Logic of Causality

Sufficient & Necessary Conditions: Definition

Sufficient Condition

- **if that Condition is present (*), the Phenomenon will be present (*)**
- **if C, then P**

Necessary Condition

- **if the Phenomenon is present (*), that Condition will be present (*)**
- **if P, then C**

Sufficient & Necessary Conditions: Eliminating Candidates

When a Condition is not Sufficient

- **presence (*) of C and absence (-) of P falsifies "if C, then P"**
- **therefore, when C is present (*) and P is absent (-), that condition is not a sufficient cause (C is ~S)**

When a Condition is not Necessary

- **presence (*) of P and absence (-) of C falsifies "if P, then C"**
- **therefore, when P is present (*) and C is absent (-), that condition is not a necessary cause (C is ~N)**

Calculating Sufficient and Necessary Conditions

Condition	**Phenomenon**	**Causal Status**
*	-	C is ~S
-	*	C is ~N
-	-	C is S, given this data
*	*	C is N, given this data