Inferential Statistics

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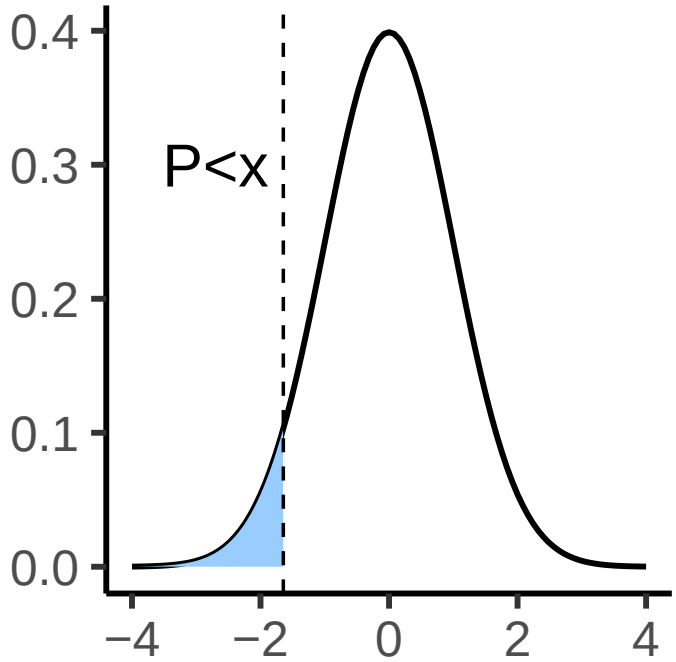
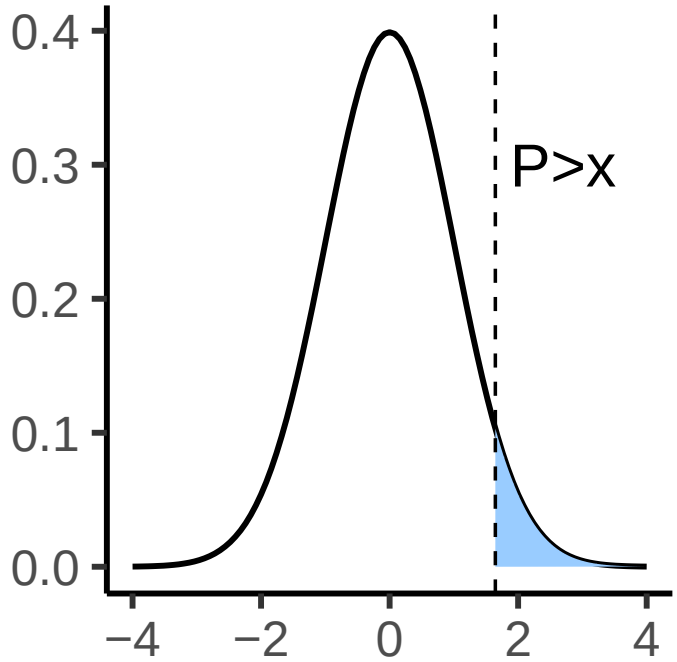
Fall 2024

Expanding on Hypothesis Testing

- 1-tailed
  - Hypothesis includes an **expected direction**.



