$$\mathbb{P}\left(\not{x}_i\, X_I \in D \mid I_{\not{j}},\ X_j \not{a} = x \right)$$

$$= \mathbb{P}\left(X_I \in D \mid X_i \leq c\ i \notin I,\ X_i > c\ i \in I,\right.$$
$$\left. X_j = x \right)$$

$$= \int \mathbb{P}\left(X_I \in D \mid X_i > c\ i \in I,\ X_i = x_i\ i \notin I,\ X_j = x \right)$$
$$dx_1 \cdots, x_{\ldots}$$

$$\mathbb{P}(X \in D \mid X > c,\ X_i = x_i) \longrightarrow \text{for } x_i > c$$

$$= \frac{\mathbb{P}(X \in D,\ X > c \mid X_i = x_i)}{\mathbb{P}(X > c \mid X_i = x_i)} = \mathbb{P}\left(X_j > c\ j \neq i \mid X_i = x_i \right)$$

this is increasing

$$\int_{X > c} p(x \mid X_i = x_i)\, dx$$