

Phase 4 Plus Visualization Atlas

用途：对当前 package 中所有 figure 的用途、路径和引用方式做一份统一说明。原则：本 atlas 既回答“哪些图被用了”，也回答“每张图在当前论证中负责什么”。

1. 为什么当前 package 需要单独的图件 atlas

当前 `Phase 4 + next-stage + next-layer` 的叙事既依赖旧的 anchor figures，也依赖这次新生成的状态/bridge/gate 图；同时，meeting 里已经明确要求主图、补充图、历史图、archive support figure 分层管理。因此，如果只给 PDF，而不给单独 atlas，后来的人很容易知道“图存在”，但不知道：

- 哪张图服务 mechanism-first；
- 哪张图服务 Group B；
- 哪张图只是 boundary/support；
- 哪张图是这次 package 新增，而不是旧项目遗留；
- 哪张图来自当前项目树，哪张图来自 archive support tree。

2. 当前 figure inventory 摘要

- current-delivery generated figures: 6
- anchor figures reused in current story: 3
- current project support figures: 14
- archive support figures: 6
- canonical figure total in this package: 29

2.1 Current generated figures

- F1 | results/phase4plus_figures/phase4plus_fig1_delivery_status_matrix.png | Top-level state ladder from frozen Phase 4 to evidence-gated delivery.
- F2 | results/phase4plus_figures/phase4plus_fig2_cross_country_bridge.png | Accuracy and delta profile for UK, USA, and MTUS wave-1 bridge rows.
- F3 | results/phase4plus_figures/phase4plus_fig3_mtus_wave1_country_delta.png | Five-country wave-1 delta profile for current MTUS bridge evidence.
- F4 | results/phase4plus_figures/phase4plus_fig4_groupb_axes.png | Employment, gender, income, and age status with structural-boundary annotation.
- F5 | results/phase4plus_figures/phase4plus_fig5_extension_support.png | Trigger difficulty, contextual/hazard lift, and expanding-window negativity.
- F6 | results/phase4plus_figures/phase4plus_fig6_evidence_gate.png | Default-delivery pass/hold structure and stronger-claim trigger rule.

2.2 Current anchor figures

- ANCHOR-6 | results/anchor_figures/figure6_transition_analysis.png | Primary mechanism-first anchor for stay versus transition asymmetry.
- ANCHOR-8 | results/anchor_figures/figure8_input_info_effect.png | Anchor figure for the claim that more history or channels do not materially improve prediction.
- ANCHOR-10 | results/anchor_figures/figure10_dimension_importance.png | Primary social-stratification figure, but only under explicit caption boundaries.

2.3 Current project support figures

- **FIGURE1** | `results/project_figures/figure1_a_class_performance.png` | Historical stage overview for cross-channel asymmetry. Keep as background, not current mainline.
- **FIGURE2** | `results/project_figures/figure2_b_class_heatmap.png` | Grouped heatmap context for older subgroup evidence.
- **FIGURE3** | `results/project_figures/figure3_e2b_waterfall.png` | Historical channel-to-channel asymmetry support figure.
- **FIGURE4** | `results/project_figures/figure4_e1_model_comparison.png` | Historical accuracy-first comparison. Preserve as archive evidence only.
- **FIGURE5** | `results/project_figures/figure5_bootstrap_ci.png` | Bootstrap uncertainty support for between-group spread estimates.
- **FIGURE7** | `results/project_figures/figure7_imputation_robustness.png` | Supplementary robustness figure for missingness handling.
- **FIGURE9** | `results/project_figures/figure9_unified_model_comparison.png` | Historical unified comparison figure retained as background.
- **FIGURE11** | `results/project_figures/figure11_deep_transition.png` | Current mainline support figure for transition difficulty across model families.
- **FIGURE12** | `results/project_figures/figure12_order_vs_bag.png` | Current mechanism-support figure showing sequence order dominance.
- **FIGURE13** | `results/project_figures/figure13_role_timelines.png` | Interpretive timeline figure for role-pattern communication.
- **FIGURE14** | `results/project_figures/figure14_role_comparison.png` | Interpretive comparison figure for role-pattern communication.
- **SUPP1** | `results/project_figures/supplementary_fig1_deep_models_by_income.png` | Supplementary figure for high-income complexity and deep-model lift.
- **SUPP2** | `results/project_figures/supplementary_fig2_multitask_comparison.png` | Supplementary architecture-comparison figure.
- **SUPP3** | `results/project_figures/supplementary_fig3_error_rate_by_group.png` | Supplementary group-level error distribution figure.

2.4 Archive support figures

- **P2-F8** | `results/archive_support_figures/phase2_fig8_us_sample_size_delta_shift.png` | Archive support figure showing why quick negatives should not be over-read without pooled support.

- P2-F10 | [results/archive_support_figures/phase2_fig10_us_pooled_support_vs_delta.png](#) | Archive support figure for pooled support-width and activity/location delta interpretation.
- P3-F1 | [results/archive_support_figures/phase3_fig1_a1_delta_by_country.png](#) | Archive support figure for MTUS country-level external-validity variation.
- P3-F10 | [results/archive_support_figures/phase3_fig10_sample_size_vs_delta.png](#) | Archive support figure for sample-size sensitivity in external-validity runs.
- P3-F11 | [results/archive_support_figures/phase3_fig11_a1_country_ci_forest.png](#) | Archive support figure for country-level uncertainty without sign reversal.
- P3-F12 | [results/archive_support_figures/phase3_fig12_b1_distribution_boxplots.png](#) | Archive support figure for grouped full-run distributions across countries.

3. 图件逐张说明

3.1 Current generated figures

1. Phase 4+ delivery status matrix

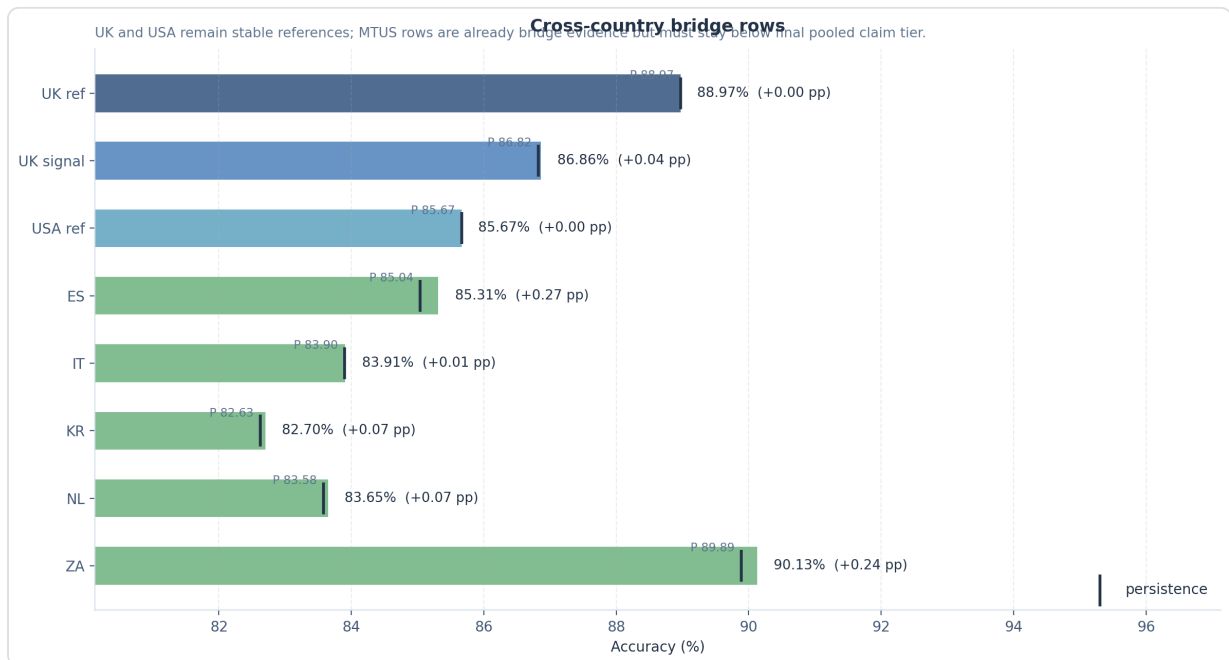
- canonical_path: results/phase4plus_figures/
phase4plus_fig1_delivery_status_matrix.png
- original_path: ORIGINAL_FIGURES/PHASE4PLUS_results_figures/
phase4plus_fig1_delivery_status_matrix.png
- source: live summary jsons
- package role: Top-level state ladder from frozen Phase 4 to evidence-gated delivery.



2. Cross-country bridge rows

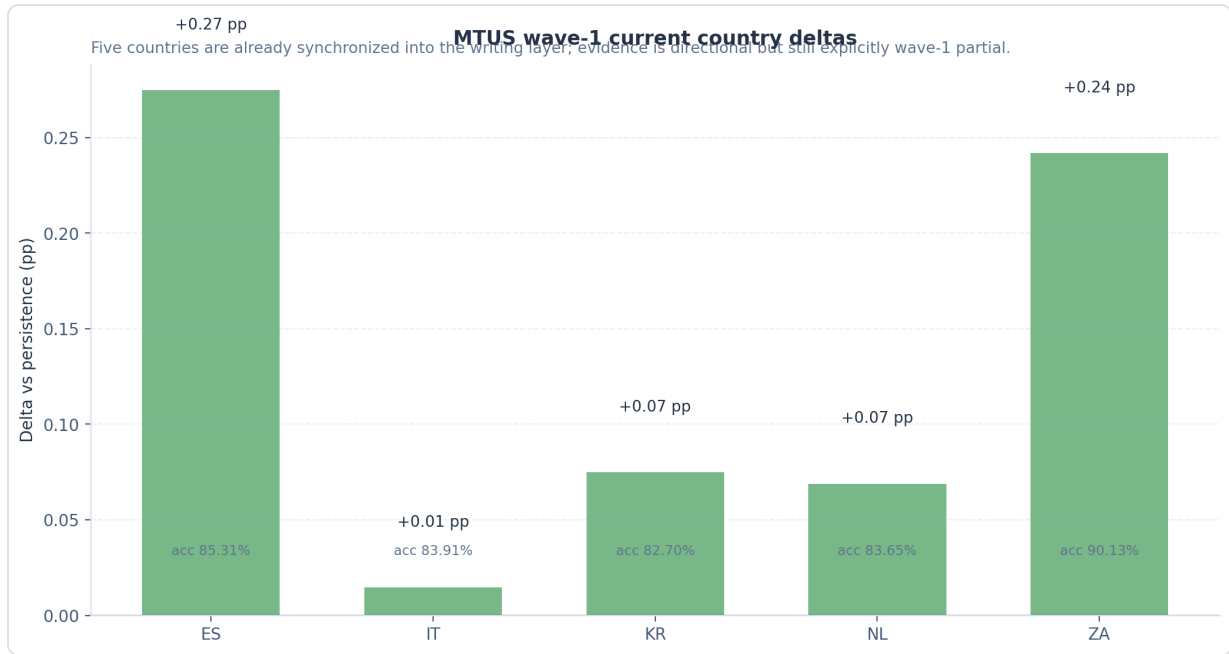
- canonical_path: results/phase4plus_figures/phase4plus_fig2_cross_country_bridge.png
- original_path: ORIGINAL_FIGURES/PHASE4PLUS_results_figures/
phase4plus_fig2_cross_country_bridge.png
- source: results/next_stage_cross_country_activity_master/summary.json

- package role: Accuracy and delta profile for UK, USA, and MTUS wave-1 bridge rows.



