^{\gamma_{i2} + \gamma_{02}}$