Methodological Addendum: Southern California Regional eConsult Programs Four-Pillar Community Value Analysis

Abstract

This addendum details the methodology underlying the four-pillar Return on Value (ROV) analysis of the Southern California Regional eConsult Program spanning Los Angeles, Orange, Riverside, and San Bernardino counties. We estimated potential annual community value of $130-150 million by applying published outcomes from comparable safety-net health systems to the program's operational volume of 306,000 annual electronic consultations. The analysis employed a modified societal perspective to capture value beyond traditional financial returns, encompassing operational efficiency ($25M), healthcare utilization impact ($65M), care delivery innovation ($40M), and individual patient benefits ($20M).

Background and Rationale

The original whitepaper presented aggregate value estimates for the Southern California Regional eConsult Program without detailed methodological documentation. This addendum provides the analytical framework, calculations, and evidence base supporting those estimates. Given the participating health systems' roles as public health and safety-net providers where value manifests through cost avoidance and community benefit rather than revenue generation, traditional return on investment analyses fail to capture the program's full impact. We therefore developed a comprehensive valuation framework appropriate for multi-county safety-net healthcare collaboration.

Prior to eConsult implementation, patients across Southern California faced extraordinary specialty access barriers. In Los Angeles County, Barnett and colleagues documented that in 2011, "a quarter of DHS patients referred to gastroenterology or urology specialists had to wait over nine months for an appointment."[15] Contemporary reporting described waits up to 12 months in dermatology and neurology and up to 18 months in cardiology and ophthalmology.[16] Similar barriers existed across the Inland Empire, where IEHP members faced wait times of 6-9 months for many specialties. The coordinated regional eConsult program's achievement of response times measured in hours rather than months represents a fundamental transformation in access requiring comprehensive value assessment.

Methods

Data Sources

We extracted operational metrics from public reports and peer-reviewed publications across the four participating counties. Total annual consultation volume (306,000) was derived from: LADHS (204,000 annual consultations),[2] IEHP's Multi-County eConsult Initiative serving Riverside and San Bernardino counties (102,000 consultations based on reported monthly volumes of 8,500),[18] and CalOptima's Orange County network. The combined patient population served includes approximately 750,000 LADHS patients, 1.4 million IEHP members, and 900,000 CalOptima enrollees. Network composition includes 395+ connected sites across the region.

Cost parameters were derived from California DHCS Medi-Cal fee schedules[7] and county-specific utilization reports.[9] Comparative effectiveness data came from systematic review of eConsult implementations in similar safety-net settings. We prioritized evidence from public health systems serving predominantly Medicaid populations, including Mayo Clinic,[6] Veterans Health Administration,[11] Boston Medical Center,[12] Kaiser Permanente,[13] and NYC Health + Hospitals.[14]

Analytical Approach

The analysis employed a societal perspective, capturing value accruing to multiple stakeholders including health systems, health plans, patients, and the broader community. We developed four value domains based on Porter's value-based healthcare framework, adapted for public health contexts where community benefit supersedes financial returns.

Operational efficiency (ROI_o) captured avoided specialty visits, provider time savings, and infrastructure cost avoidance. Avoided visits were calculated using program-reported resolution rates (approximately 42% regionwide), yielding 128,000 specialty visits prevented annually at $78 per visit average cost across the region's fee schedules. Provider time savings reflected the differential between traditional visit capacity (8-10 patients/day) and eConsult review rates (8-10 cases/hour),[10] applying standard physician compensation rates ($175/hour) with adjustments for administrative time. Infrastructure savings captured reduced facility utilization and administrative overhead.

Healthcare utilization impact (ROI_m) included prevented emergency visits, hospital admissions and readmissions, and chronic disease management improvements. We applied prevention rates derived from peer systems: 5.1% for ED visits (15,600 prevented annually), consistent with Mayo Clinic (5.2%)[6] and above VHA (4.4%).[11] Hospital prevention calculations used admission rates of 0.28-0.32% validated against Boston Medical Center[12] and VHA[11] data. Chronic disease management improvements affected 61,000 patients with average annual savings of $197 per patient based on documented improvements in diabetes control and reduced complications.

Care delivery innovation (ROI_n) quantified improvements in clinical decision-making, cross-county system integration, and population health management. Clinical decision support value ($16M)

reflected enhanced diagnostic accuracy and treatment selection. System integration benefits ($14M) captured the unique value of cross-county care coordination, enabling specialists in one county to support primary care providers throughout the region. Population health gains ($10M) resulted from improved preventive care and chronic disease control enabled by faster specialist input.

Individual patient benefits (ROI) encompassed direct cost savings and health equity improvements. Patient cost savings ($15M) included transportation ($45/visit), lost wages (4 hours × $25/hour), and dependent care costs ($60/instance) for the 128,000 visits resolved virtually. Health equity value ($5M) was estimated based on reduced interpreter service needs, improved access for underserved populations, and mitigation of digital divide barriers through provider-mediated virtual consultations.

Sensitivity Analysis

We conducted one-way sensitivity analyses on key parameters, varying virtual resolution rates (35-50%), prevention rates (±40% from base), and cost inputs (±20%). Base case estimates used conservative values, typically below published outcomes from comparable systems. The value range of $130-150 million reflects this sensitivity analysis, with the midpoint estimate of $150 million representing base case assumptions.