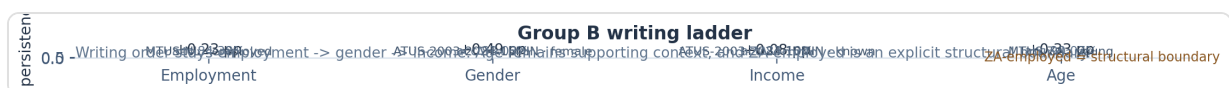
3. MTUS wave-1 country deltas

- canonical_path: `results/phase4plus_figures/phase4plus_fig3_mtus_wave1_country_delta.png`
- original_path: `ORIGINAL_FIGURES/PHASE4PLUS_results_figures/phase4plus_fig3_mtus_wave1_country_delta.png`
- source: `results/next_stage_cross_country_activity_master/summary.json`
- package role: Five-country wave-1 delta profile for current MTUS bridge evidence.



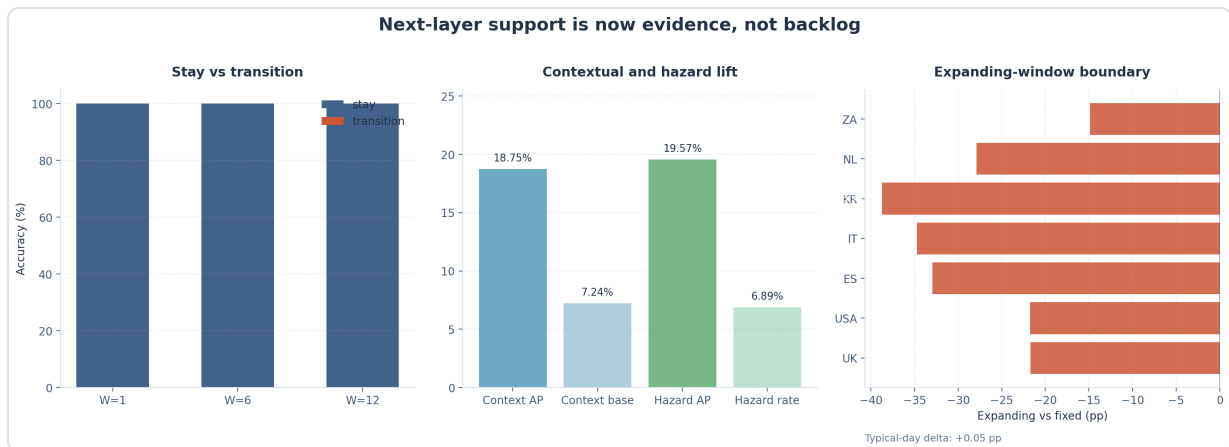
4. Group B axis ladder

- canonical_path: results/phase4plus_figures/phase4plus_fig4_groupb_axes.png
- original_path: ORIGINAL_FIGURES/PHASE4PLUS_results_figures/phase4plus_fig4_groupb_axes.png
- source: results/next_stage_groupb_master/summary.json
- package role: Employment, gender, income, and age status with structural-boundary annotation.



5. Next-layer support and boundary evidence

- canonical_path: results/phase4plus_figures/phase4plus_fig5_extension_support.png
- original_path: ORIGINAL_FIGURES/PHASE4PLUS_results_figures/phase4plus_fig5_extension_support.png
- source: results/next_layer_extension_summary/summary.json
- package role: Trigger difficulty, contextual/hazard lift, and expanding-window negativity.

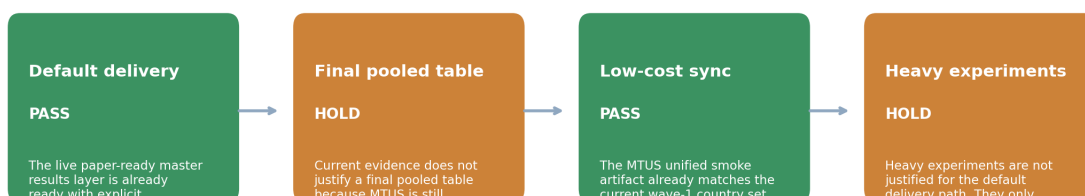


6. Evidence gate decision

- canonical_path: `results/phase4plus_figures/phase4plus_fig6_evidence_gate.png`
- original_path: `ORIGINAL_FIGURES/PHASE4PLUS_results_figures/phase4plus_fig6_evidence_gate.png`
- source: `results/evidence_gate_decision/summary.json`
- package role: Default-delivery pass/hold structure and stronger-claim trigger rule.

Evidence gate logic

Recommended action: freeze default delivery and defer heavy experiments until a stronger claim is explicitly required.



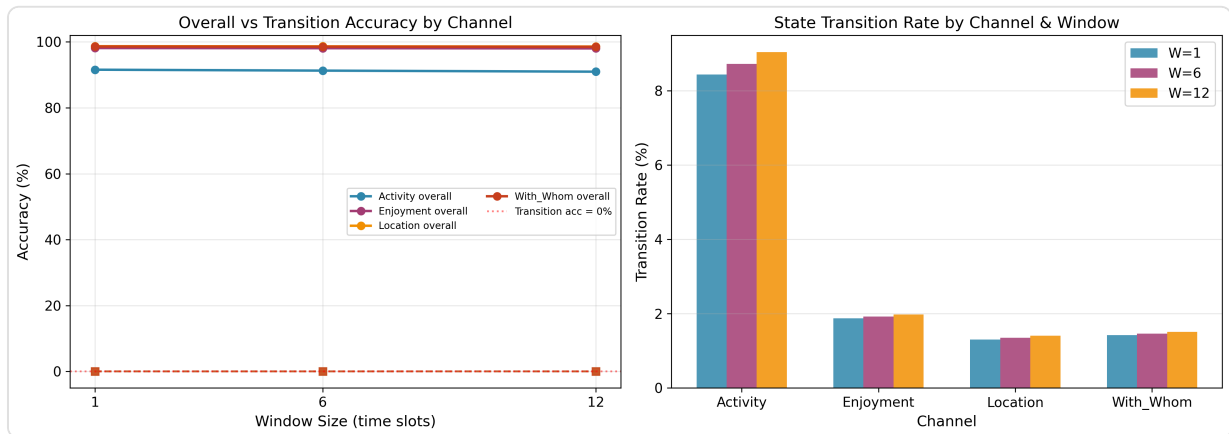
Trigger condition for reopening larger experiments: stronger pooled or uncapped claim target, not simply the existence of more prose work.

3.2 Current anchor figures

7. Figure 6 transition analysis

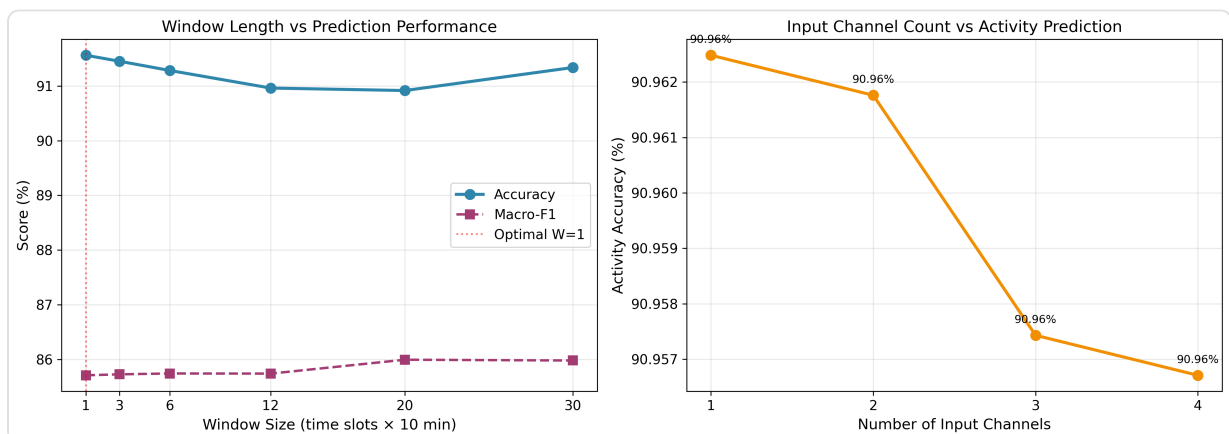
- canonical_path: `results/anchor_figures/figure6_transition_analysis.png`
- original_path: `ORIGINAL_FIGURES/ANCHOR_results_figures/figure6_transition_analysis.png`

- source: `results/figures/figure6_transition_analysis.png`
- package role: Primary mechanism-first anchor for stay versus transition asymmetry.



