$-\hat{\sigma}_x\hat{\sigma}_y < \text{cov}(x, y) < 0$
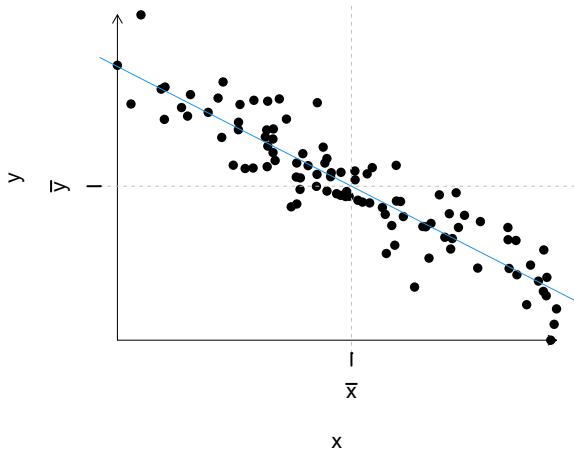
$\text{cov}(x, y) = -\hat{\sigma}_x\hat{\sigma}_y$