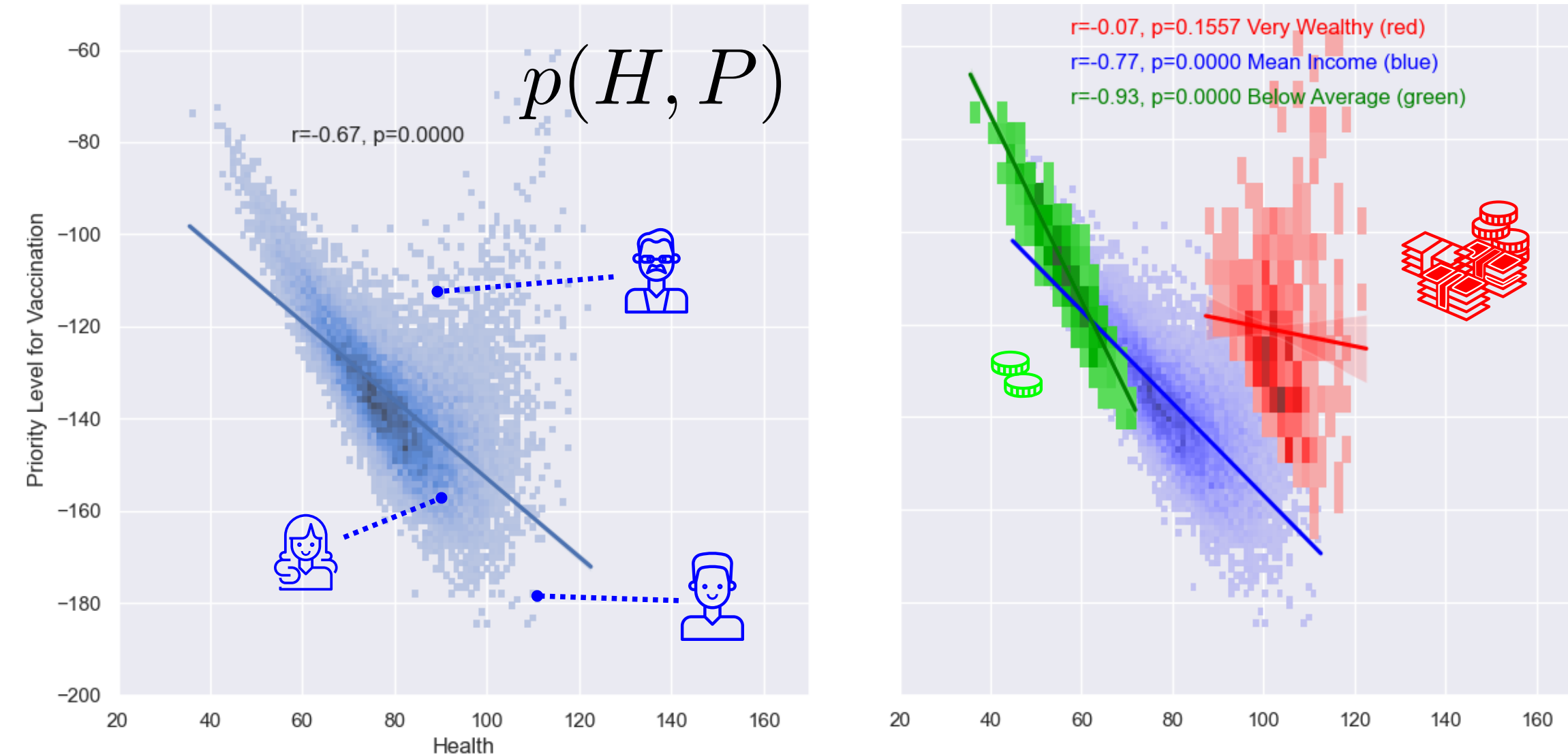
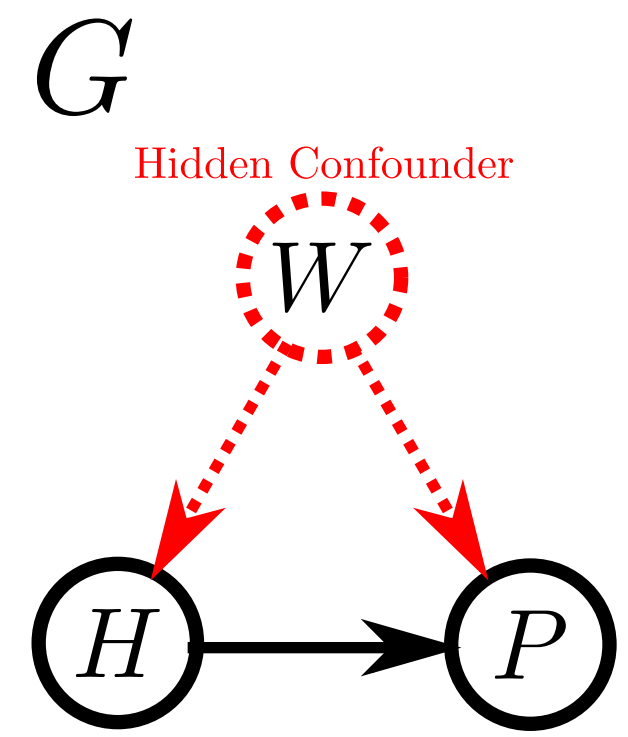
