

5
Year Follow-up
2012–2016

20
Quality
Measures

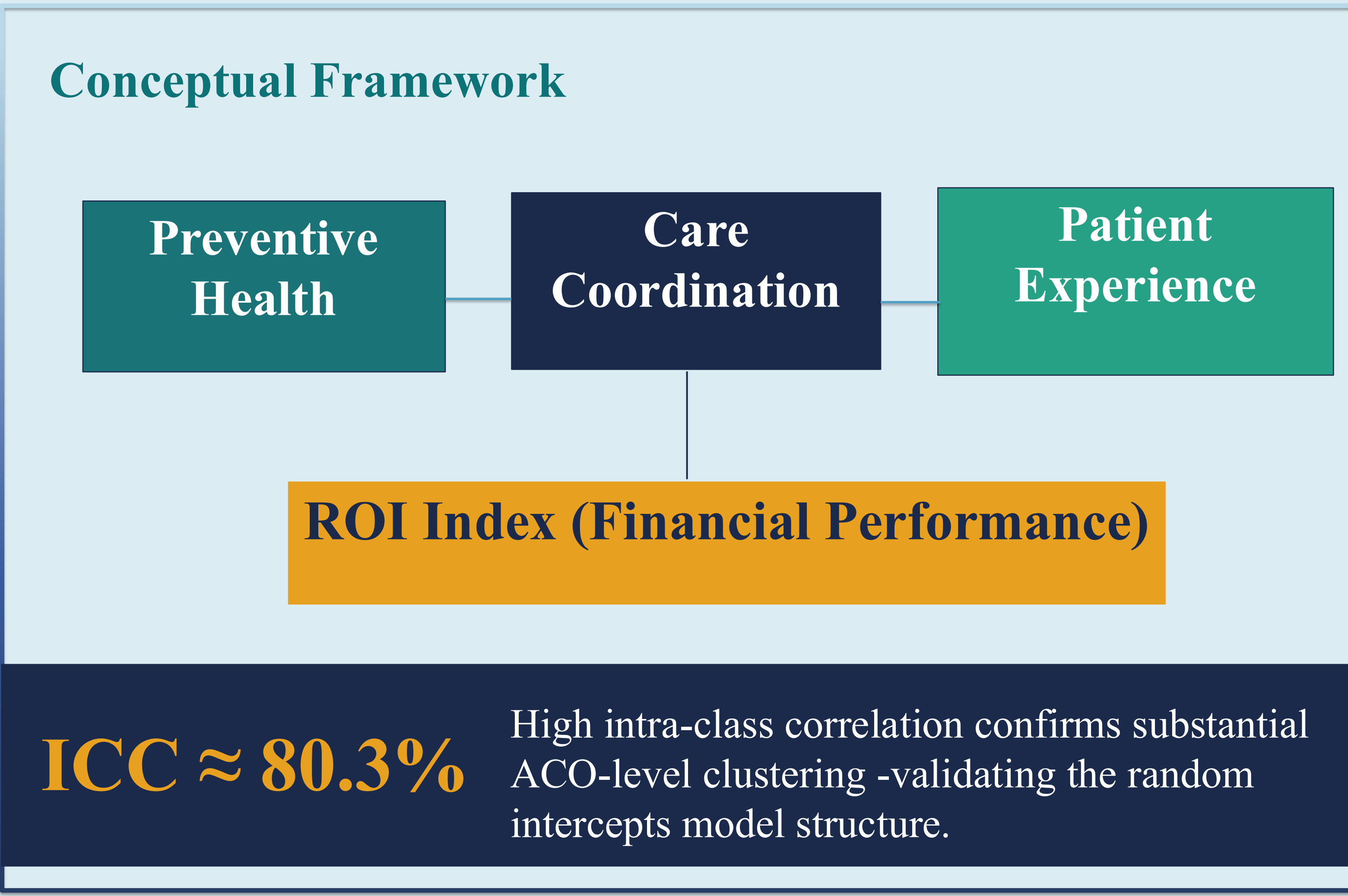
32
Pioneer ACOs

Background

- ACOs are central to U.S. value-based care reform. As ACOs transition to the ACO REACH framework, understanding how domain-specific quality performance translates to longitudinal ROI is critical for provider incentive design.
- Evidence remains limited on whether preventive care, care coordination, and patient experience improvements lead to differential financial returns over a multi-year horizon.

Objectives

1. Develop a composite ROI index from CMS benchmark expenditure % and shared savings data.
2. Evaluate longitudinal associations between quality domain scores and ROI using linear mixed-effects models by including year's influence.
3. Identify how quality-ROI associations evolve over 5 years to provide reference for ACO REACH incentive design.



