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The Impact of Early Hints

A U.S. Mid-market Online Retailer Case Study

Summary

A U.S. mid-market online retailer with a large product catalog was struggling with Core Web Vitals and site performance, limiting growth in search visibility and customer engagement. Despite steady investment in optimization, mobile scores showed widespread failures, creating a ceiling on revenue expansion. By deploying Harper's Early Hints technology in a 30-day proof of concept (POC), the retailer achieved faster load times, significant improvements in Core Web Vitals, and measurable gains in user engagement. With minimal engineering effort and rapid rollout, the POC demonstrated clear business impact and established a strong case for scaling performance enhancements across the digital experience.

Context

This retailer manages a broad direct-to-consumer catalog with thousands of products. As organic search continued to drive a growing share of sessions, performance became critical for both customer experience and indexation. Yet Google Search Console showed that the majority of URLs were in the "Poor" category for LCP and CLS, restricting visibility and leaving revenue untapped. Leadership recognized that without a step-change in performance, marketing spend would plateau in effectiveness, and growth would stagnate.

Key Results

56% faster
LCP (3.3s 1.96s)

72% fewer
poor mobile URLs

2.95% more
product page views/session

$600K estimated
annual revenue uplift

The Problem

- **Core Web Vitals failures:** The Majority of mobile URLs are flagged as poor

- **SEO growth limits:** Indexation and visibility constrained by slow performance

- **Inefficient engagement:** Customers viewed fewer pages per session

- **Risk of stagnation:** Ongoing investment without proportional returns

The Solution: Early Hints

Harper partnered with the retailer to implement Early Hints, a distributed edge capability that preloads critical assets before full HTML is returned. By accelerating time-to-first-byte and largest contentful paint, Early Hints improved both customer experience and search engine responsiveness.

The proof of concept was deployed in less than 30 days with no refactoring of the retailer's application. Early Hints was activated through platform configuration, making the rollout low-risk and minimally disruptive.

The Outcome

The POC generated clear improvements across performance, Core Web Vitals, and user engagement. Median LCP dropped by more than 1.3 seconds, a 56% reduction that moved a large share of mobile pages out of the "Poor" category. CLS also improved, with poor URLs decreasing by nearly 72%.

On the customer side, engagement metrics improved measurably within the Early Hints test group. Sessions were longer, product pages viewed per session rose by nearly 3%, and overall page views per session increased as well.

When modeled against industry benchmarks that link speed to conversion, the gains were estimated to result in a $600,000 annual revenue uplift. This established a compelling business case, based on a 6x ROI, for expanding Early Hints and exploring further enhancements, such as prerendering and advanced caching.

Conclusion & Path Forward

The POC validated that targeted acceleration of page loads delivers measurable SEO and revenue benefits for retailers with large catalogs. Building on these results, the next step is to roll out Early Hints site-wide and pursue additional strategies such as prerendering and advanced caching. Together, these improvements will move Core Web Vitals into the green range, securing long-term competitiveness and sustainable growth. For large-scale e-commerce organizations, performance is not just a technical metric—it is a revenue strategy.

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