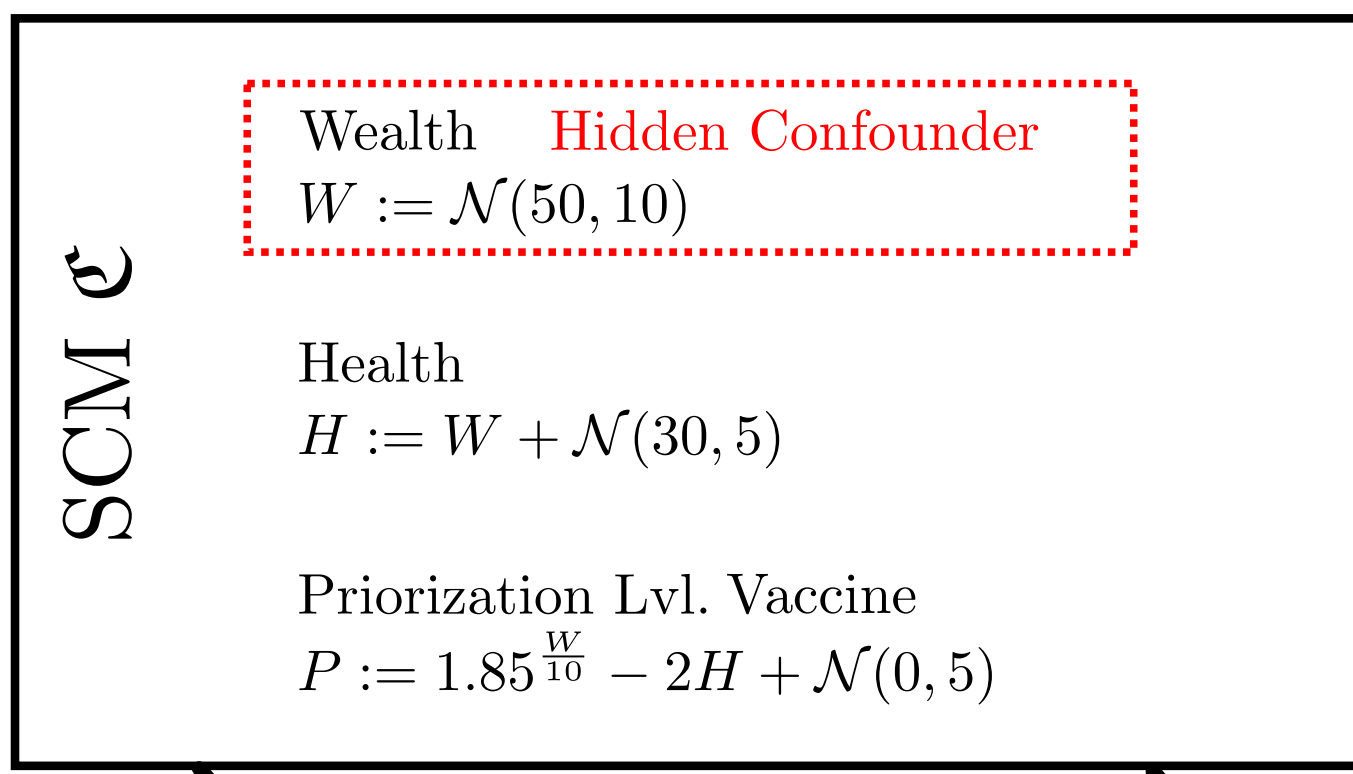


