

The Amplifying Effect: How Moving Out-of-Home Media Inclusion Enhances Campaign Performance

A Collaborative Research Initiative by Firefly and Reveal.

1st in a Series.

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Key Findings at a Glance

- *The findings derived from the studies captured in this whitepaper have shown the inclusion of moving OOH to enhance lift results by 50 to 100%.*
- *A person exposed to both stationary and moving OOH formats were up to 2.5x more likely to follow up with a website or store visitation compared to an unexposed individual.*
- *The positive effect was proven statistically significant with an audience inclusion of ~400,000 participants for each study.*
- *Results will profoundly influence how OOH media is planned and bought.*

Executive Summary

The out-of-home (OOH) advertising landscape is experiencing unprecedented transformation as digital technologies reshape how brands engage audiences in physical spaces. This pioneering research initiative, commissioned by Firefly and conducted by Reveal, examines a fundamental question that could redefine media buying strategies: Does combining moving OOH media with stationary OOH placements (including but not limited to Static Billboards, Programmatic digital out-of-home (pDOOH) screens, Digital Billboards, Bus shelters, Wallsapes) create material value beyond the use of each individual campaign channel?

Initial hypothesis testing suggests that the strategic integration of moving and stationary OOH media generates a synergistic effect—where 1+1 equals 3 or more in terms of campaign performance metrics. This white paper introduces the first comprehensive study in a planned series that will quantify the multiplicative impact of mixed OOH media strategies.

Key findings indicate that audiences exposed to both moving and stationary OOH elements demonstrate significantly higher digital engagement rates and foot traffic increases compared to those exposed to stationary formats in isolation.

While moving out-of-home media has existed for decades, the industry has only recently gained the tools necessary to measure its true impact. Advances in high-resolution mobility data and attribution modeling now allow for precise differentiation between stationary and moving exposures. Through Reveal's breakthrough cross-format measurement capabilities and Firefly's scaled, data-enabled network, this study represents the first published comprehensive, statistically rigorous analysis of how moving OOH amplifies campaign performance across audiences and objectives.

Introduction

The Evolution of Out-of-Home Media

Out-of-home advertising has long relied on traditional stationary displays to capture audience attention in high-traffic locations. However, the integration of digital technology and moving displays has created new opportunities to enhance campaign impact through dynamic content delivery. Although long recognized as a powerful reach-and-frequency medium, moving OOH can now be measured with precision. Recent advancements in attribution and data analytics make it possible to quantify its complementary effect and understand, in detail, how multi-format content delivery enhances overall campaign performance.

The critical question facing advertisers today is not whether to choose between stationary and moving OOH formats, but how to strategically combine them for maximum effectiveness. This research addresses a significant gap in industry understanding by providing empirical evidence of the synergistic potential between these complementary media formats.

Research Objectives

This collaborative study aims to:

- Quantify the performance impact of combining moving and stationary OOH media placements
- Establish baseline metrics for future comparative analysis
- Identify optimal integration strategies for mixed OOH campaigns
- Provide actionable recommendations for media buyers and advertisers
- Lay groundwork for an ongoing research series exploring moving OOH media synergies

Research Partnership: Firefly and Reveal

Firefly: Innovation in Out-of-Home Advertising

Firefly is the global leader in moving OOH advertising, operating more than 60,000 screens across all major U.S. markets and an international network spanning 6 countries, delivering more than six billion impressions each month. Firefly transforms traditional environments into dynamic engagement platforms through car top displays and branded wraps on taxi and rideshare vehicles,

along with experiential activations. Leveraging its digital car top network and moving fleet, Firefly provides geo-targeted reach and contextual targeting, enabling brands to deliver relevant messages in real time.

Firefly's decision to commission this research stems from observed performance improvements in campaigns that incorporate both moving and stationary elements. By partnering with Reveal to conduct rigorous analysis, Firefly demonstrates its commitment to evidence-based advertising strategies and industry advancement, reflecting its position as a thought leader in the evolving OOH landscape.

Reveal: Over a Decade of Research Excellence

Reveal brings over eleven years of specialized research expertise to this collaboration, having successfully delivered thousands of studies across diverse industries and media formats. The company's established methodology framework and analytical capabilities make it uniquely positioned to examine the complex interactions between different OOH media formats.

Reveal's extensive experience in OOH media effectiveness research includes:

- Pioneered Net Lift Attribution measurement for OOH
- Ability to measure all for OOH formats
- Full Marketing Funnel Measurement from Brand Impact to Sales Lift
- Campaign performance optimization
- Statistical significance testing

The partnership combines Firefly's innovative media solutions with Reveal's proven research methodologies, creating an ideal foundation for generating actionable insights about OOH media synergies.

