Pure strategy equilibrium: individual i chooses I (inform) (payoff= v-c) and no one else does(payoff v).

if she deviates and chooses N will get 0

any other player gets v from N (given that i is choosing I): would get v-c from choosing I.

No pure strategy equilibrium where more than one person choses to inform police.

Symmetric mixed strategy equilibrium. Each person choses to inform with probability p

Pr(no one reports) = $(1-p)^n$

player i 's expected payoffs for reporting and not reporting:

u(N; p; n) =0* Prob(No one else reports)+ Pr(at least one other person reports) *v = $(1-(1-p)^{n-1})$ *v

u(I; p; n) = v-c;

In a mixed strategy equilibrium:

u(N; p; n) = u(I; p; n)

If v-c >$(1-(1-p)^{n-1})$ *v then player i should report for sure, that is, set p = 1 so we do not have a mixed strategy Nash equilibrium. v-c <$(1-(1-p)^{n-1})$*v then player i should not report for sure, that is, set p = 0 so we do not have a Nash equilibrium.

A Nash equilibrium occurs when:

v -c = $[1-(1-p)^{n-1}]$*v

$1-p=(c/v)^{1/(n-1)}$

With n increasing, i.e. the more witnesses there are, the less likely each witness is to inform the police.

The probability that no one reports the crime is:

Pr(no one reports) = $(1-p)^n = (c/v)^{1+(1/(n-1))}$

With n increasing, i.e. the more witnesses there are, the less likely the police is informed about the crime.