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Ski Megapasses and Local Housing Values

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Ski Megapasses and Local Housing Values*

Abstract

Epic and Ikon megapasses bundle access to geographically dispersed ski resorts under a single pass. This paper studies how expansion of these networks affects local housing markets. I combine resort affiliation histories with monthly Zillow Home Value Index data at the ZIP-code level and exploit the variation in the timing of network entry between 2008 and 2018 using staggered difference-in-differences. Among resorts joining Epic in 2010–17, entry is associated with a 5% increase in nearby home values over the subsequent three years. The estimates remain positive and generally similar in magnitude across alternative treatment dates, geographic definitions, sample restrictions, and control groups. Later Epic entrants show smaller positive estimates, while the 2008 Epic and 2018 Ikon cohorts show no clear effect. Resort-specific synthetic control exercises reveal substantial heterogeneity: Park City, Stowe, and Mammoth Mountain show the clearest positive capitalization patterns, while results for other resorts are more mixed. The estimates capture the combined consequences of network entry, including any accompanying changes in ownership or resort operations. The findings suggest that firms' decisions about bundled recreational access can have consequences for local housing values. These results may inform resort operators' real estate investments and workforce planning, as well as local governments' assessments of housing affordability pressures and potential fiscal benefits.

Keywords: bundling, ski megapasses, housing prices, staggered difference-in-differences, amenity migration

JEL Codes: L11, L83, R31, R11, C23

*AI tools (Codex by OpenAI and Claude by Anthropic) were used for coding assistance and editing. All errors are my own.