8. Figure 8 input-information effect

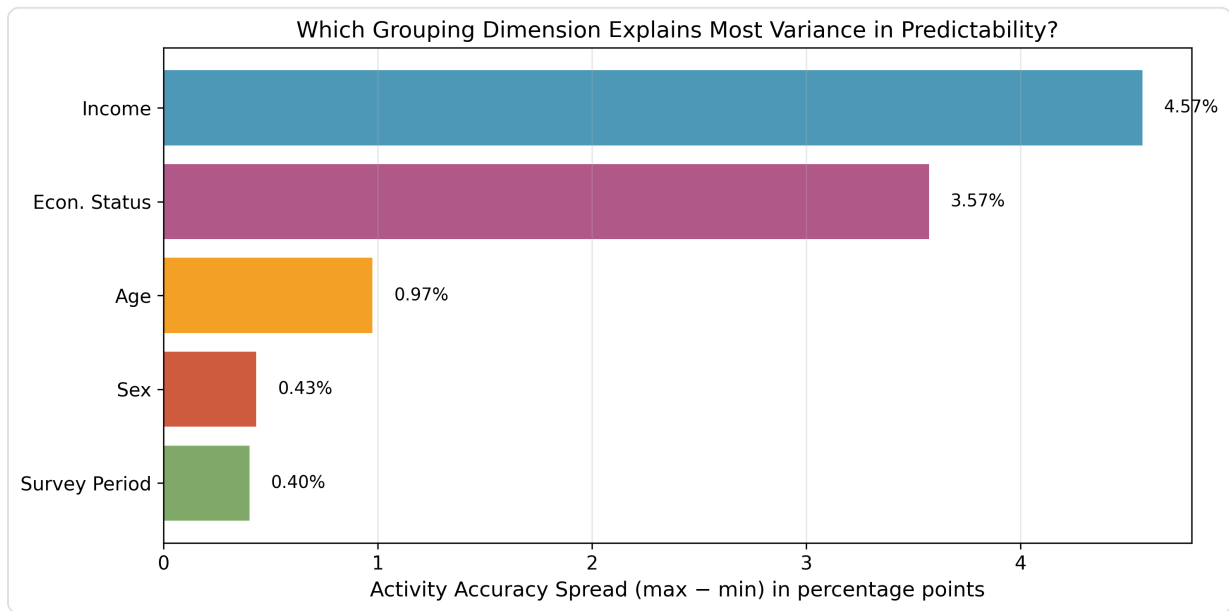
- canonical_path: `results/anchor_figures/figure8_input_info_effect.png`
- original_path: `ORIGINAL_FIGURES/ANCHOR_results_figures/figure8_input_info_effect.png`
- source: `results/figures/figure8_input_info_effect.png`
- package role: Anchor figure for the claim that more history or channels do not materially improve prediction.



9. Figure 10 dimension importance

- canonical_path: `results/anchor_figures/figure10_dimension_importance.png`
- original_path: `ORIGINAL_FIGURES/ANCHOR_results_figures/figure10_dimension_importance.png`
- source: `results/figures/figure10_dimension_importance.png`

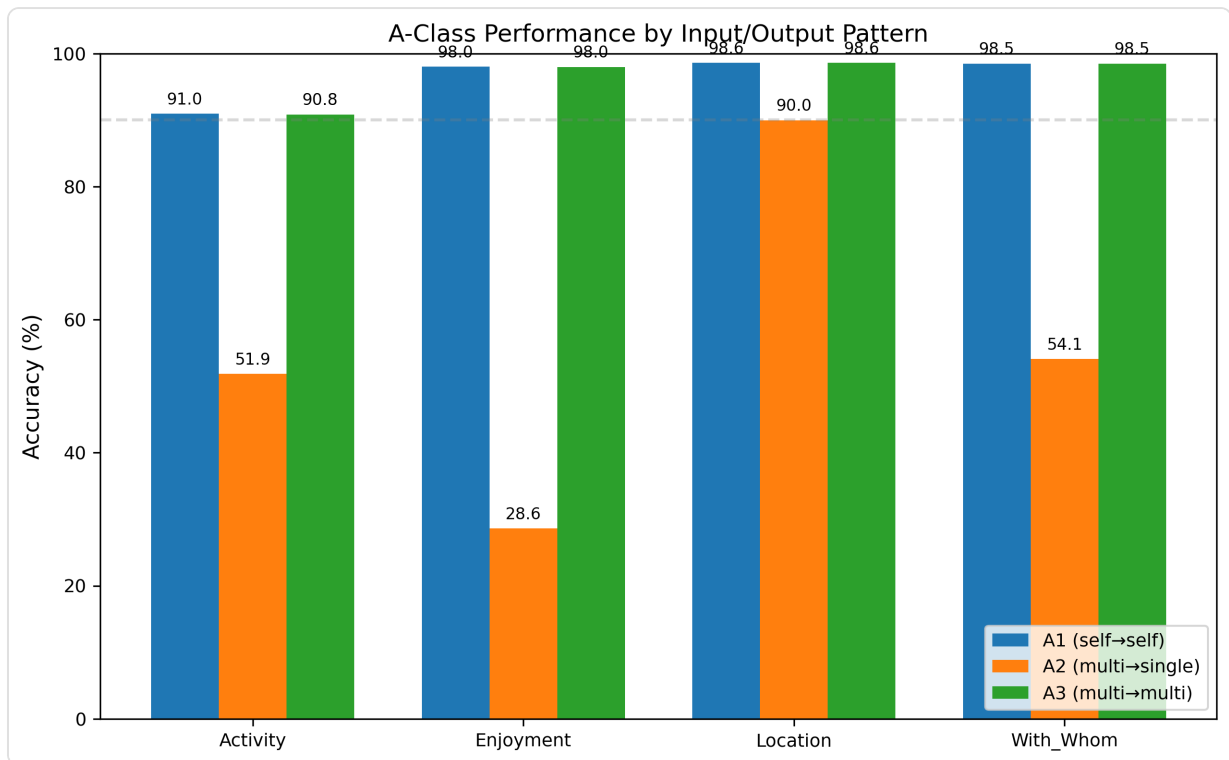
- package role: Primary social-stratification figure, but only under explicit caption boundaries.



3.3 Current project support figures

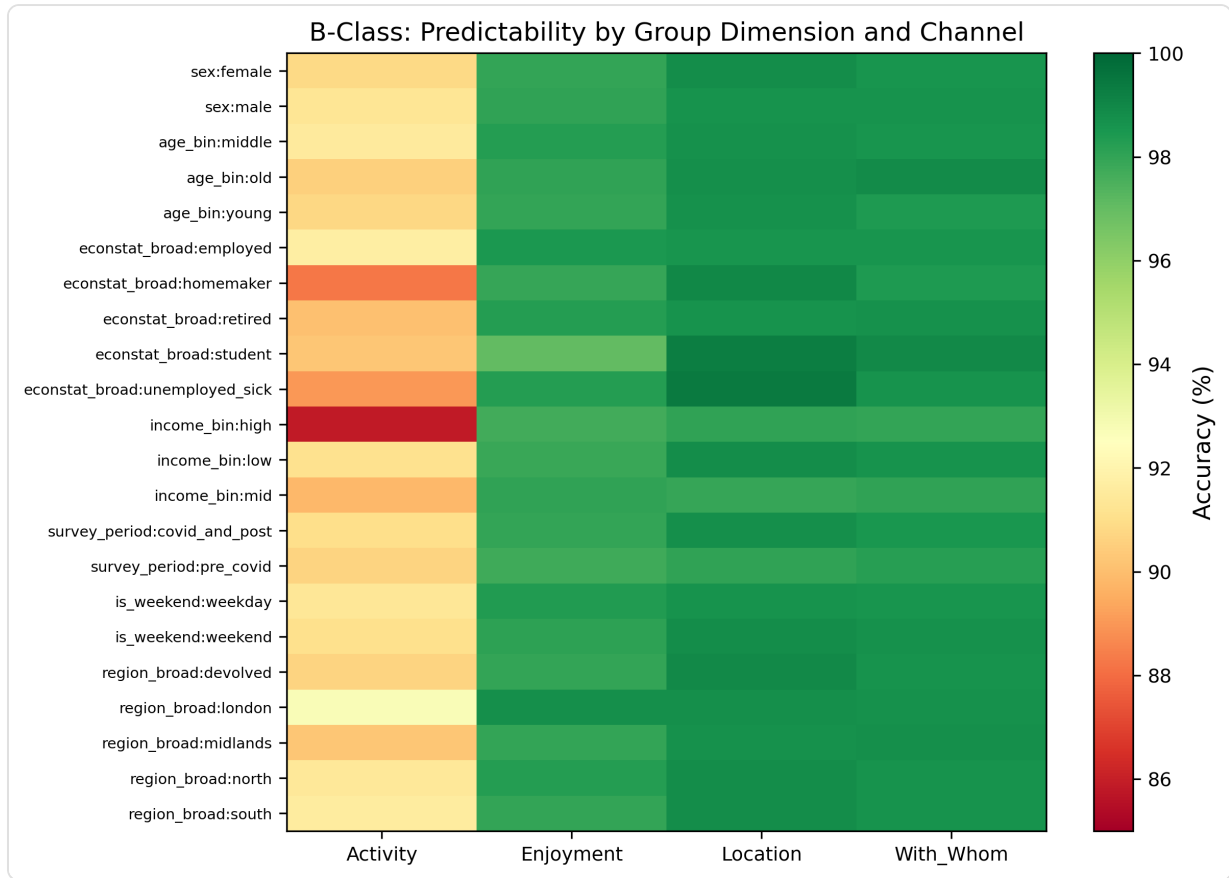
10. Figure 1 A-class performance

- canonical_path: `results/project_figures/figure1_a_class_performance.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/figure1_a_class_performance.png`
- source: `results/figures/figure1_a_class_performance.png`
- package role: Historical stage overview for cross-channel asymmetry. Keep as background, not current mainline.



