Yield vs Fight:

Confrontation between two people: $P_1, P_2$

Each can choose to either $<Yield$ (Y)$>$ $<Fight$ (F)$>$
One type of Player 1.
Two types of Player 2

Player 2

Strong \( P = \frac{1}{4} \)
Weak \( P = \frac{3}{4} \)

Bayesian Yield vs Fight

<table>
<thead>
<tr>
<th></th>
<th>Y</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>0,0</td>
<td>0,1</td>
</tr>
<tr>
<td>F</td>
<td>1,0</td>
<td>-1,1</td>
</tr>
</tbody>
</table>

\[ \text{Strong: } P(S) = \frac{1}{4} \]
\[ \text{Weak: } P(W) = \frac{3}{4} \]
Player 2 chooses $(F, Y)$

Player 2 of type strong chooses $F$

Player 2 of type weak chooses $Y$

$u_i(Y, (F, Y))$

Player 1 chooses $Y$

Player 2 of type weak

Player 2 of type strong

$= 0 \times \frac{1}{4} + 0 \times \frac{3}{4} = 0$
\[ U, (F, (F, Y)) \]

Player 1 choosing \( F \) \( \Rightarrow \) Player 2 of type strong chooses \( F \),

\[ U = -1 \times \frac{1}{4} + 1 \times \frac{3}{4} = -\frac{1}{4} + \frac{3}{4} = \frac{1}{2} \]

Let player 2 choose \( (F, F) \)

Player 2 of type weak chooses \( Y \),

Player 2 of type weak chooses \( F \)
\[ U_1(y, (F, F)) = 0 \times \frac{1}{4} + 0 \times \frac{3}{4} = 0 \]
\[ U_1(F, (F, F)) = (-1) \times \frac{1}{4} + 1 \times \frac{3}{4} = -\frac{1}{4} + \frac{3}{4} = \frac{1}{2} \]

We also have to compute average payoffs of Player 1, corresponding to \((y, F), (y, y)\) of Player 2.
\( (Y, F) \) Player 2 of type strong chooses \( Y \)
Player 2 of type weak chooses \( F \).

\( (Y, Y) \) Player 2 of type strong chooses \( Y \)
Player 2 of type weak also chooses \( Y \).

\( Y \) is a dominated strategy for player 2 of type strong.
Therefore, in any Nash equilibrium of the game, Player 2 of type strong is NOT choosing Y.
Is \((F, (F, Y))\) a Bayesian Nash Equilibrium?

\(F\) or Player 1 is BR to \((F, Y)\) if Player 2:
- If Player 2 of type strong is BR to F at Player 1
- Y of Player 2 of type weak is BR to F at Player 1

Therefore \((F, (F, Y))\) is a Bayesian Nash Equilibrium of this game since each player of each type is playing BR.
Is \((F, (F, F))\) a BNE?

- Player 1 chooses \(F\)
- Player 2 of type strong chooses \(F\)
- Player 2 of type weak chooses \(F\) \(\times\) NOT OR

Bayesian Nash Equilibrium \((F, (F, Y))\)

- Player 1 chooses \(F\)
- Player 2 of type weak chooses \(Y\)