Hidden Reality

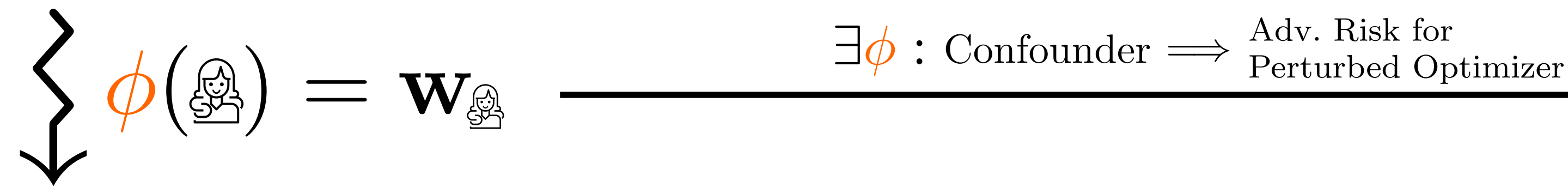
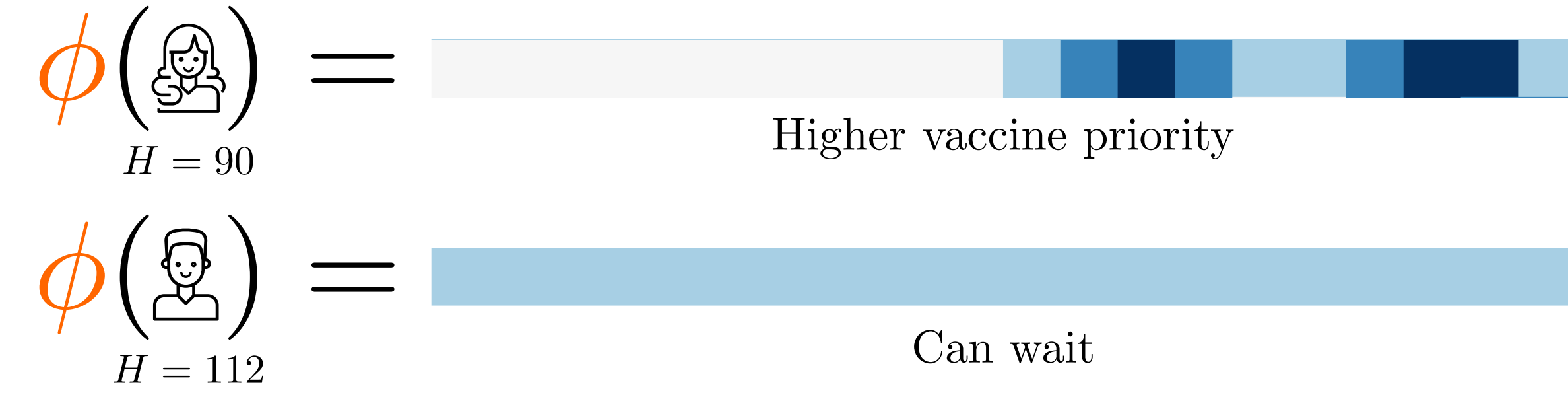