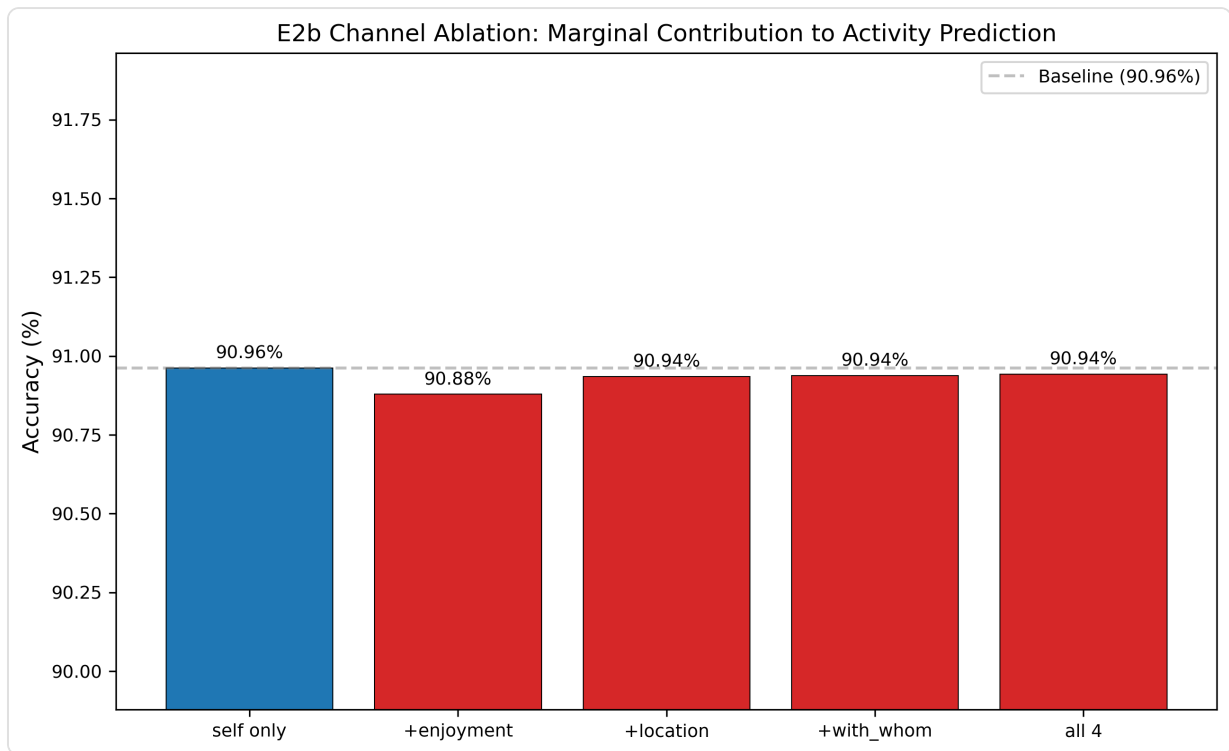
11. Figure 2 B-class heatmap

- canonical_path: results/project_figures/figure2_b_class_heatmap.png
- original_path: ORIGINAL_FIGURES/PROJECT_results_figures/figure2_b_class_heatmap.png
- source: results/figures/figure2_b_class_heatmap.png
- package role: Grouped heatmap context for older subgroup evidence.



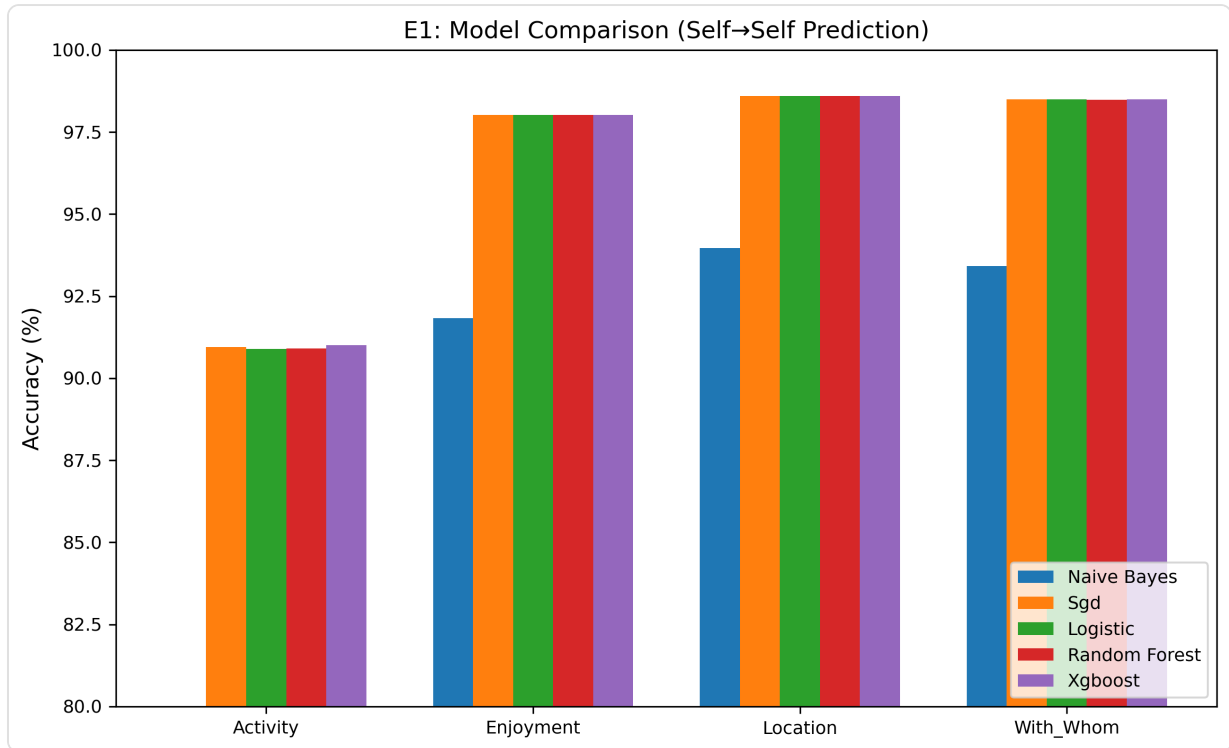
12. Figure 3 E2B waterfall

- canonical_path: `results/project_figures/figure3_e2b_waterfall.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/figure3_e2b_waterfall.png`
- source: `results/figures/figure3_e2b_waterfall.png`
- package role: Historical channel-to-channel asymmetry support figure.



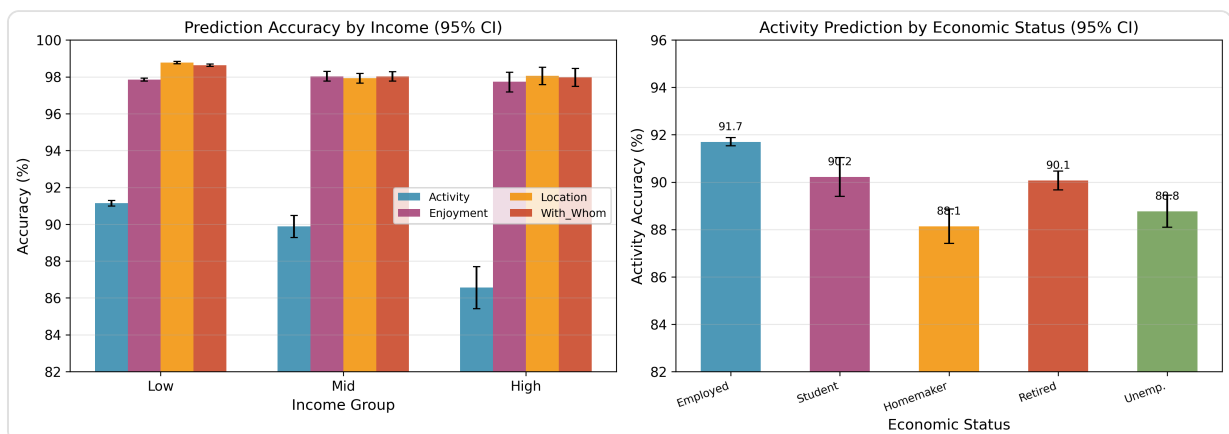
13. Figure 4 E1 model comparison

- canonical_path: results/project_figures/figure4_e1_model_comparison.png
- original_path: ORIGINAL_FIGURES/PROJECT_results_figures/figure4_e1_model_comparison.png
- source: results/figures/figure4_e1_model_comparison.png
- package role: Historical accuracy-first comparison. Preserve as archive evidence only.



14. Figure 5 bootstrap confidence intervals

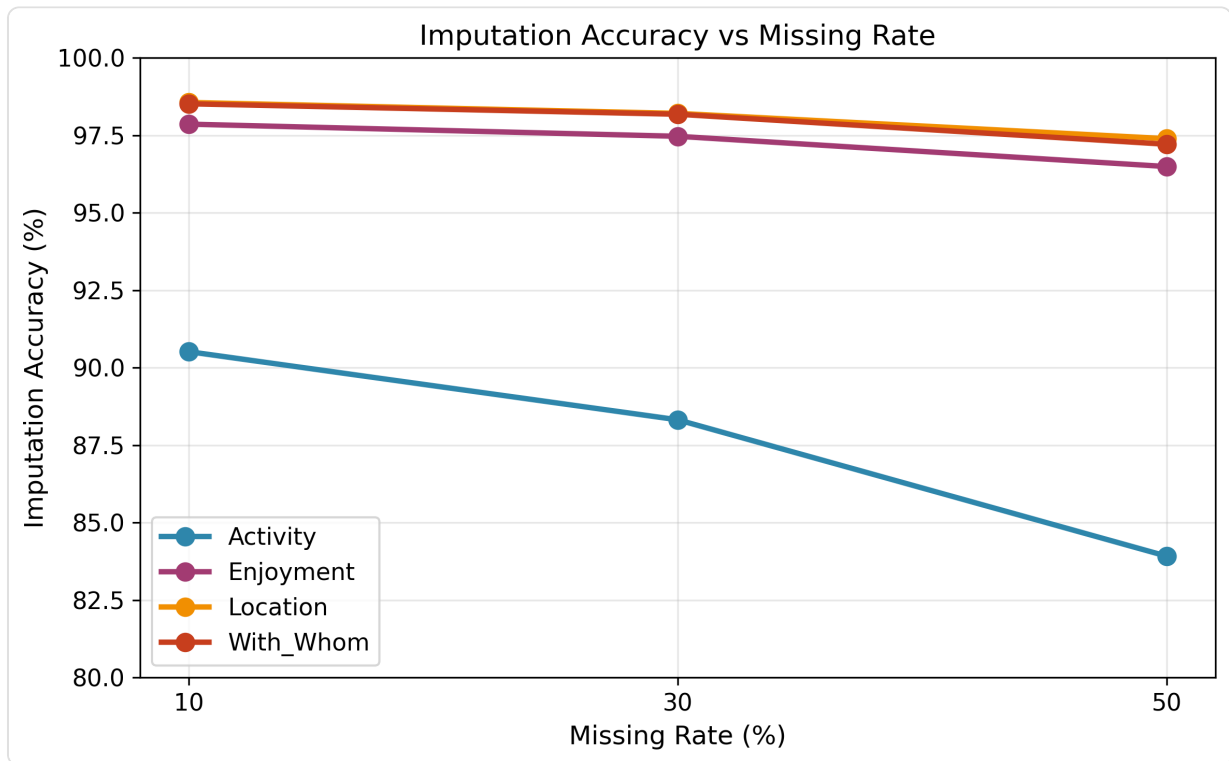
- canonical_path: `results/project_figures/figure5_bootstrap_ci.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/figure5_bootstrap_ci.png`
- source: `results/figures/figure5_bootstrap_ci.png`
- package role: Bootstrap uncertainty support for between-group spread estimates.



