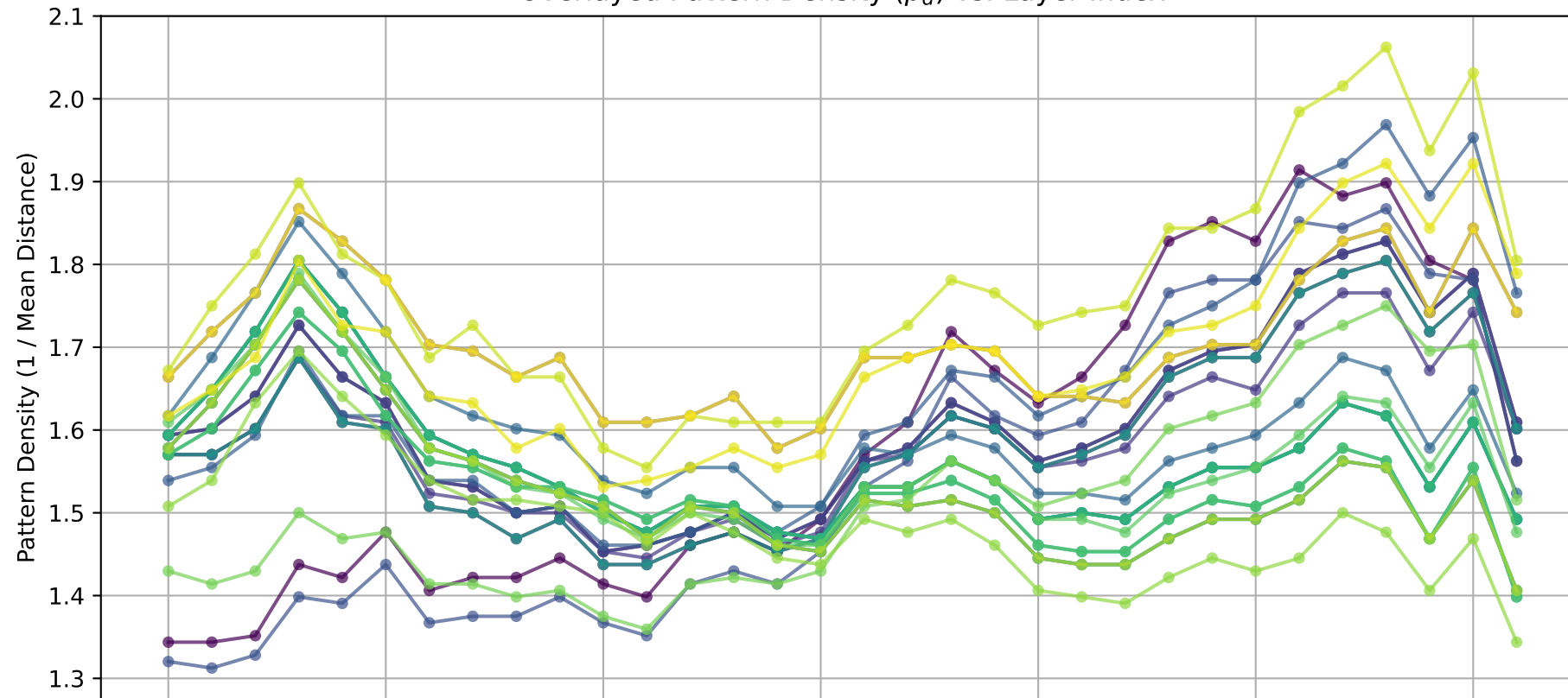
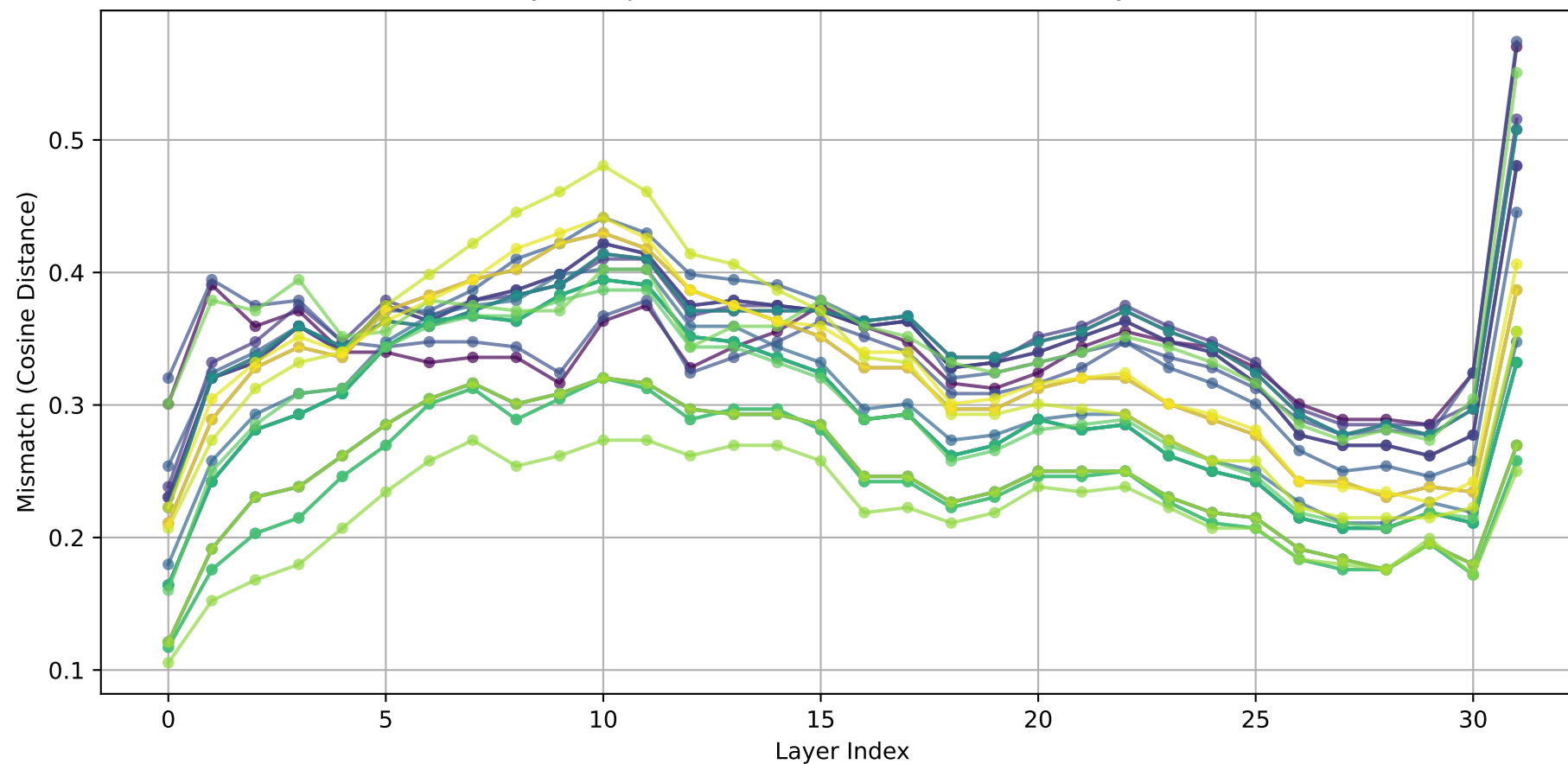


