Meeting 4
Development Economics Cohort

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November 5, 2022

Overview

1 Recap of Last Meeting

2 Intro to Set Theory
- Intersection
- Union
- Complement
- Other Notations
- Combination of Three Events

3 R - IHDS Workbook

Overview

Recap of Last Meeting

▶ **Sample space**: a set that contains every possible outcome of a random experiment.

▶ **Event**: a subset of sample space; an unambiguous outcome of the experiment that can be determined by yes or no.

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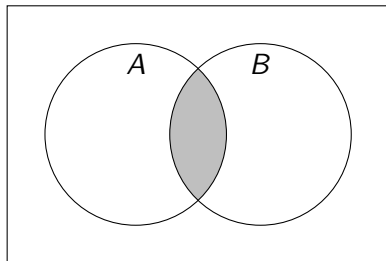
③ R - IHDS Workbook

Intro to Set Theory

Let $A, B \subset \Omega$ be two events in the sample space. Keep these two guys in mind and we will define three terms later.

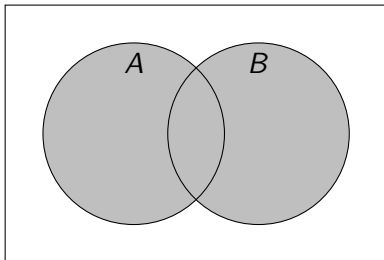# Intersection

Let's firstly define the term **intersection**:

▶ Mathematically, we denote $A \cap B = \{\omega \in \Omega : \omega \in A \text{ and } \omega \in B\}$.

▶ Definition in words: The intersection contains elements that are both in A and in B.

Union

Then, we are going to define **union**.

▶ Mathematically, we denote $A \cup B = \{\omega \in \Omega : \omega \in A \text{ or } \omega \in B\}$.

▶ Definition in words: The union contains elements that are either in A or in B.

Complement

- Mathematically, we denote the complement of A as $A^c = \{\omega \in \Omega : \omega \notin A\}$.
- Definition in words: The complement contains all the elements that are not in A.

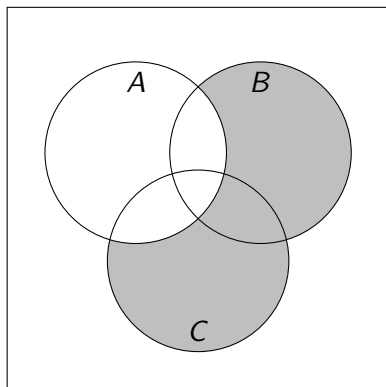# Other Notations

- **Multiple intersections**: $\bigcap_{i \geqslant 1} A_i = A_1 \cap A_2 \cap A_3 \cap \ldots$;
- **Multiple unions**: $\bigcup_{i \geqslant 1} A_i = A_1 \cup A_2 \cup A_3 \cup \ldots$;
- Explanation in words: These two above expressions can help us to define the intersection/union of more than two sets. Especially when we have a large collection of events, we can use these notations to simplify.

Combination of Three Events

▶ Example: $(B \cup C) \cap A^C$

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