15. Figure 7 imputation robustness

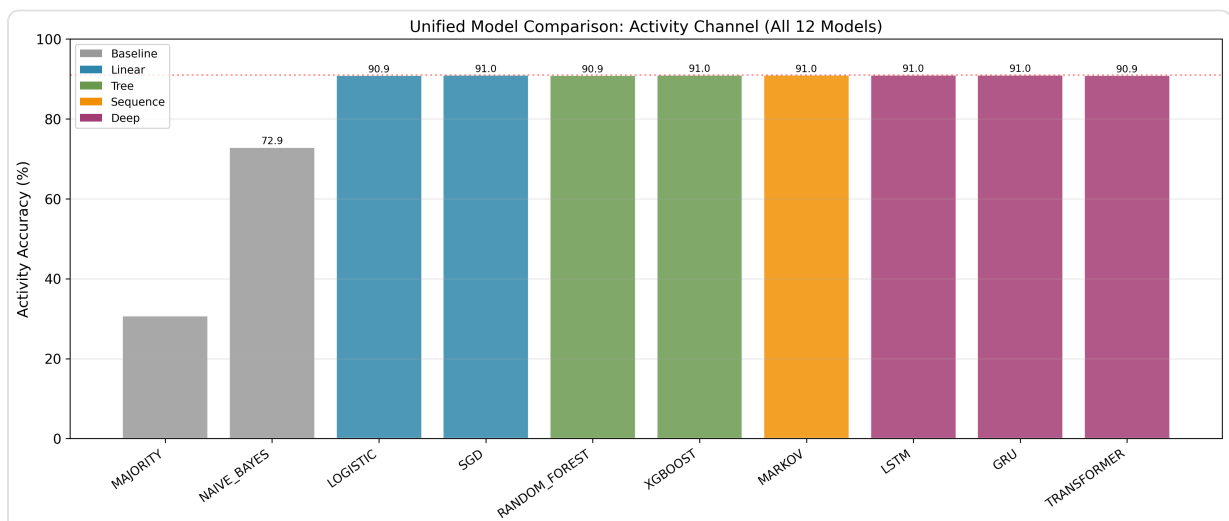
- canonical_path: `results/project_figures/figure7_imputation_robustness.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/figure7_imputation_robustness.png`
- source: `results/figures/figure7_imputation_robustness.png`

- package role: Supplementary robustness figure for missingness handling.



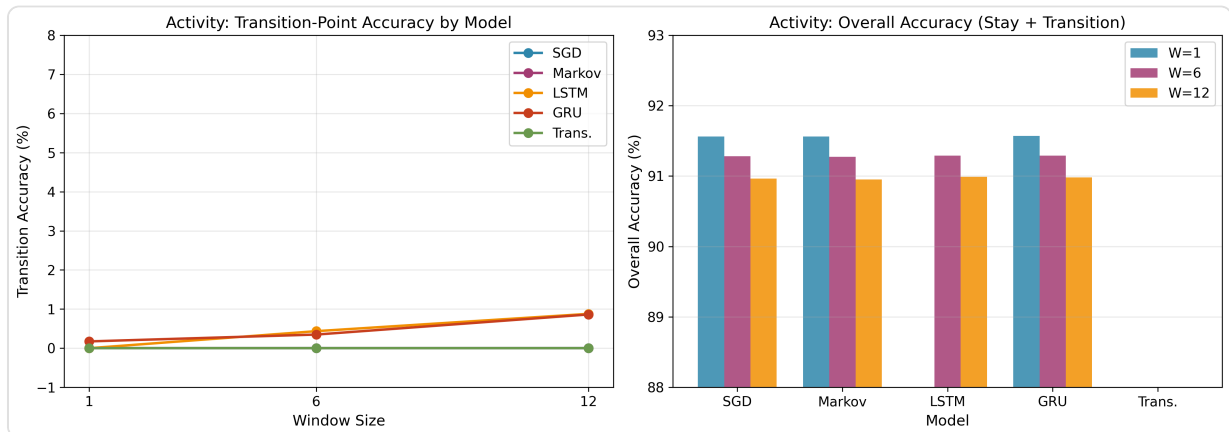
16. Figure 9 unified model comparison

- canonical_path: `results/project_figures/figure9_unified_model_comparison.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/figure9_unified_model_comparison.png`
- source: `results/figures/figure9_unified_model_comparison.png`
- package role: Historical unified comparison figure retained as background.



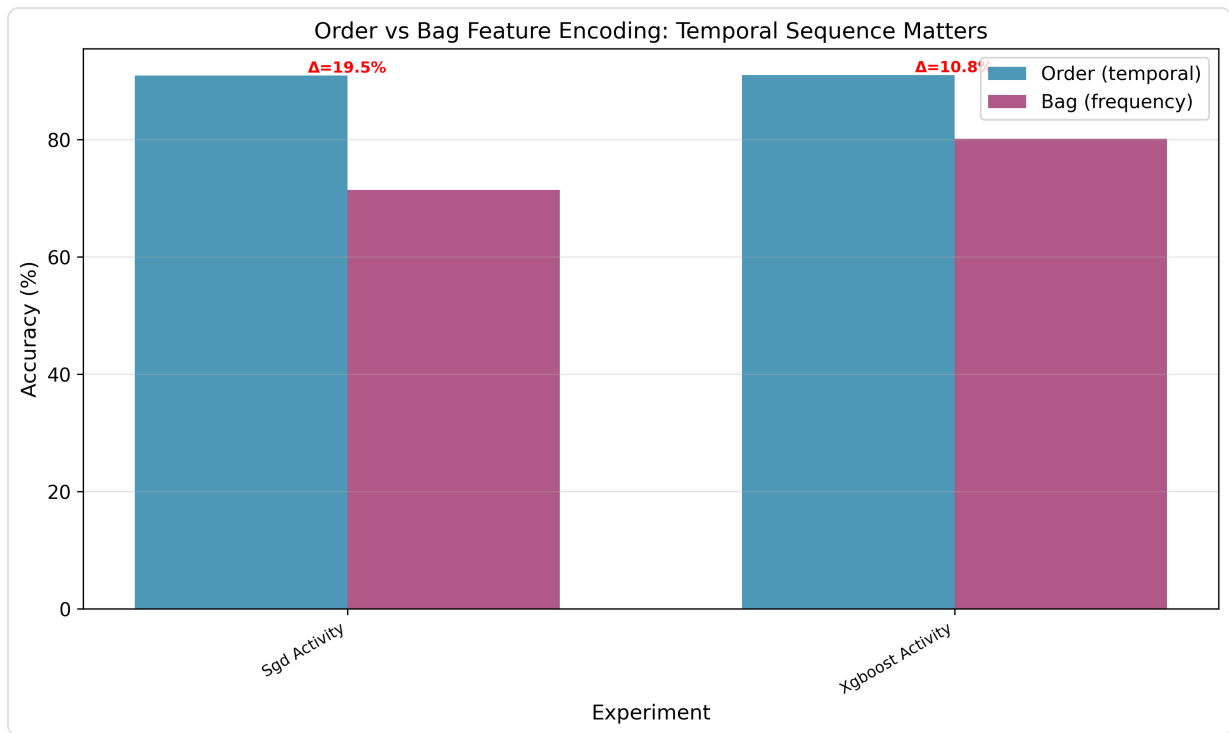
17. Figure 11 deep transition

- canonical_path: `results/project_figures/figure11_deep_transition.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/figure11_deep_transition.png`
- source: `results/figures/figure11_deep_transition.png`
- package role: Current mainline support figure for transition difficulty across model families.



