

PSM SPRING 2018, HOMEWORK 6

1. (The following probability numbers are my invention)
 - The probability that an adult person is suffering from schizophrenia is 0.01.
 - The probability that an adult person wearing a hearing aid hears voices is 0.1.
 - The probability that a schizophrenic adult person who has a hearing aid hears voices is 0.99.
 - The probability that an adult person has a hearing aid is independent of whether this person is schizophrenic.

Mr. Thompson, who wears a hearing aid, hears voices. What is the probability that he suffers from schizophrenia?

2. Let $\Omega = \{\omega_1, \omega_2\}$ and $X, Y : \Omega \rightarrow \{0, 1\}$. Specify a probability measure P on Ω and concrete values $X(\omega_i), Y(\omega_i)$ (where $i = 1, 2$) such that X, Y are identically distributed but not for all $\omega \in \Omega : X(\omega) = Y(\omega)$.
3. Verify the claim made in the last bullet point in the list after Definition 12 in the lecture notes.