Summary of Tableau 9, Part 1

Independence
A first look at independent events

- *Informally*: Independence is a rule of products. It captures the intuitive idea that if events are independent then the occurrence of one does not affect the chances of the other.
- The *formal definition*: Events A and B in a probability space are independent if $\mathbf{P}(A \cap B) = \mathbf{P}(A)\,\mathbf{P}(B)$.
  - If A and B are independent then so are A and B^c (as also A^c and B, and also A^c and B^c).
  - Events A and B are conditionally independent given an event C if $\mathbf{P}(A \cap B \mid C) = \mathbf{P}(A \mid C)\,\mathbf{P}(B \mid C)$.
  - Conditional independence does not imply independence, or vice versa.