Key Findings

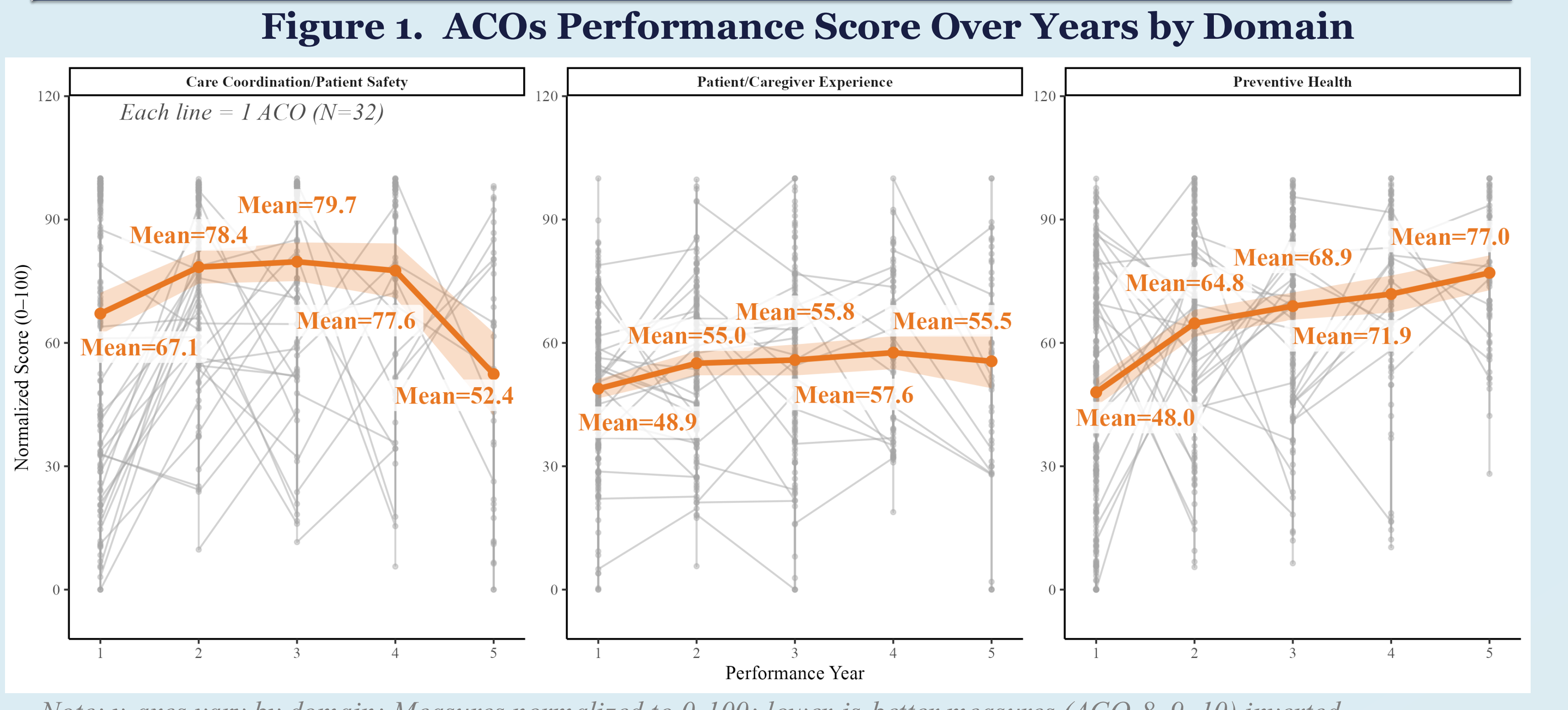


Table 1. Year-to-Year Changes (Δ) and Overall Change (Year1→Year5) in Domain Scores

Domain Category	Yr1→2	Yr2→3	Yr3→4	Yr4→5	Yr1→5
Care Coordination/Patient Safety	11.29	1.31	-2.16	-25.16	-14.72
Patient/Caregiver Experience	6.19	0.79	1.79	-2.09	6.68
Preventive Health	16.77	4.18	2.94	5.15	29.04