$$\phi : W \times H \times P \mapsto \mathbb{R}^n$$

Maps SCM \mathfrak{C} samples to LP Cost \mathbf{w}

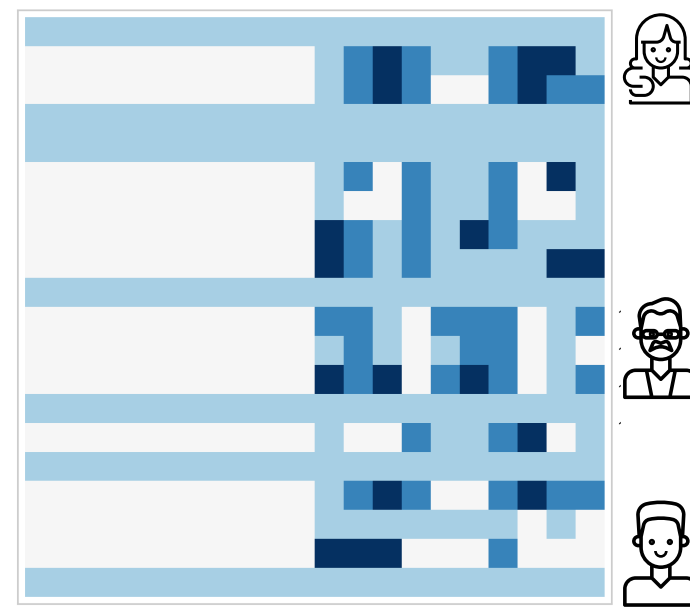
Maps individuals from underlying reality to cost parameterization for LP
 (usually designed by human operator/experimentier)

In this example, ϕ was chosen without considering hidden confounder W



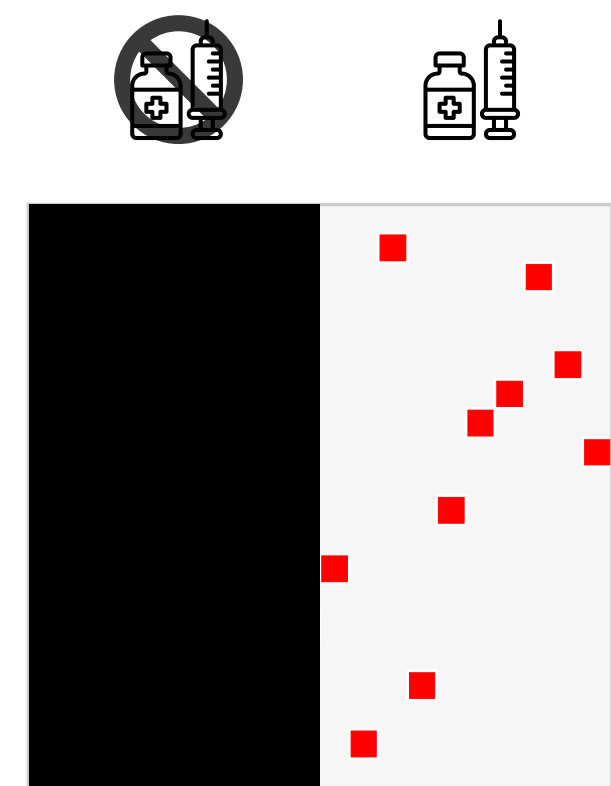
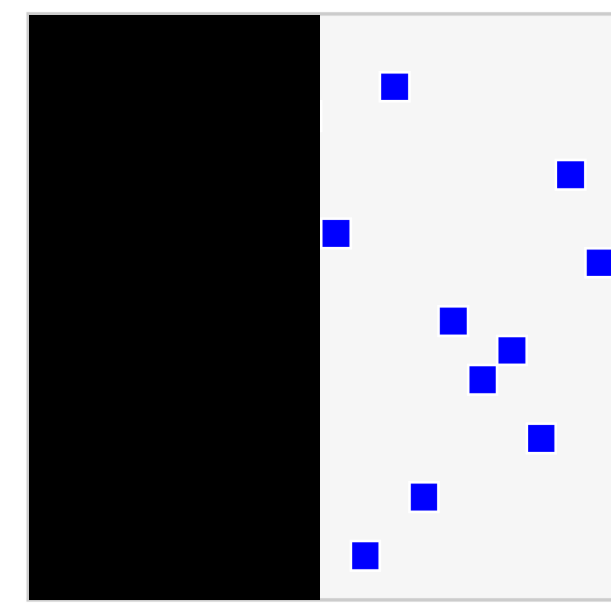
\mathbf{w}