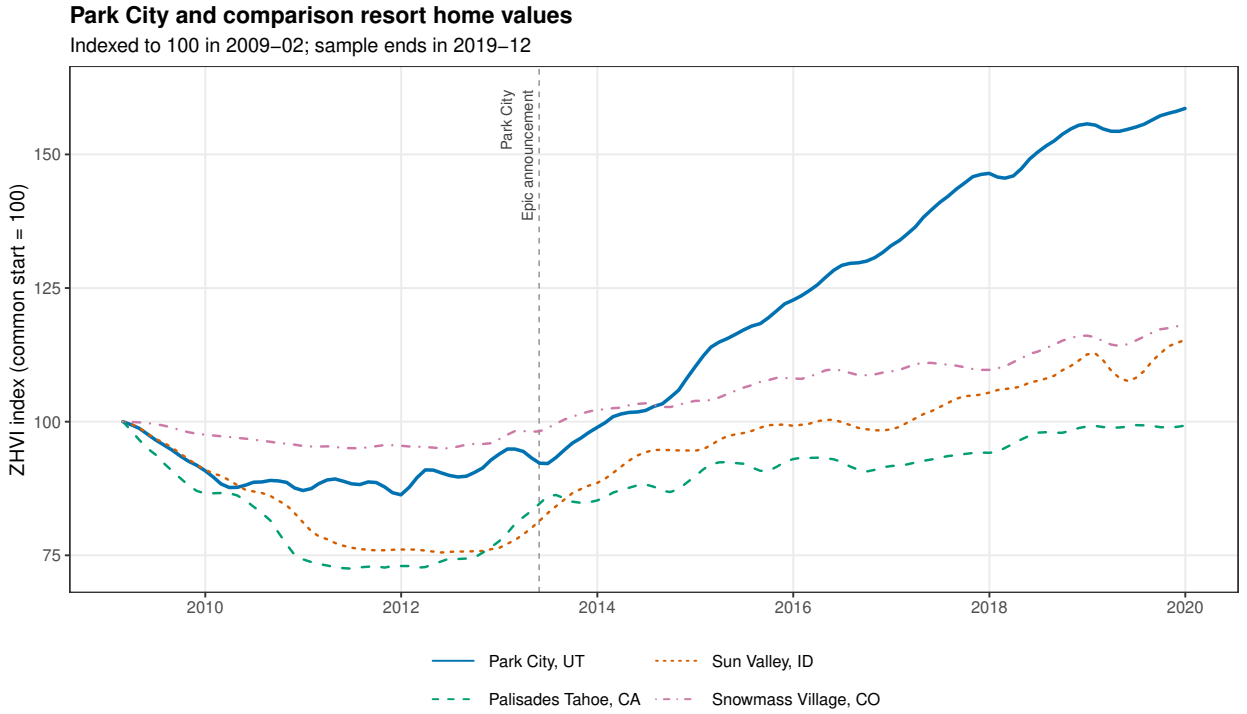
1 Introduction

Bundling is a central way firms design and price their offerings (Adams and Yellen, 1976; Crawford and Yurukoglu, 2012). Research on bundling has examined its consequences for consumers and firms. When bundled services are tied to particular locations, however, bundling can also have indirect effects: combining access across destinations can change their attractiveness, and these changes may be reflected in local housing prices. Ski megapasses provide a setting for studying such spillovers: the Epic and Ikon networks each bundle access to geographically dispersed resorts under a single pass. When a resort joins a network, passholders face a lower marginal cost of skiing there, potentially affecting destination choices and demand for nearby housing. This paper complements the bundling literature by examining the local housing market consequences of expanding such a bundle.

These housing market consequences may matter for both resort operators and mountain communities. For operators with local real estate interests, such as ownership of nearby condominiums, changes in property values may affect investment returns, while housing costs can influence employee recruitment and retention. For local governments, higher home values may generate additional property tax revenue while intensifying housing affordability pressures for prospective homebuyers and renters.

Beginning with the introduction of the Epic Pass in 2008, large ski resort operators consolidated access across multiple destinations, allowing skiers to visit dozens of resorts under a single, relatively low-priced season pass. Today, Vail Resorts (Epic Pass) and Alterra Mountain Company (Ikon Pass) together offer access to more than 150 resorts worldwide. This innovation changed skier decision making. Rather than committing to a single mountain, skiers now face a near-zero marginal cost of visiting additional resorts within the network. As a result, megapasses may have increased visitation – and therefore local housing demand – at participating destinations. Consistent with this possibility, Figure 1 shows faster home value growth in Park City than in three comparison resort markets following its Epic entry.

Figure 1. Park City Home Values Relative to Comparison Resort Markets



Notes: The figure plots ZIP-level ZHVI (Zillow Home Value Index) indexed to 100 in February 2009 for Park City (ZIP 84060) and three comparison resort markets: Sun Valley, Idaho (ZIP 83353), Palisades Tahoe, California (ZIP 96146), and Snowmass Village, Colorado (ZIP 81615). The sample ends in December 2019, before the COVID-era mountain housing boom. The vertical line marks Park City's Epic announcement on May 29, 2013. Palisades Tahoe and Snowmass Village joined the Ikon Pass in 2018, and Sun Valley joined the Epic Pass in 2019. These comparison markets may therefore be affected by megapass entry near the end of the period shown. In the baseline DiD analysis, however, they are excluded from the control group.

To study housing market implications of megapass entry, I combine three ingredients: (i) a resort-level history of Epic and Ikon affiliations from 2008–2026; (ii) monthly ZIP-code-level home values from the Zillow Home Value Index (ZHVI); and (iii) a cleaned dataset covering 469 U.S. alpine ski resorts. For the main paper specifications, I further restrict attention to a 271-resort sample with at least five lifts and verified acreage, which excludes very small hills that are not plausible peers for the megapass resorts. I then exploit the staggered timing of resort entry into the Epic and Ikon networks to estimate changes in nearby home values following megapass affiliation. Because megapass entry sometimes coincided with changes in ownership or resort operations, these estimates do not isolate the effect of pass access alone.

My main analysis uses the staggered difference-in-differences (DiD) estimator of Callaway and Sant'Anna (2021) for the five resorts that joined the Epic Pass between 2010 and 2017. I date treatment at the *public announcement* to allow for housing market responses before the season begins. Joining Epic is associated with a 5% increase in local home values over the first three post-treatment years. The baseline estimate is statistically significant at the 5% level, and estimates generally remain around 4–5% across alternative frequencies, treatment geographies (ZIP versus county), time windows, and control groups. Dating treatment at the season start yields similar, though somewhat smaller, estimates.