The Synergistic Hypothesis

Beyond Additive Effects

Traditional media planning often assumes additive effects when combining different formats—the total impact equals the sum of individual components. However, preliminary observations suggest that moving and stationary OOH media may interact in ways that amplify overall campaign effectiveness beyond simple addition.

The core hypothesis driving this research posits that strategic integration of moving and stationary OOH elements creates material value where the combined impact significantly exceeds the mathematical sum of individual format performance. This multiplicative effect, conceptualized as "1+1=3 or more," represents a fundamental shift in understanding OOH media interactions.

Longer term, as the effort to more accurately reflect OOH's reach and impact inside the Marketing Mix Models (MMM) grows, incorporating findings like this will improve OOH's likelihood of attracting larger budgets.

Theoretical Framework

Earlier studies show that the use of multiple advertising formats synergistically enhances ad recall by leveraging both the creation of unique memory traces and the deep cognitive processing required for memory reconstruction (Noel, 2006). Henceforth, we would expect a similar fortification effect when moving OOH is integrated to a campaign only utilizing stationary OOH formats. This expectation is based upon below concepts detailing attention and recollection behavior of an audience:

- **Encoding Variability Theory:** A stimulus repetition is considered potentially effective if the second presentation of the stimulus advertisement content is different in attributes including but not limited to contextual, structural and descriptive features (Glenberg, 1976, 1979).
- **Reconstruction Hypothesis:** If a stimulus, advertisement content, is repeatedly presented within a close time period, it is easier for the stimulus recipient to access the memory of the initial presentation (Jacoby, 1978; Rose, 1980).

In addition to these concepts, the synergistic effect will be reinforced by several other psychological and behavioral mechanisms triggered by OOH exposure:

Attention Reinforcement of Motion: Moving displays capture initial attention while stationary elements provide sustained exposure and message reinforcement.

Cognitive Processing: The combination triggers different cognitive pathways, enhancing overall message comprehension and retention.

Environmental Integration: Mixed formats create more comprehensive coverage of audience touchpoints within specific locations.

Frequency Optimization: Strategic placement of both formats increases effective reach without redundant exposure waste.

Research Methodology Overview

Study Design

This initial study employs a controlled experimental design comparing three distinct exposure scenarios. Exposure was measured at the Mobile Advertising ID (MAID) level. Using live GPS data, the viewsheds of all campaign inventories were analyzed to identify devices located within exposure zones for each format. Simultaneously, MAIDs detected nearby but outside the defined viewsheds were collected to form a matched control group. The resulting datasets were then cross-referenced to determine whether each MAID had been exposed to any campaign element. MAIDs appearing in both stationary and moving OOH exposure zones were classified as 'multi-format exposures'—the core target group of this study:

1. **No Exposure:** A control group of individuals that are not exposed to any included OOH formats in the campaigns

2. **Stationary OOH Only:** Audiences exposed exclusively to stationary OOH displays (both static and digital).
3. **Combined Exposure:** Audiences exposed to strategically integrated moving and stationary displays
4. **Combined Exposure vs. Stationary Only:** The quantitative value of combining stationary and moving OOH displays.

Measurement Framework

Key performance indicators include:

- **Foot Traffic Conversions:** Measuring the audience's tendency to visit a specific POI (store, venue etc) during the campaign's run time.
- **Digital Engagements:** Measuring the audience's tendency to visit a specific website or mobile app during the campaign's run time.

Geographic and Demographic Scope

The study encompasses 10+ markets and multiple demographic segments to ensure broad applicability of findings. This comprehensive approach enables identification of variables that may influence the synergistic effect across different contexts.

The DMAs included in the study were New York City, Boston, Dallas, LA and other major metropolitan areas.

Implications for the Industry

Strategic Media Planning

If the synergistic hypothesis proves correct, the implications for OOH media planning are profound. Traditional budget allocation models that treat different formats as independent variables would require fundamental revision to account for multiplicative effects.

Media buyers could optimize campaigns by:

- Strategically pairing moving and stationary placements within key locations
- Adjusting frequency caps to account for enhanced effectiveness
- Reallocating budgets to maximize synergistic potential
- Developing integrated creative strategies that leverage both formats

Measurement and Attribution

Confirming synergistic effects would necessitate new measurement approaches that capture interactive impacts rather than isolated format performance. This could drive adoption of more sophisticated attribution models, cross-format optimization techniques, and greater representation in MMMs used by sophisticated brand marketers.