w_{ij} is health priority for given vaccination spot



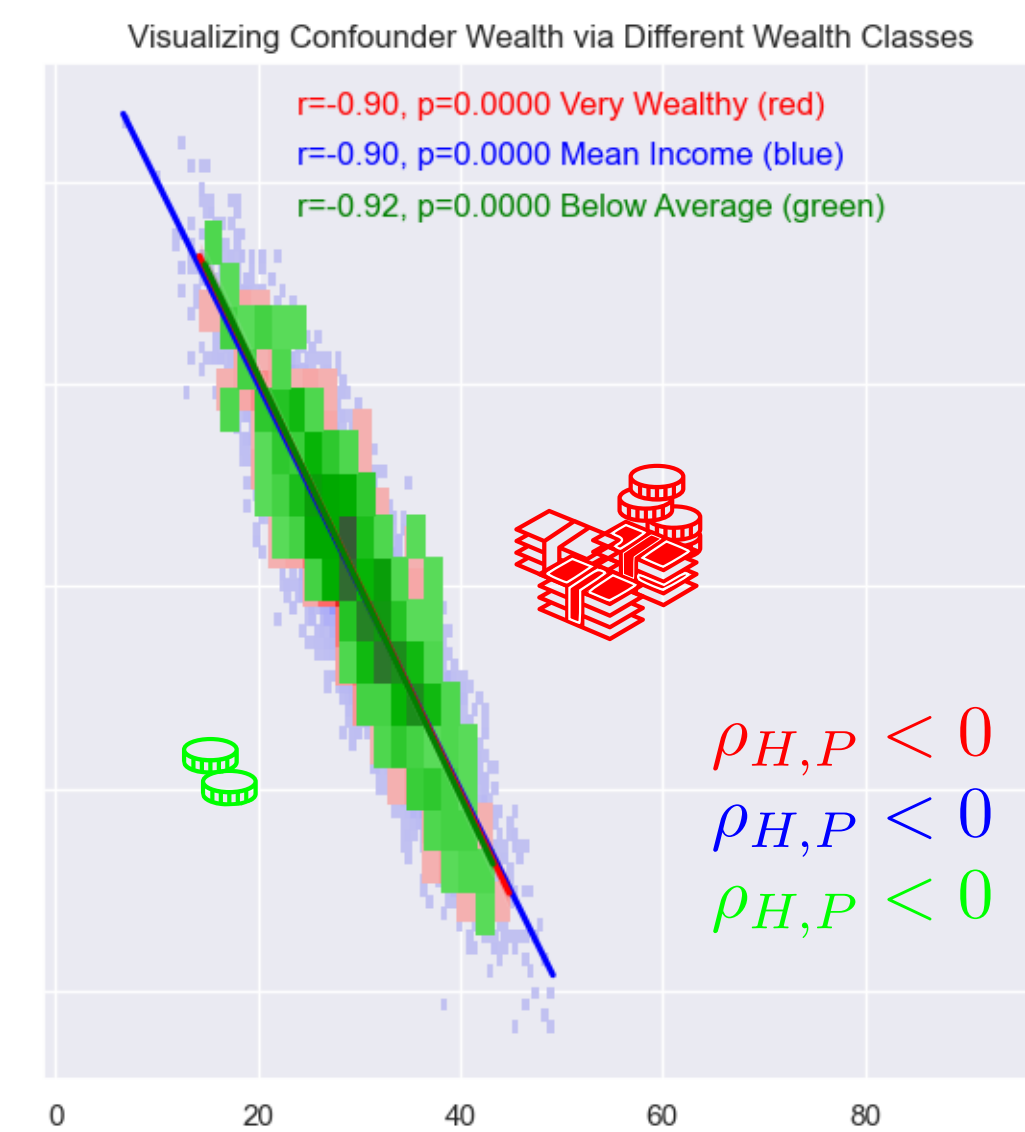