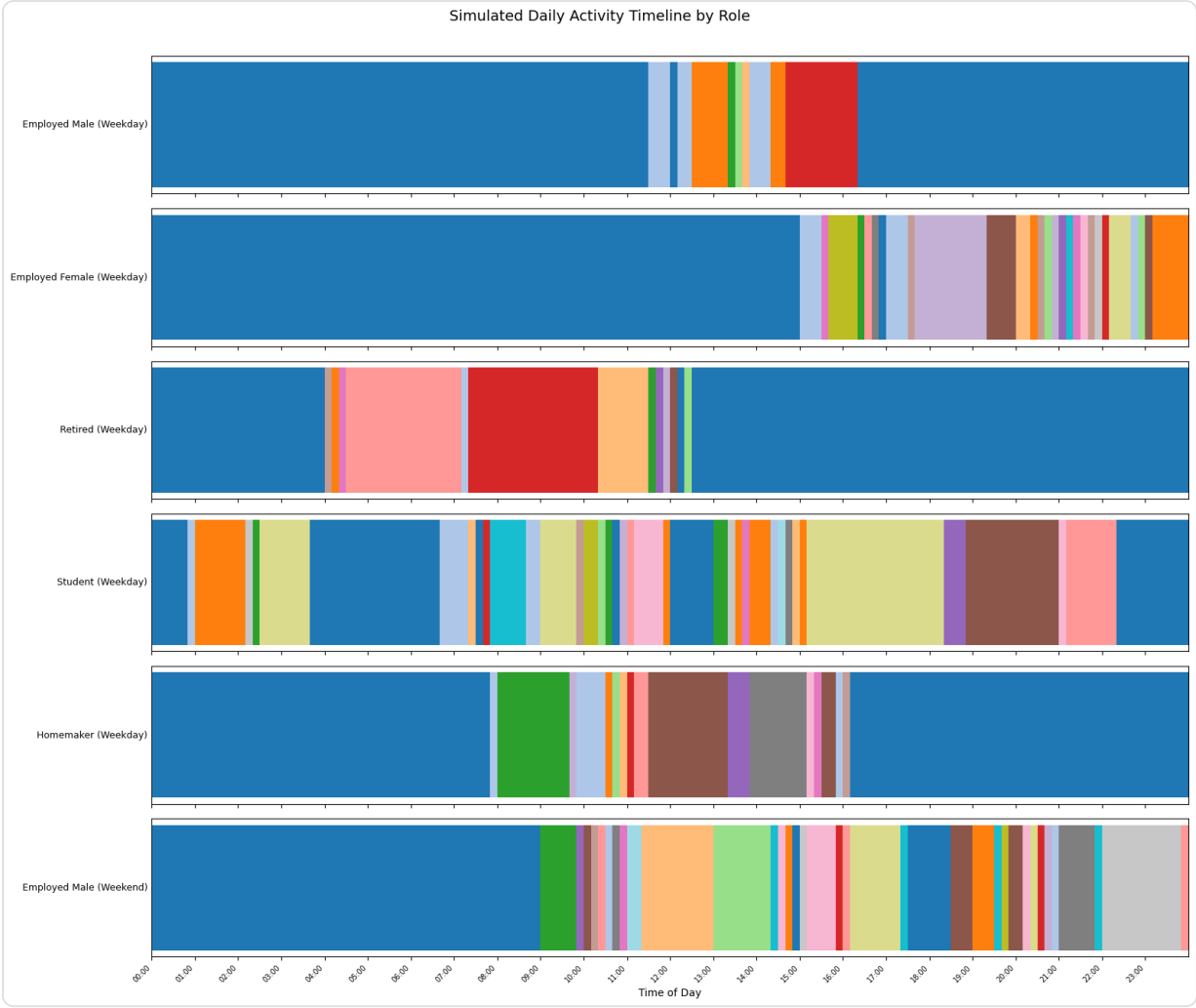
18. Figure 12 order versus bag

- canonical_path: `results/project_figures/figure12_order_vs_bag.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/figure12_order_vs_bag.png`
- source: `results/figures/figure12_order_vs_bag.png`
- package role: Current mechanism-support figure showing sequence order dominance.



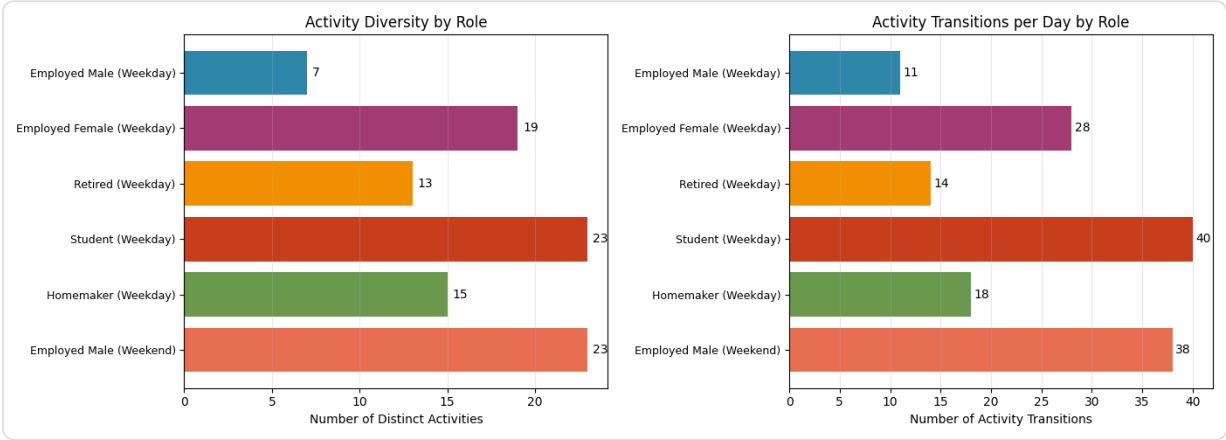
19. Figure 13 role timelines

- canonical_path: results/project_figures/figure13_role_timelines.png
- original_path: ORIGINAL_FIGURES/PROJECT_results_figures/figure13_role_timelines.png
- source: results/figures/figure13_role_timelines.png
- package role: Interpretive timeline figure for role-pattern communication.



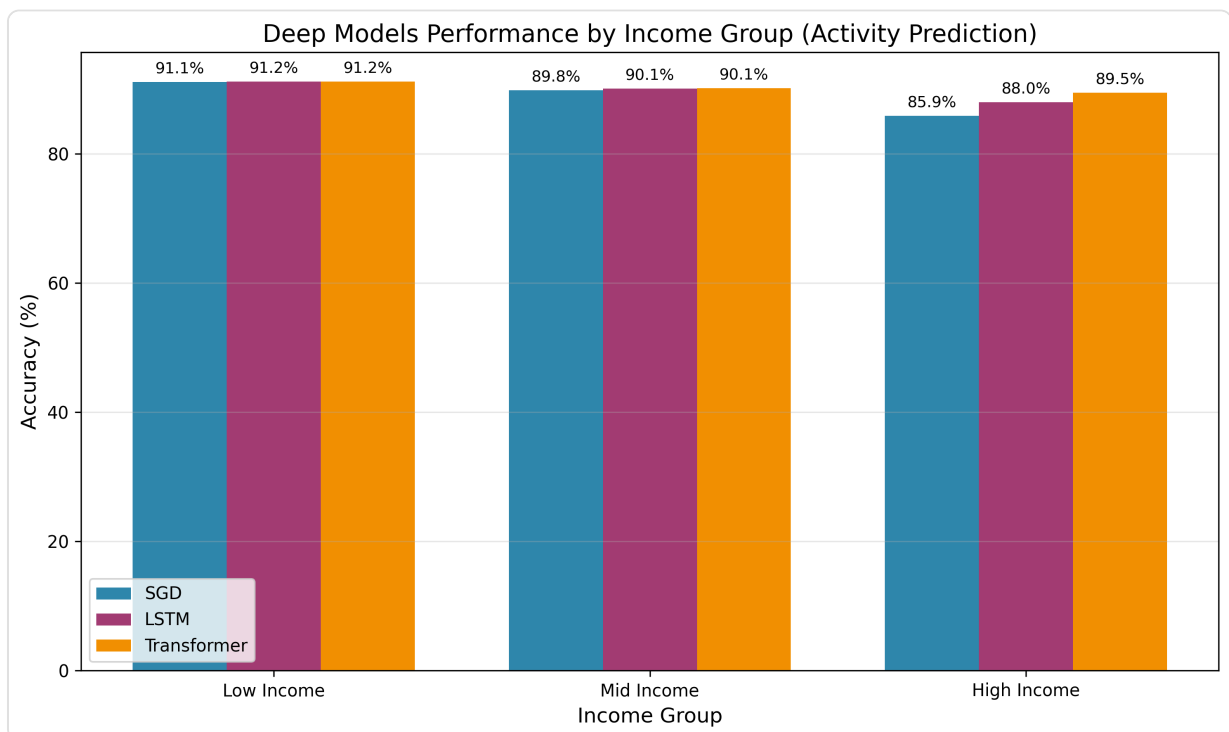
20. Figure 14 role comparison

- canonical_path: `results/project_figures/figure14_role_comparison.png`
- original_path:
`ORIGINAL_FIGURES/PROJECT_results_figures/figure14_role_comparison.png`
- source: `results/figures/figure14_role_comparison.png`
- package role: Interpretive comparison figure for role-pattern communication.



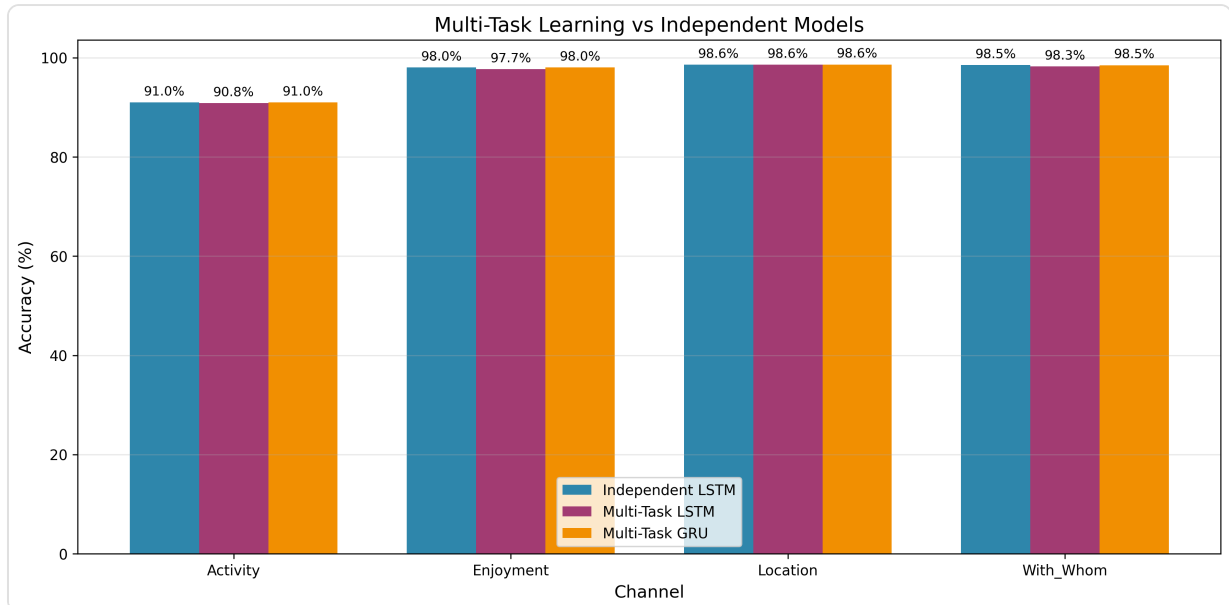
21. Supplementary Figure 1 deep models by income

- canonical_path: `results/project_figures/supplementary_fig1_deep_models_by_income.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/supplementary_fig1_deep_models_by_income.png`
- source: `results/figures/supplementary_fig1_deep_models_by_income.png`
- package role: Supplementary figure for high-income complexity and deep-model lift.