- Decrease
- Cooler
- Smaller
- Lower



- Increase
- Warmer
- Higher
- Expand

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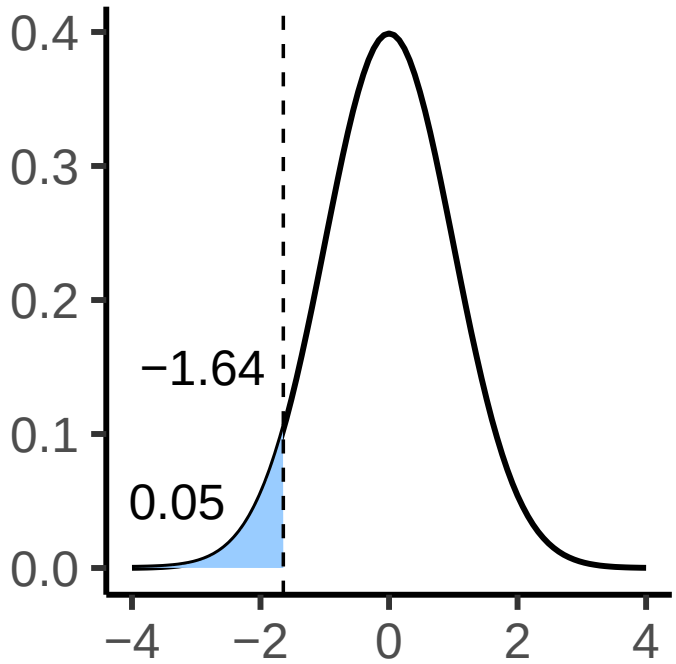
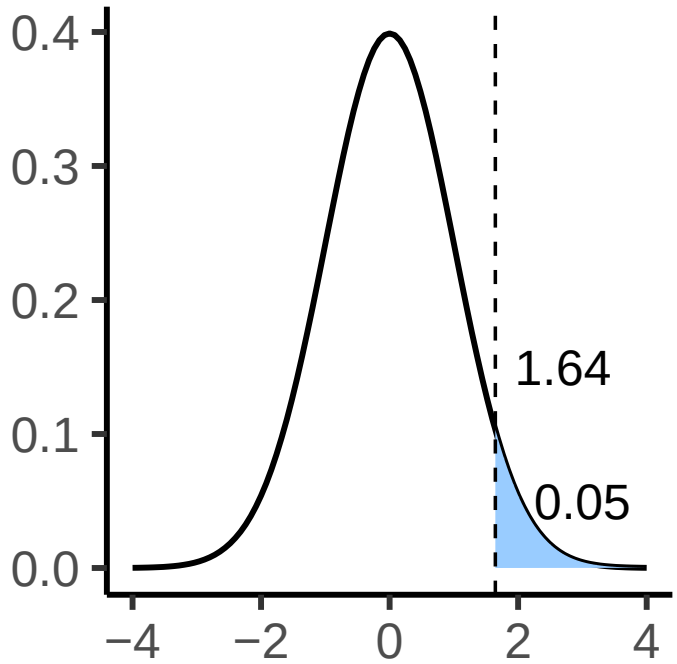
Expanding on Hypothesis Testing

- 1-tailed - hypothesis includes an **expected direction**.





- If your obtained test statistic falls beyond the critical value (lightblue) for your given Alpha threshold = Significant result, **reject the null**.

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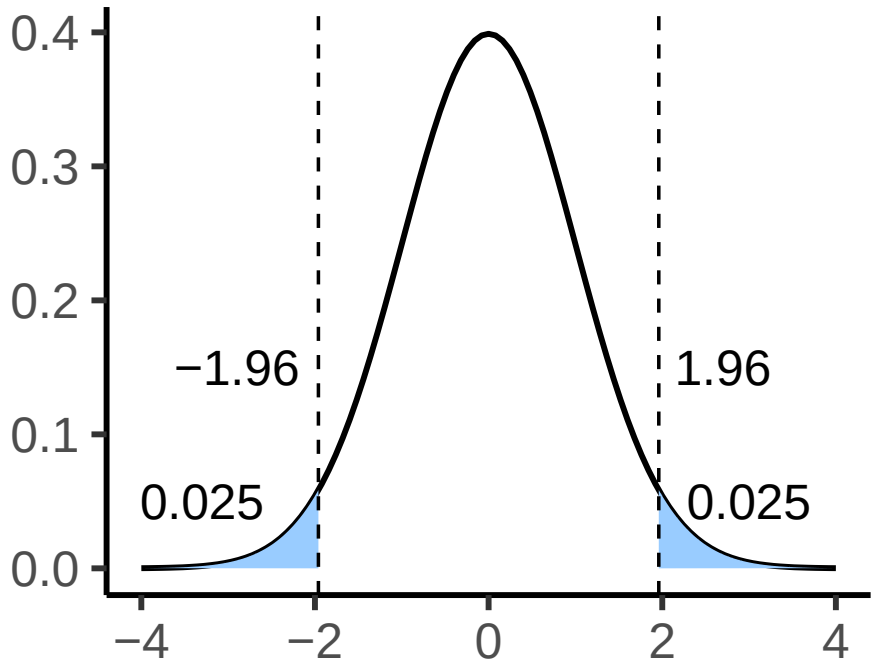
Expanding on Hypothesis Testing

- 2-tailed tests:
  - Have **no expected directionality** hypothesized.
  - Splits the 5% of the area under the curve that would be considered significant between both tails of the normal distribution curve.
  - Are therefore less powerful tests (more likely to find a significant result).



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Significant or Not?

- **Not significant**:
  - Accept the null hypothesis.
  - There is **no** difference between the sample and population mean.
  - Obtained test statistic $<$ critical value threshold.
  - p-value $>$ alpha threshold (usually 0.05).

Significant:

- Reject the null hypothesis,
- There **is** a difference between the sample and population mean.
- Obtained test statistic $>$ critical value threshold.
- p-value $<$ alpha threshold (usually 0.05).

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Basic steps for an **Inferential Test**

contents. . .

- A statement of null hypothesis.
- Choose the appropriate test.
- Set the level of Type I error risk (alpha)
- Analyze data distribution
- Compute the test statistic (obtained) value
- Assess significance:
  - Determine the critical value needed to reject the null hypothesis and compare it to your - calculated test statistic
  - Determine the p-value associated with your calculated test statistic
- Summarize

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