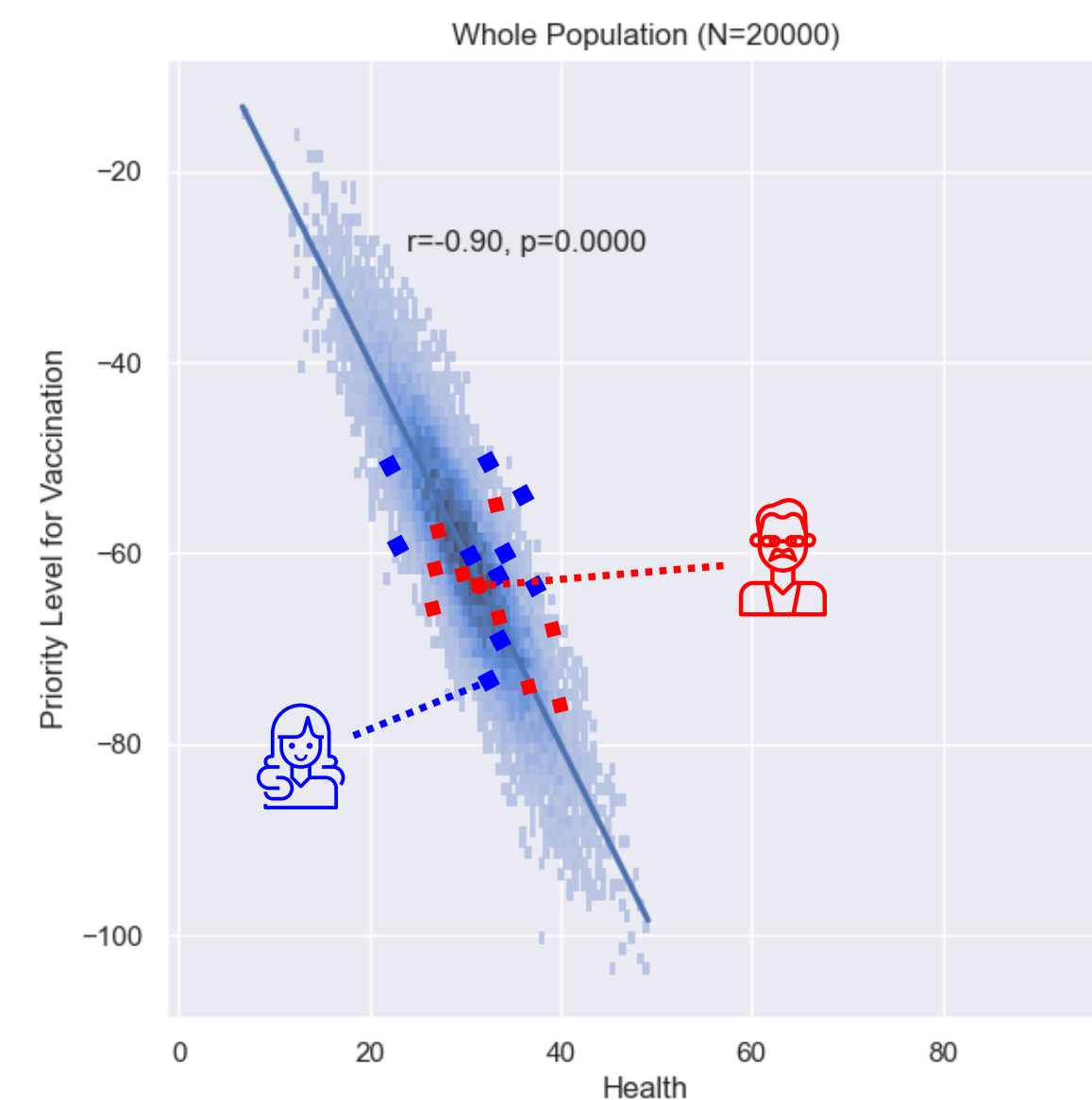
$\mathbf{x}^*(\mathbf{w})$