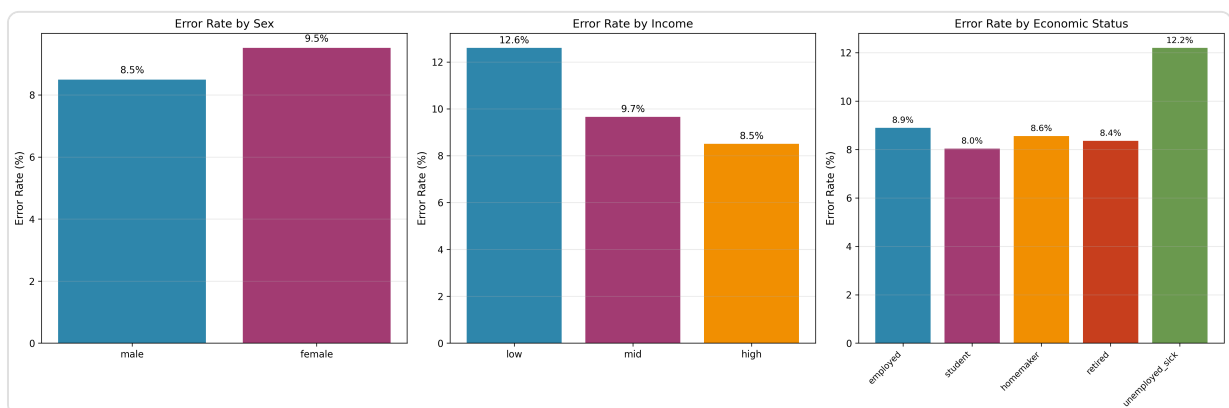
22. Supplementary Figure 2 multitask comparison

- canonical_path: `results/project_figures/supplementary_fig2_multitask_comparison.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/supplementary_fig2_multitask_comparison.png`
- source: `results/figures/supplementary_fig2_multitask_comparison.png`
- package role: Supplementary architecture-comparison figure.



23. Supplementary Figure 3 error rate by group

- canonical_path: `results/project_figures/supplementary_fig3_error_rate_by_group.png`
- original_path: `ORIGINAL_FIGURES/PROJECT_results_figures/supplementary_fig3_error_rate_by_group.png`
- source: `results/figures/supplementary_fig3_error_rate_by_group.png`
- package role: Supplementary group-level error distribution figure.

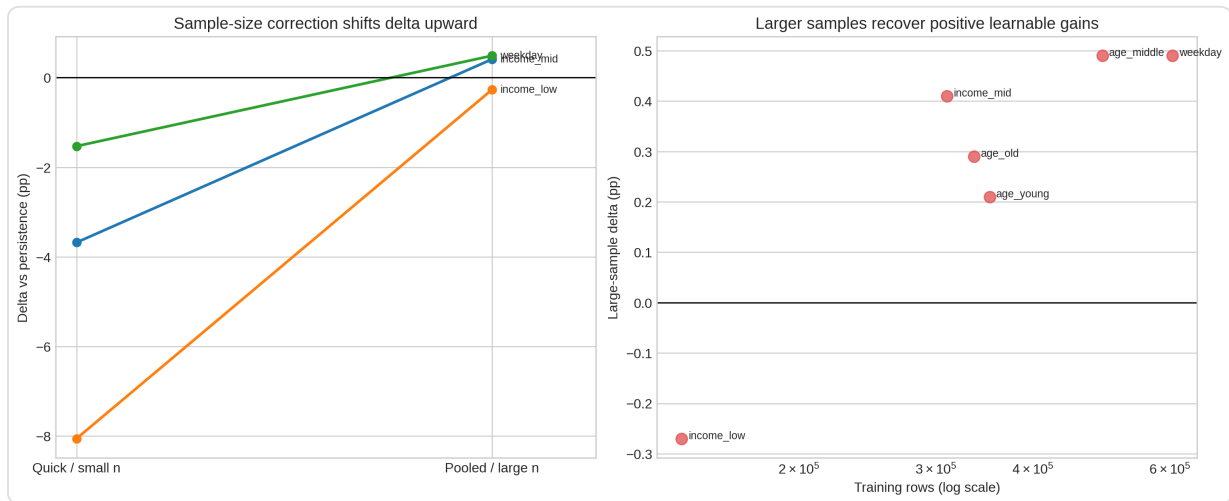


3.4 Archive support figures

24. Phase 2 sample-size delta shift

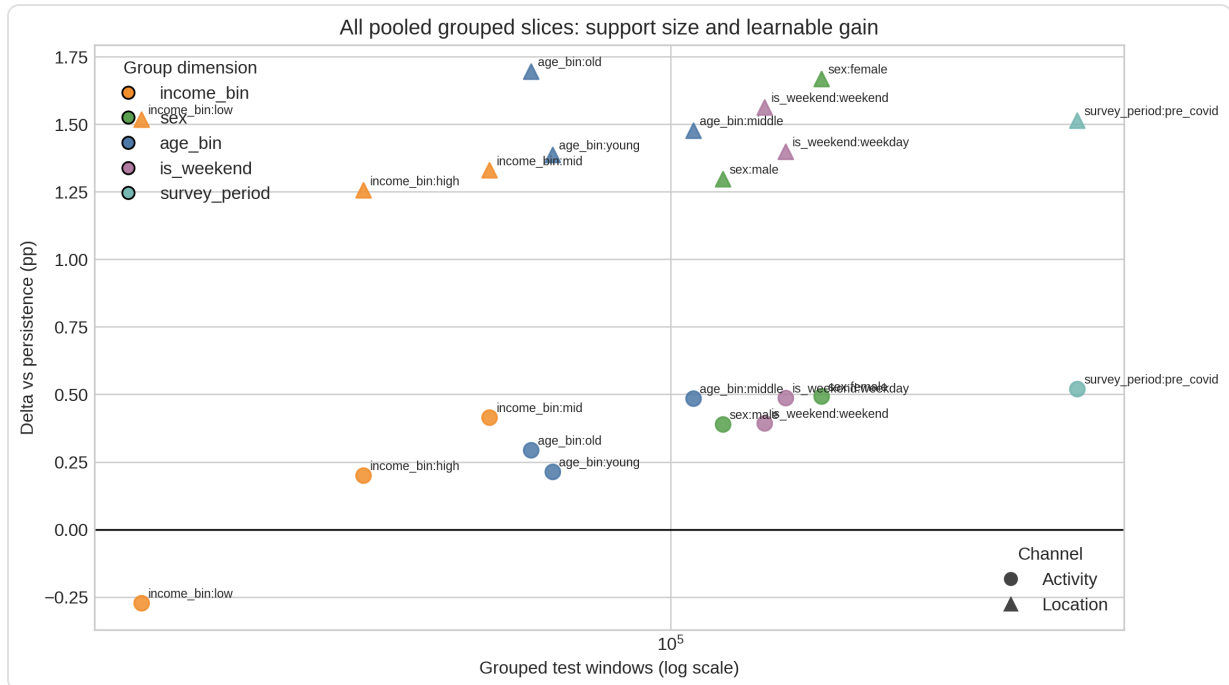
- canonical_path: `results/archive_support_figures/phase2_fig8_us_sample_size_delta_shift.png`
- original_path: `ORIGINAL_FIGURES/ARCHIVE_support_figures/phase2_fig8_us_sample_size_delta_shift.png`

- source: `ADVISOR_PACKAGE_PHASE1_2_3_20260403/ORIGINAL_FIGURES/PHASE2_results_phase2_figures/phase2_fig8_us_sample_size_delta_shift.png`
- package role: Archive support figure showing why quick negatives should not be over-read without pooled support.



25. Phase 2 pooled support versus delta

- canonical_path: `results/archive_support_figures/phase2_fig10_us_pooled_support_vs_delta.png`
- original_path: `ORIGINAL_FIGURES/ARCHIVE_support_figures/phase2_fig10_us_pooled_support_vs_delta.png`
- source: `ADVISOR_PACKAGE_PHASE1_2_3_20260403/ORIGINAL_FIGURES/PHASE2_results_phase2_figures/phase2_fig10_us_pooled_support_vs_delta.png`
- package role: Archive support figure for pooled support-width and activity/location delta interpretation.



26. Phase 3 A1 delta by country

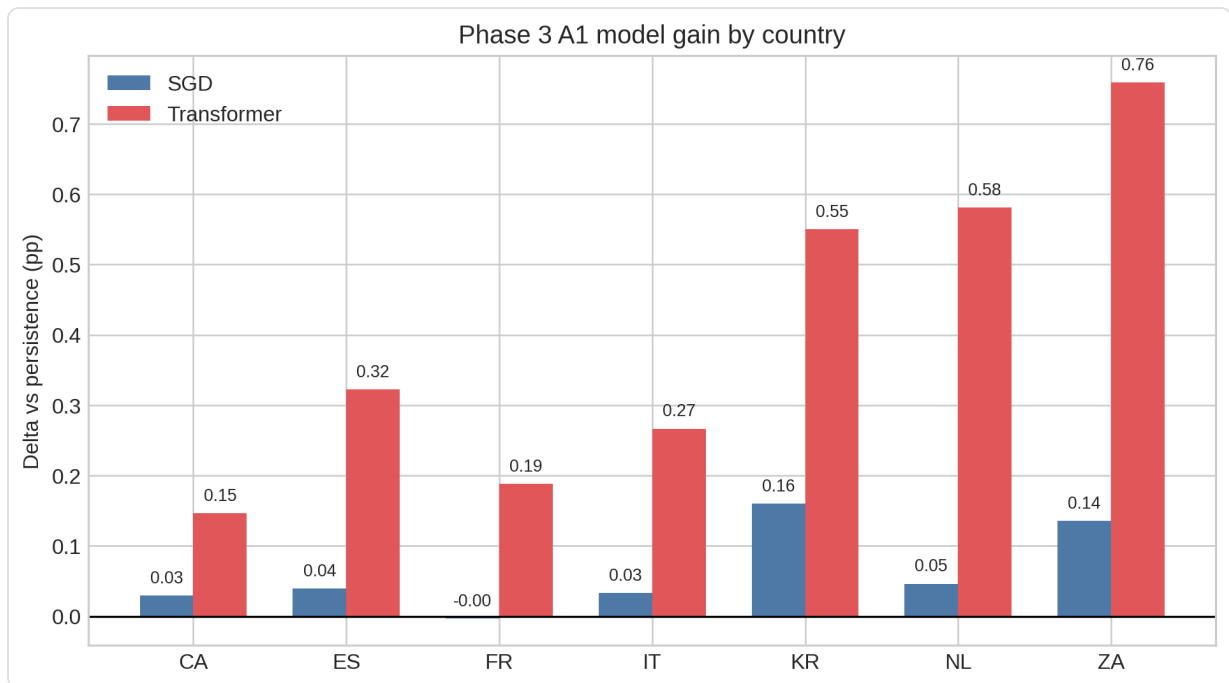
- canonical_path:

results/archive_support_figures/phase3_fig1_a1_delta_by_country.png

- original_path: ORIGINAL_FIGURES/ARCHIVE_support_figures/
phase3_fig1_a1_delta_by_country.png