Results

Overview of Study Findings

Multiple comprehensive studies were conducted to test the hypothesis that combining moving and stationary out-of-home media formats creates amplified campaign performance. The studies examined website visit conversions and foot traffic metrics across different exposure scenarios, utilizing rigorous incremental lift analysis methodology with proper control groups and statistical significance testing. The following studies were chosen as most representative of the overall findings.

Study 1: Technology Solutions Campaign Analysis

Campaign Length: 3 Months

Primary Conversion Goal: Website visits

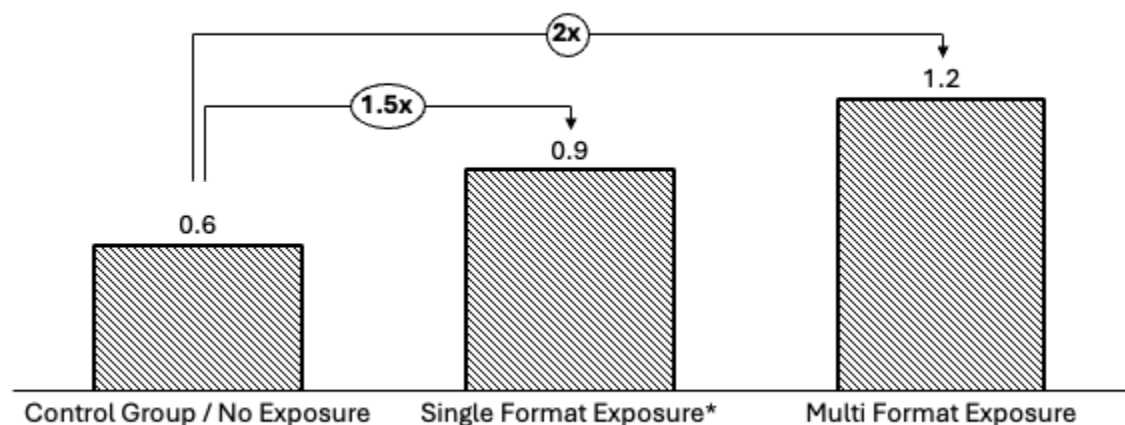
Attribution Window: 14 days

Key Findings

This campaign demonstrated statistically significant positive results across all measured scenarios:

- **Overall Campaign Lift:** Users exposed to the combined OOH campaign were **99% more likely** to visit the advertiser's website compared to unexposed control groups
- **Format Performance:** Both moving (Firefly) and stationary formats individually showed positive, statistically significant net lift
- **Additive Exposure Impact:** Audiences exposed to **both** stationary and Firefly units demonstrated a remarkable **39% higher rate** of company website visits compared to unexposed users

Web Conversion by Exposure Group, %



**Single Format Exposure sample only contains the audience who only have been exposed to the campaign through either a Stationary or Moving OOH inventory type.*

Study 2: Apparel Campaign Analysis

Campaign Period: 1 Month

Primary Conversion Goal: Website visits

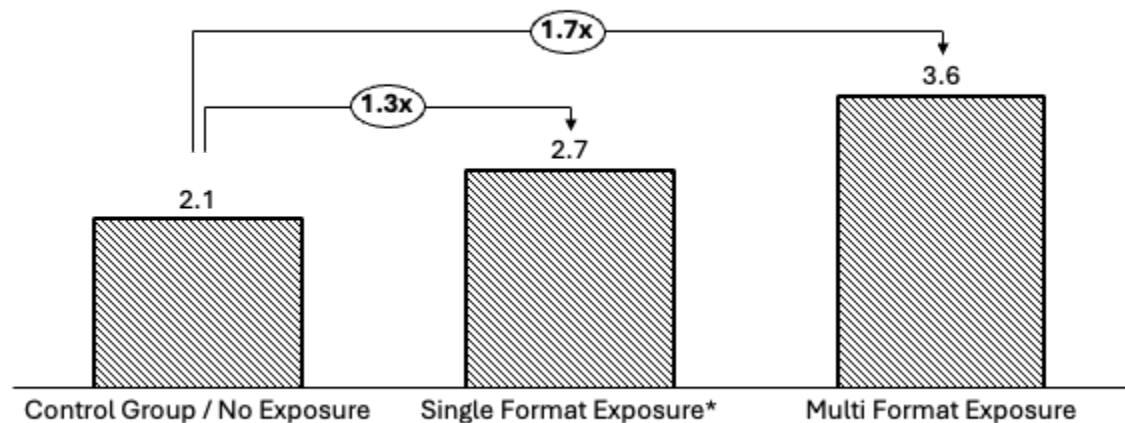
Attribution Window: 14 days

Key Findings

The consumer apparel campaign corroborated the Technology Solutions study findings with equally compelling results:

- **Overall Campaign Lift:** Users exposed to the combined OOH campaign were **73% more likely** to visit the apparel producer's website than unexposed control groups
- **Format Performance:** Both moving (Firefly) and stationary formats individually showed positive, statistically significant net lift
- **Additive Exposure Impact:** Audiences exposed to **both** stationary and Firefly units demonstrated a remarkable **44% higher rate** of company website visits compared to unexposed users

Web Conversion by Exposure Group, %



**Single Format Exposure sample only contains the audience who only have been exposed to the campaign through either a Stationary or Moving OOH inventory type.*

Study 3: Furniture & Design Campaign Analysis

Campaign Period: 1 Month

Primary Conversion Goals: Foot Traffic

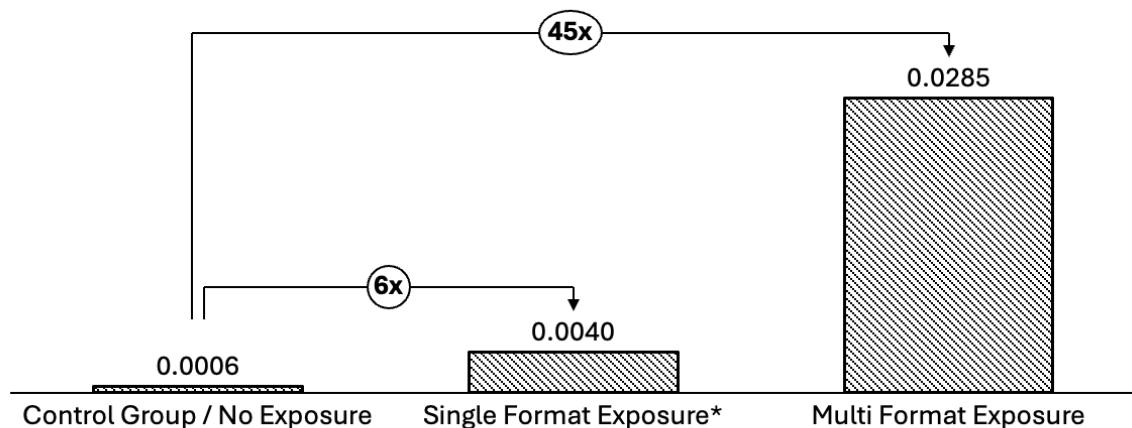
Attribution Window: 14 days

Key Findings

This furniture & design company's campaign provided additional validation of the synergistic effect across multiple conversion objectives:

- **Overall Campaign Lift:** The campaign achieved statistically significant **positive net lift of 67%**, and users exposed to the combined OOH campaign were **45x more likely** to visit the apparel producer's website than unexposed control groups
- **Format Performance:** Moving OOH (Firefly) formats demonstrated effectiveness with positive, statistically significant performance. No statistically significant change was observed for stationary OOH format exposed audiences.
- **Additive Exposure Impact:** Audiences exposed to **both** stationary and Firefly units demonstrated a remarkable **84% higher rate** of company store visits compared to unexposed users

Foot Traffic Conversion by Exposure Group, %



**Single Format Exposure sample only contains the audience who only have been exposed to the campaign through either a Stationary or Moving OOH inventory type.*

Cross-Study Analysis

Validation of Synergistic Effects

The results from all three studies provide compelling evidence supporting the core hypothesis that combining moving and stationary OOH formats creates multiplicative rather than merely additive effects:

Metric	Technology Solutions Study	Apparel Study	Furniture & Design Study
Stationary OOH Campaign Lift	+60.40%	+29.30%	No statistically significant change
Combined OOH Campaign Lift	+99.68%	+73.31%	+66.67%
Moving OOH Lift Enhancement	+39.28% (1.7x)	+44.01% (2.5x)	+83.34%
Statistical Significant Effect for Combined Exposure	Yes	Yes	Yes
Campaign Duration	3 months	1 month	1 month

*Specific lift percentages vary by conversion goal within the multi-objective framework

Performance Amplification Patterns

The data reveals a consistent pattern across all three campaigns where audiences exposed to both formats significantly outperform those exposed to individual formats alone. This amplification effect validates the "1+1=3 or more" hypothesis across different industries, campaign durations, and conversion objectives, demonstrating that strategic integration of moving and stationary elements generates exponential value.