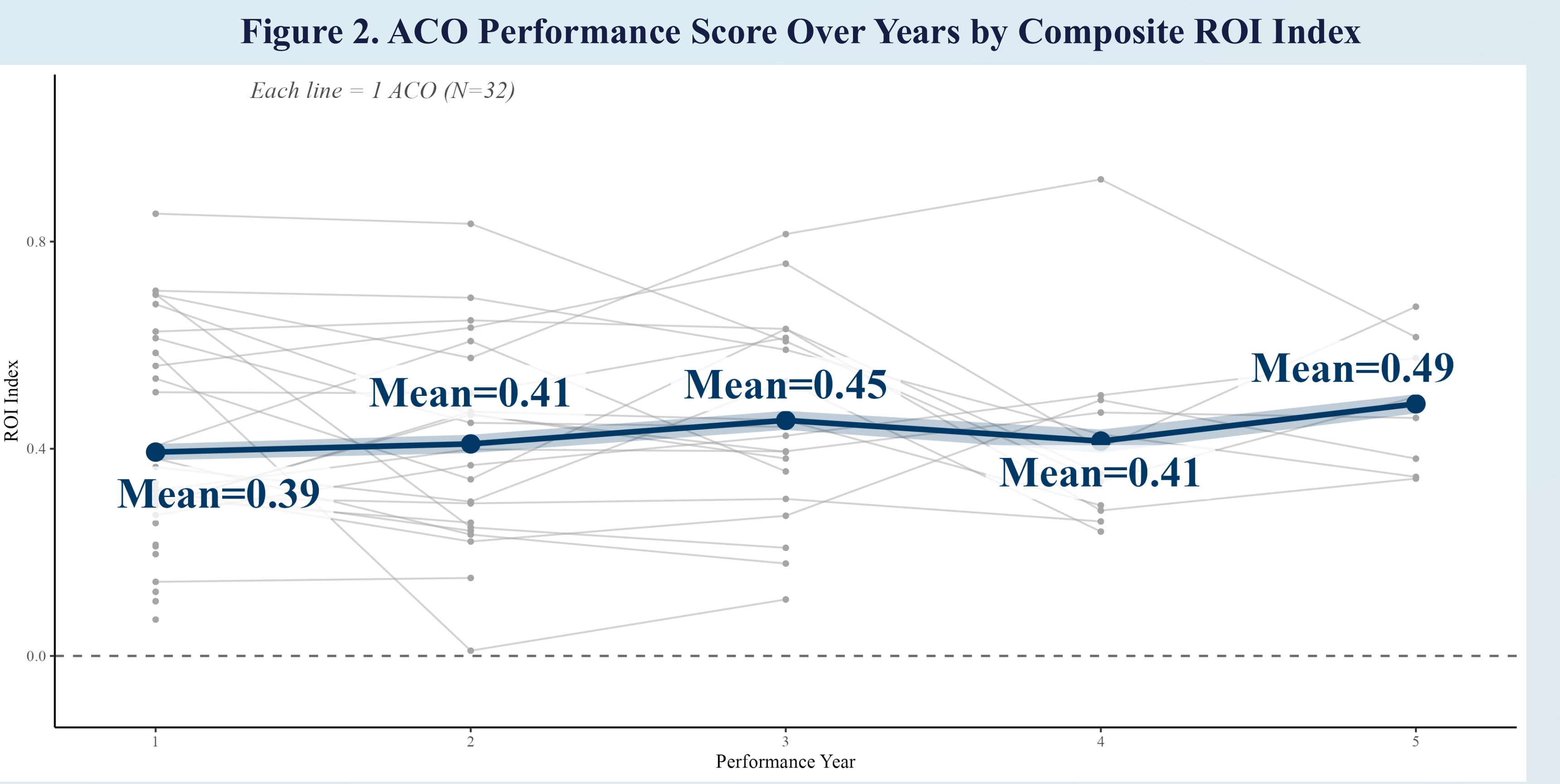


Table 2. Linear Mixed-Effect Model Results for Composite ROI index

Predictor	β (95% CI)	p-value
Care coordination	-0.130 (-0.152, -0.108)	<0.001
Preventive health	0.093 (0.070, 0.115)	<0.001
Year 2	0.032 (0.007, 0.058)	0.013
Year 3	-0.014 (-0.041, 0.012)	0.291
Year 4	-0.097 (-0.129, -0.065)	<0.001
Year 5	-0.199 (-0.245, -0.152)	<0.001
Care coord × Year 4	+0.284 (0.253, 0.316)	<0.001
Pat exp × Year 4	-0.128 (-0.155, -0.102)	<0.001
Preventive health × Year 4	-0.160 (-0.188, -0.131)	<0.001

Note: *Year 1 = reference. Patient experience and care coordination Year 2–3 interactions omitted for space; full model results available from authors.

Method Summary

- **Data:** CMS ACO Public Use Files 2012-2016; Pioneer & MSSP ACOs; N=32 Pioneer ACOs
- **ROI Index:** Composite: benchmark-minus-actual expenditure % + shared savings/losses (weighted)
- Inverse measures (ACO-8,9,10) normalized and inverted prior to scoring
- **Quality:** 20 standardized measures; 3 domains: Patient/Caregiver Experience, Care Coordination/Patient Safety, Preventive Health
- **Model:** Linear mixed-effects; ACO random intercepts; year × domain interactions; REML estimation

Discussion

- **Care Coordination/Patient Safety:** Negative baseline ROI association reversed to positive by Yr4 = consistent with maturation of care infrastructure
- **Preventive Health:** Large gains (+29 pts) but diminishing ROI returns = payment design under incentivizes long-term prevention
- **Patient/Caregiver Experience:** Significant negative association at Yr4 ($\beta = -0.128$), suggests mid-program resource trade-offs; locally tailored strategies needed
- **ACO REACH:** Domain-differentiated incentives required to align provider and population health goals

Limitation

- Pioneer ACOs are early adopters; generalizability to MSSP/REACH limited
- Study period (2012-2016) predates ACO REACH prospective capitation
- ROI index weighting assumptions; sensitivity analyses confirm robustness
- Unmeasured confounders: EHR capacity, social complexity, etc.

Conclusion

- **Care Coordination:** Early investment pays off - negative-to-positive ROI reversal by Yr4 supports sustained ACO commitment
- **Preventive Health:** Diminishing ROI despite large quality gains signals a structural payment design gap
- **Patient Experience:** High variability demands locally tailored, not uniform, quality strategies
- **ACO REACH:** Differentiated domain incentives needed to align provider behavior with long-run population health goals