

# Lab 5: Regional Pooling Implementation

## No pooling vs complete vs partial pooling, Bias-variance trade-offs, Shrinkage effects

CEVE 543 Fall 2025

2025-09-26

### 1 Objectives

1. Implement hierarchical Bayesian models with different pooling strategies
2. Understand bias-variance trade-offs in regional frequency analysis
3. Observe shrinkage effects in partial pooling models

### 2 Before

#### ! Instructions

Do this before the lab date so that lab itself can go more smoothly.

### 3 Background and Reading

### 4 Tasks

Modify the code section below to address the following tasks.

1. Implement no pooling, complete pooling, and partial pooling models
2. Compare bias-variance trade-offs across different pooling strategies
3. Visualize and analyze shrinkage effects in hierarchical models
4. Assess regional frequency analysis performance with different approaches

### 5 Code

### Bibliography