# Meta-Llama-3.1-8B-Instruct Overlayed Hidden Density and Distance Trajectories

Overlayed Pattern Density ( $\rho_d$ ) vs. Layer Index



Overlayed Representational Mismatch ( $d_r$ ) vs. Layer Index



- Task
- Country to Capital (1)
  - Simple Addition (1)
  - Base 10 Arithmetic - Addition (1)
  - Base 10 Arithmetic - Subtraction (1)
  - English to French Translation (2)
  - Base 10 Arithmetic - Multiplication (2)
  - Synonym Matching (2)
  - Unscramble Words (3)
  - Base 10 Arithmetic - Modulo (3)
  - Base 9 Arithmetic - Addition (4)
  - Base 9 Arithmetic - Subtraction (4)
  - Base 8 Arithmetic - Addition (4)
  - Base 8 Arithmetic - Subtraction (4)
  - minus -> plus (5)
  - Base 9 Arithmetic - Multiplication (5)
  - Base 9 Arithmetic - Modulo (5)
  - Base 8 Arithmetic - Multiplication (5)
  - Base 8 Arithmetic - Modulo (5)
  - Pattern Induction (6)
  - Prime Factor Decomposition (6)
  - Symbol Substitution Puzzle (7)
  - Logic Deduction (8)
  - Anagram Logic Puzzle (8)
  - Word Math (9)
  - Tower of Hanoi (10)