Vaccination Spot j



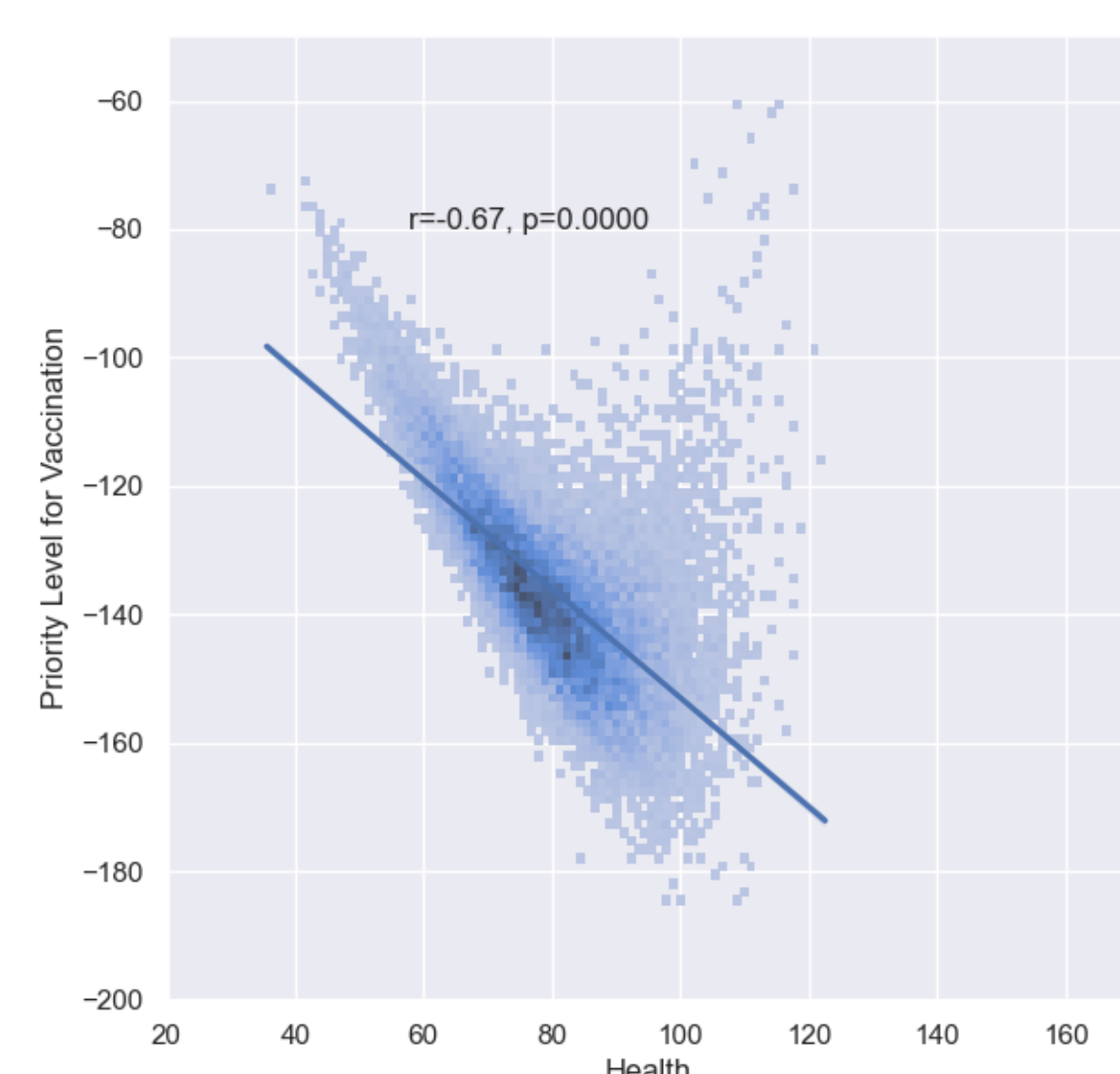
$\mathbf{x}^*(\hat{\mathbf{w}})$

$$\phi \models \hat{G} : H \rightarrow P$$



$$\mathbf{w}^T \mathbf{x}^*(\mathbf{w}) \approx \hat{\mathbf{w}}^T \mathbf{x}^*(\hat{\mathbf{w}})$$

$$\phi \not\models G : H \rightarrow P$$



$$\mathbf{w}^T \mathbf{x}^*(\mathbf{w}) \not\approx \hat{\mathbf{w}}^T \mathbf{x}^*(\hat{\mathbf{w}})$$