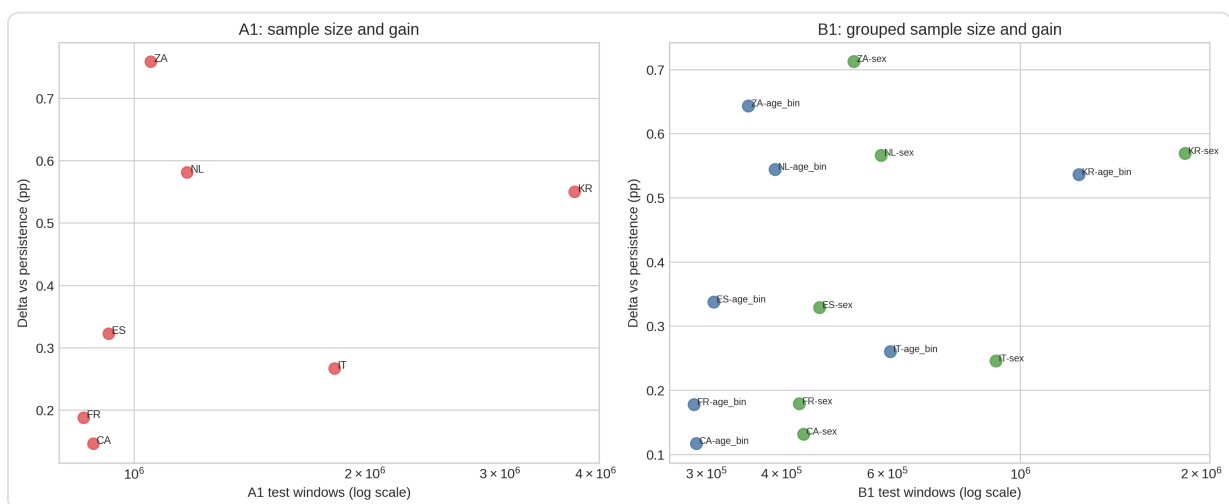
- source: ADVISOR_PACKAGE_PHASE1_2_3_20260403/ORIGINAL_FIGURES/
PHASE3_results_phase3_figures/phase3_fig1_a1_delta_by_country.png

- package role: Archive support figure for MTUS country-level external-validity variation.



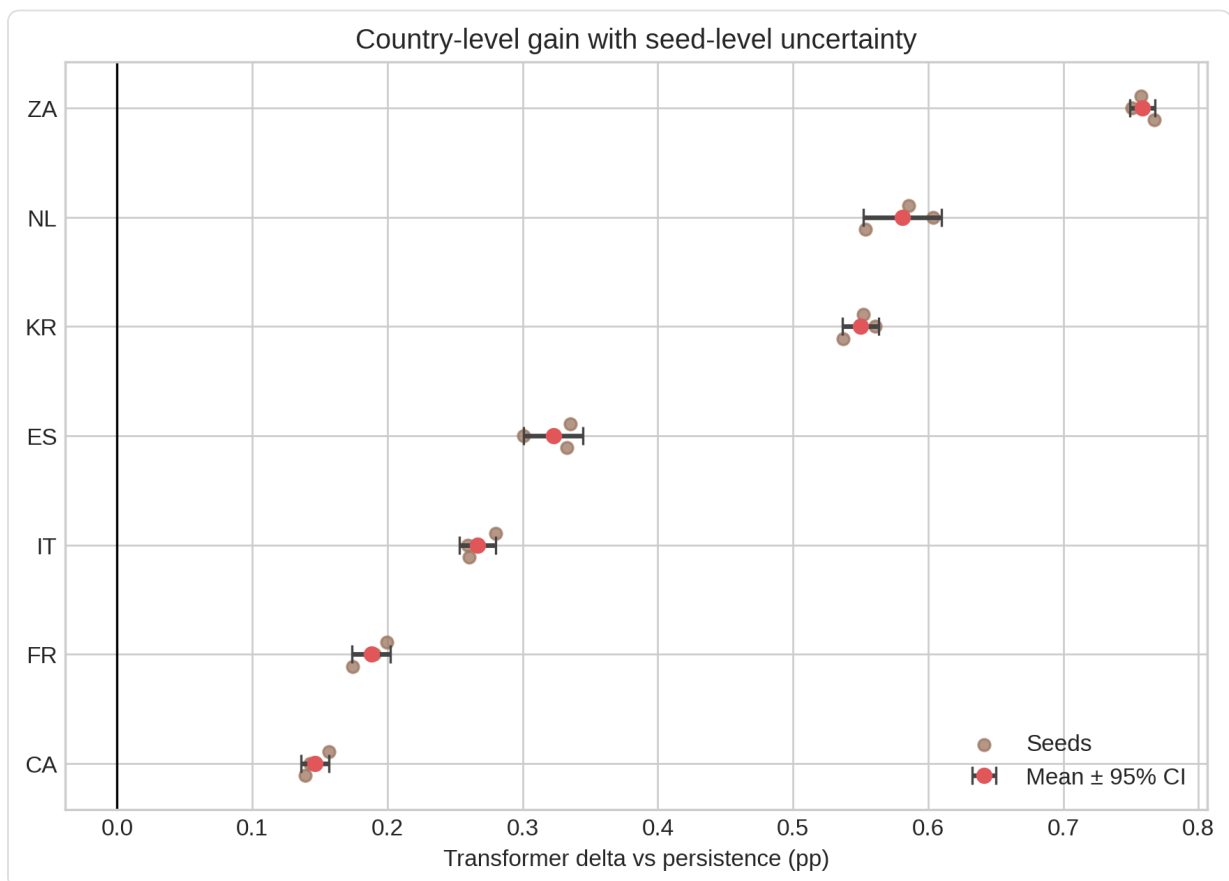
27. Phase 3 sample size versus delta

- canonical_path: `results/archive_support_figures/phase3_fig10_sample_size_vs_delta.png`
- original_path: `ORIGINAL_FIGURES/ARCHIVE_support_figures/phase3_fig10_sample_size_vs_delta.png`
- source: `ADVISOR_PACKAGE_PHASE1_2_3_20260403/ORIGINAL_FIGURES/PHASE3_results_phase3_figures/phase3_fig10_sample_size_vs_delta.png`
- package role: Archive support figure for sample-size sensitivity in external-validity runs.



28. Phase 3 country CI forest

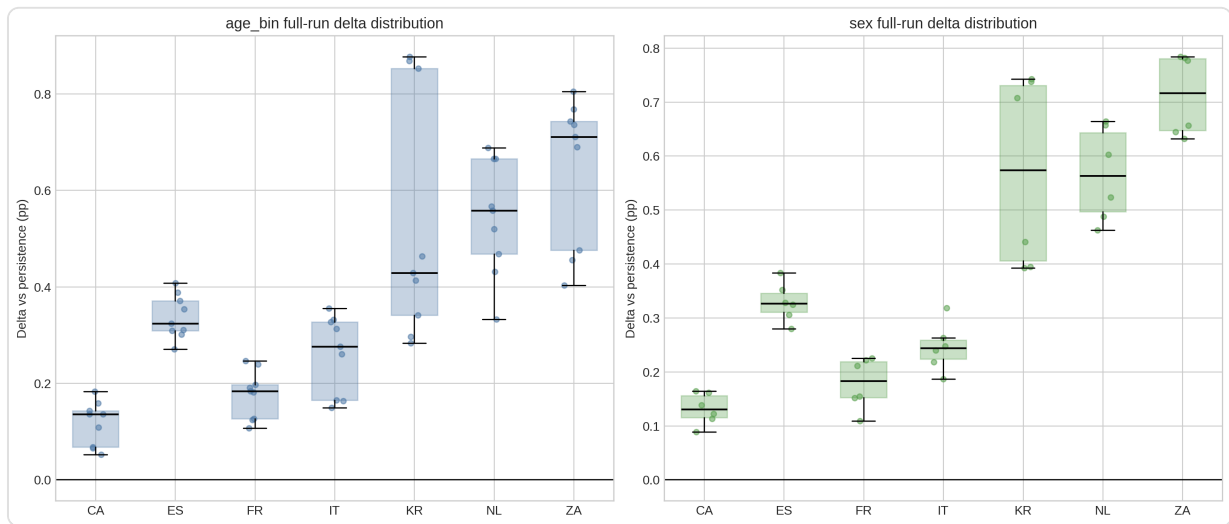
- canonical_path: results/archive_support_figures/
phase3_fig11_a1_country_ci_forest.png
- original_path: ORIGINAL_FIGURES/ARCHIVE_support_figures/
phase3_fig11_a1_country_ci_forest.png
- source: ADVISOR_PACKAGE_PHASE1_2_3_20260403/ORIGINAL_FIGURES/
PHASE3_results_phase3_figures/phase3_fig11_a1_country_ci_forest.png
- package role: Archive support figure for country-level uncertainty without sign reversal.



29. Phase 3 grouped distribution boxplots

- canonical_path: results/archive_support_figures/
phase3_fig12_b1_distribution_boxplots.png
- original_path: ORIGINAL_FIGURES/ARCHIVE_support_figures/
phase3_fig12_b1_distribution_boxplots.png
- source: ADVISOR_PACKAGE_PHASE1_2_3_20260403/ORIGINAL_FIGURES/
PHASE3_results_phase3_figures/phase3_fig12_b1_distribution_boxplots.png

- package role: Archive support figure for grouped full-run distributions across countries.



4. 当前 package 的图件结构

- 新生成的当前态图位于：`results/phase4plus_figures/`
- 当前 package 复用的 anchor figures 位于：`results/anchor_figures/`
- 当前项目 support figures 位于：`results/project_figures/`
- archive support figures 位于：`results/archive_support_figures/`
- 所有原图镜像位于：`ORIGINAL_FIGURES/`

如果需要稳定引用，请优先使用 `results/...` 里的 canonical paths；`ORIGINAL_FIGURES/...` 更适合邮件、PPT 或单独抽图。