Other adoption waves show smaller or less clear effects. The five-resort 2018 Epic cohort yields a positive but statistically insignificant estimate of around 3.5%, while pooling the 2010–18 Epic resorts yields a statistically significant estimate of about 4.3%. The inaugural 2008 Epic wave, which coincided with the financial crisis, and the 28-resort 2018 Ikon wave show no clear increase in nearby home values. The pooled 2010–18 Epic and Ikon estimate is around 2% and statistically significant. These differences point to variation across entry waves and market environments; the much larger Ikon cohort may also mask heterogeneous effects and substitution across resorts within the network.

Splitting treated resorts by acreage yields imprecise estimates, but point estimates tend to increase with resort size, suggesting stronger housing market effects around larger destination resorts. Analogous splits by local second-home share reveal a less consistent pattern.

Resort-specific synthetic control method (SCM) specifications reveal further heterogeneity. Among the 2010–17 Epic entrants, Park City and Stowe show the clearest positive post-treatment gaps relative to their counterfactuals. Afton Alps also shows a large gap but relies heavily on a single donor; Northstar and Mount Brighton yield more mixed results. Park City and Stowe are large destination resorts that may more strongly anchor their surrounding housing markets. Mount Brighton is a smaller local hill, while Northstar lies in the more diffuse Tahoe lodging market and joined Epic soon after the financial crisis.

The California Ikon resorts Mammoth Mountain and Bear Mountain also differ: Mammoth shows a positive post-treatment gap, while Bear Mountain's estimates remain near zero to mildly negative. Both joined in 2018, so their post-treatment periods overlap with the COVID-era mountain housing boom, warranting caution. One possible explanation is within-network substitution: both serve the Los Angeles market, but Mammoth is larger, farther away, and has a longer season. Bundled access may have shifted demand toward Mammoth. Such heterogeneity may help explain the insignificant pooled Ikon estimates, which combine 25 ZIPs entering in one year.[1]

Housing affordability is an important policy concern in resort communities. In 2024, CBS News reported that Steamboat Springs, Colorado – home to a major resort on the Ikon Pass – could not fill a $167,000 human resources director position because candidates could not afford local housing (CBS News, 2024). In Park City, Utah, ski patrol went on a 13-day strike in December 2024–January 2025, citing high living costs as a central concern (CNN, 2025). My estimates provide historical evidence on home-value changes around network entry that operators can consider when evaluating affiliations, real estate investments, and employee housing. Local governments may use the same evidence when planning land use and housing construction and weighing potential fiscal benefits against affordability pressures.

These implications require caution. Although the estimates are robust to alternative specifications and control groups, I cannot rule out operators' selection of markets based on anticipated housing-demand growth that would have occurred even without network entry. Such growth prospects need not appear in pre-treatment trends. Moreover, entry sometimes coincided with ownership changes and investment, so the estimates do not isolate the effect of pass access alone. The findings therefore provide suggestive evidence of past capitalization around network entry. The consequences of future affiliations may depend on how they are implemented. Evaluating distributional and welfare consequences would additionally require evidence on rents, wages, housing supply, and ownership.

[1]The discrepancy between 28 *resorts* and 25 *ZIPs* is explained in the note to Table 1.

In addition to the bundling literature, this paper relates to three strands of research on tourism and housing markets. First, the Airbnb literature, including Garcia-López et al. (2020), Barron et al. (2021), and Koster et al. (2021), shows how a platform that increases short-term rental demand raises housing costs. Megapass expansion may similarly affect local housing demand by changing demand for accommodation and second homes near participating resorts. Second, research on tourism demand, amenity migration, and second homes, such as Deller et al. (2001), Moss (2006), and Mikulić et al. (2021), studies how recreational access and visitor inflows capitalize into local housing markets. Third, work on ski resort housing markets, including Butsic et al. (2011) and Blok and Fuerst (2025), shows that mountain property values respond strongly to resort fundamentals and climate-related shocks.

The remainder of the paper is organized as follows. Section 2 provides background on ski industry consolidation and the megapass phenomenon. Section 3 describes the data sources and sample construction. Section 4 presents the empirical strategy. Section 5 reports the main estimates and robustness checks. Section 6 discusses heterogeneity in the estimated effects and the challenge of defining the relevant treated geography. Section 7 concludes. Additional extensions and robustness checks appear in the online supplement. Tables and figures with an S prefix refer to that supplement.