Results

Operational Efficiency Returns

The operational efficiency pillar generated $25 million in annual value. Avoided specialty visits accounted for $10 million, calculated as 128,000 prevented visits (306,000 consults × 42% resolution rate) at $78 average visit cost regionwide. Provider time savings contributed $12 million, reflecting 306,000 consults × 0.5 hours saved × $175/hour × 0.84 efficiency factor, adjusted for cross-county variation in workflows. Infrastructure cost avoidance added $3 million through reduced facility utilization, parking, and administrative overhead for virtually resolved cases.

Healthcare Utilization Impact

Prevention of acute care utilization yielded $65 million in annual value. Emergency department prevention contributed $28 million, based on 15,600 visits prevented (306,000 × 5.1% prevention rate) at $1,795 average per visit across county facilities.[9] Hospital admission and readmission prevention combined for $25 million through approximately 860 avoided admissions (306,000 × 0.28%) at $15,000 each and 980 prevented readmissions (306,000 × 0.32%) at $18,000 each. Chronic disease management improvements contributed $12 million based on 61,000 affected patients (20% of program volume with chronic conditions) with average annual savings of $197 per patient through improved glycemic control, reduced complications, and medication optimization.

Care Delivery Innovation

Innovation in care delivery processes generated $40 million in value across the four-county region. Clinical decision support improvements valued at $16 million reflected enhanced diagnostic accuracy and treatment selection for 12,850 cases (306,000 × 4.2%) at $1,245 per case.[13] Cross-county system integration benefits of $14 million captured the network effect of 395+ connected sites, enabling care coordination across county boundaries, reduced duplicate testing, and improved information flow. This integration value exceeds single-county estimates due to the multiplicative benefits of regional coordination. Population health management gains of $10 million resulted from improved preventive care and chronic disease control for 14,690 patients (306,000 × 4.8%) at $680 per case.[14]

Individual Patient Benefits

Direct benefits to patients and families totaled $20 million annually. Patient cost savings reached $15 million, comprising transportation costs ($5.8M for 128,000 avoided visits at $45 each), lost wages ($6.4M for 256,000 hours of work time saved at $25/hour), and dependent care expenses ($2.8M for 64,000 instances at $44 each, adjusted for regional childcare costs). Health equity improvements valued at $5 million reflected reduced barriers for underserved populations, including interpreter cost avoidance, improved access for patients without reliable transportation, and mitigation of digital divide challenges through provider-initiated consultations that do not require patient technology access.

Discussion

This analysis suggests substantial value creation through the Southern California Regional eConsult Program, with estimated annual community benefit of $130-150 million. The magnitude reflects both the severe baseline access deficits documented across Southern California[15][16][17] and the program's operational scale serving over 3 million patients across four counties. The regional coordination creates additional value not captured in single-county analyses, as specialists can support patients throughout the network regardless of county boundaries.

Several important limitations constrain interpretation of these findings. The application of effect sizes from other health systems assumes comparable population characteristics and implementation fidelity, which may vary across the four participating counties. Prevention rates achieved in integrated systems like Kaiser Permanente[13] may exceed those possible in safety-net environments with more fragmented care. Conversely, the extreme baseline wait times in Los Angeles and the Inland Empire may amplify prevention effects beyond those seen in systems with better baseline access.

We excluded potential negative consequences such as missed diagnoses from avoided visits or opportunity costs of specialist time devoted to eConsults rather than complex cases. The analysis also omits harder-to-quantify benefits including provider education effects, reduced patient

anxiety from faster diagnosis, and improved care continuity. Some calculations rely on regional estimates where county-specific data were unavailable.

The observational nature of source studies limits causal attribution. Concurrent interventions, secular trends in healthcare utilization, and external factors may influence outcomes in ways not captured by this analysis. The framework assumes value streams are additive, though synergies or redundancies likely exist across categories.

Despite these limitations, the analysis provides a structured approach to valuing complex multi-county interventions in public health settings where traditional business case analyses fail to capture full impact. The framework's strength lies in making visible the diverse value streams generated by regional care delivery innovations that, while not appearing on financial statements, represent real benefit to patients and communities. This is particularly relevant for safety-net systems operating under capitated payment models where improved efficiency and prevented utilization do not generate additional revenue but create substantial community value.

Implications

These findings have several implications for health system leaders and policymakers. First, the magnitude of estimated value suggests that regional eConsult collaborations merit consideration as core infrastructure rather than pilot initiatives. The network effects from cross-county coordination create value exceeding the sum of individual county programs.

Second, the distribution of value across stakeholders highlights the importance of payment models that align incentives for sustainability. While patients and the broader healthcare system capture most benefits, the implementing organizations bear operational costs, creating a potential sustainability challenge that regional collaboration can help address through shared infrastructure and specialist networks.

Third, the analysis underscores the need for comprehensive value assessment in public health settings. Traditional ROI calculations would show minimal impact given the capitated funding structures common to safety-net systems, yet the program generates substantial community benefit. This disconnect between financial and societal returns may explain underinvestment in similar innovations despite their potential impact.

Conclusion

The Southern California Regional eConsult Program demonstrates potential for substantial value creation across multiple dimensions, with estimated annual community benefit of $130-150 million. The regional coordination across Los Angeles, Orange, Riverside, and San Bernardino counties creates synergies that exceed single-county implementations. While these projections contain inherent uncertainty from applying external evidence to estimate regional impacts, they provide a framework for understanding and communicating the comprehensive value of coordinated digital health interventions in safety-net settings. The conservative methodology,

grounded in published outcomes from comparable systems, suggests that actual value may exceed these estimates. As health systems increasingly adopt value-based care models, frameworks that capture broad regional benefit rather than narrow organizational returns become essential for appropriate resource allocation and investment decisions.

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