Industry Agnostic Results

The consistency of results across technology, apparel, and home furnishing sectors demonstrates the broad applicability of the synergistic effect. This cross-industry validation suggests that the multiplicative impact is driven by fundamental psychological and behavioral mechanisms rather than sector-specific factors.

Statistically Robust

All three studies employed rigorous methodology including:

- **Control Group Construction:** Matched demographics, geography, and behavioral indicators
- **Pre/Post Analysis:** Baseline measurements before campaign launch
- **95% Confidence Level:** Results achieved statistical significance with less than 5% probability of chance occurrence
- **Large-Scale Data:** Analysis based on billions of daily location events from opted-in mobile users
- **Multiple Conversion Goals:** Foot traffic increase and website activity lift

Implications for Campaign Performance

Multiplicative Value Creation

The results confirm that properly integrating moving OOH units to stationary OOH campaigns generates exponential value compared to utilizing individual formats on the media plan. This multiplicative effect represents a fundamental shift from traditional additive media planning assumptions and provides a strong foundation for strategic media investment optimization.

Enhanced Digital Engagement

The studies demonstrate that strategic OOH media combinations drive substantial increases in digital engagement across multiple touchpoints. The IT study's nearly doubled website visit rates for combined exposures, supported by consistent patterns in the apparel and furniture campaigns, suggests powerful cross-channel activation effects where physical world exposures translate directly to digital actions.

Consistent Cross-Industry Performance

Despite different product categories, campaign durations, and conversion objectives, all three campaigns showed similar amplification patterns when combining moving and stationary formats. This consistency suggests broad applicability of the synergistic effect across diverse advertising contexts and reinforces the fundamental nature of the observed behavioral response.

Scalability Validation

The successful replication of results across three separate campaigns, different time periods, and varying market conditions demonstrates the scalability and reliability of the synergistic effect for practical application in media planning and execution.

Conclusion

The empirical evidence from all three studies provides statistically significant validation of the synergistic hypothesis across multiple industries, time periods, and conversion objectives. Audiences exposed to combined moving and stationary OOH formats consistently demonstrate dramatically higher engagement rates than those exposed to individual formats, confirming that strategic integration of these complementary media types creates exponential rather than incremental value for advertisers. This comprehensive validation establishes a strong foundation for the strategic adoption of integrated OOH media approaches in campaign planning and execution.

Future Research Directions

Planned Study Series (NOTE: Actual Future Paper Topics are TBD)

This initial research represents the first phase of a comprehensive examination of OOH media synergies. Future studies in the series will explore potential subjects including the following possibilities:

- Creative optimization strategies for maximizing synergistic effects
- Geographic and demographic variables influencing interaction strength
- Long-term brand impact and retention analysis
- Cross-industry applicability and sector-specific variations

Recommendations for Industry Stakeholders

For Advertisers

- Diversify the campaign's frequency with moving OOH inclusion and enhance the resonance of the message with the target audience to drive stronger results
- Consider pilot testing of combined moving and stationary OOH strategies
- Integrate current measurement frameworks into your media plans for compatibility with synergistic analysis
- Engage with research-driven media partners to access emerging insights
- Reevaluate optimal budget allocation strategies

For Media Owners

- Develop integrated inventory solutions that facilitate strategic format combinations
- Invest in measurement capabilities that capture cross-format performance
- Collaborate with research partners to validate effectiveness claims

- Consider pricing models that reflect potential synergistic value

For Agencies and Planners

- Expand expertise in integrated OOH campaign design
- Develop analytical capabilities for multi-format optimization
- Stay informed about emerging research findings and methodology advances
- Prepare clients for evidence-based strategy evolution

Conclusion

The collaboration between Firefly and Reveal represents a significant step forward in understanding the true potential of integrated OOH media strategies. By rigorously testing the hypothesis that moving and stationary formats create synergistic effects, this research addresses a critical knowledge gap that has implications for the entire industry.

Initial indications support the premise that strategic combination of moving and stationary OOH media generates multiplicative value that exceeds the sum of individual format contributions. If confirmed through comprehensive analysis, these findings could fundamentally reshape how the industry approaches OOH media planning, measurement, and optimization.

The commitment to ongoing research through a planned study series demonstrates both partners' dedication to advancing industry knowledge and providing actionable insights for improved campaign effectiveness. As this research program unfolds, it will provide the evidence base necessary for confident adoption of integrated OOH strategies and optimization of advertising investments.

The future of out-of-home advertising may well depend on understanding and leveraging these synergistic effects. Through rigorous research and collaborative industry engagement, we can unlock the full potential of combined media strategies and drive superior results for advertisers while enhancing audience experiences in the physical world.

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