2 Background: Ski Industry Consolidation and Megapasses

Prior to 2008, the North American ski industry was fragmented. Most resorts operated independently, selling single-resort season passes and day tickets. Vail Resorts changed this model in 2008 by introducing the Epic Pass, initially priced at $579 for unlimited access to Vail, Beaver Creek, Breckenridge, Keystone, Heavenly, and Arapahoe Basin. By bundling access to multiple major resorts at a price below the cost of a single-resort season pass, it increased the number of options available to skiers. Instead of committing to a single resort

or buying day tickets, skiers were now able to buy a single season pass in advance and choose between several destinations with near-zero marginal cost.

Vail Resorts subsequently expanded the Epic network through two channels: *ownership acquisitions* (purchasing resorts outright) and *partnership agreements* (offering limited-day access at independent resorts). Major acquisitions include Northstar (2010), Whistler Blackcomb (2016), Stowe (2017), and the Peak Resorts portfolio of 17 resorts (2019). In Park City, Vail first entered through the May 29, 2013 announcement that it would operate Canyons for the 2013–14 season; the later corporate acquisition of Park City Mountain occurred in 2014. In 2015, Canyons and Park City Mountain merged into a single resort, Park City.[2]

The company later named Alterra Mountain Company was formed in 2017 and launched the Ikon Pass in 2018. The pass initially covered 20 U.S. destinations, expanding to 28 by the end of the year. The Ikon Pass followed a similar model of owned resorts plus partnerships. By the 2025–26 season, the two passes together offered access to more than 150 resorts worldwide.

A natural question is whether ownership-type and partnership-type entries have different effects. In practice, that distinction is difficult to study cleanly in the baseline Epic sample because nearly all Epic resort entries between 2010 and 2018 are ownership-type, leaving little within-wave variation to separately identify partnership versus ownership effects. The 2018 Ikon wave contains more partnership-type entries, but that setting is already complicated by the simultaneous entry of many resorts and by its close timing to the COVID-era housing boom.

Megapasses can affect local housing markets through several channels. First, by reducing the additional cost of lift access at participating resorts, megapasses may encourage more visits. Anecdotal evidence supports this demand channel: when Deer Valley joined the Ikon Pass in 2018, visitation surged, leading to congestion and capacity constraints (Aspen Times,

[2]Canyons and Park City were distinct resorts prior to the merger, but in the empirical analysis they are absorbed into a single treated ZIP because both map to ZIP 84060.

2019). Conversely, when Arapahoe Basin left the Epic Pass, visitation fell to roughly 75% of prior levels (Summit Daily, 2023).

Second, they may channel demand to previously less-visited resorts, as megapass holders explore destinations they would not have visited under single-resort pricing. Even when these additional visitors do not purchase homes directly, greater demand for lodging or seasonal rentals can tighten local housing markets and eventually capitalize into higher home values. Third, ownership acquisitions often bring capital improvements (new lifts, lodges), which may increase the resort's attractiveness and the surrounding area's desirability. Finally, joining a major pass network may signal that a resort is a "serious" destination (as opposed to a "small" local hill), potentially attracting investment and second-home buyers. My empirical strategy does not separately identify these channels. I cannot systematically examine local visitation with the available data: the NSAA publishes national and regional skier-visit totals but does not provide data at the resort, ZIP, or county level (National Ski Areas Association, 2026).

3 Data

3.1 Megapass Timeline Data

I compile the history of resort affiliations with the Epic Pass and Ikon Pass from press releases, news articles, and industry sources. For each resort, I record the first season on the pass, the relevant announcement date used to time treatment, and other institutional details of the affiliation. Supplement Section S2 documents the resort universe, ZIP assignment, pass timeline, and Zillow panel construction in detail.

My treated sample includes resorts that joined the Epic Pass between 2008 and 2018, as well as resorts that joined the Ikon Pass in 2018. These resorts can be divided into three distinct waves, and the empirical analysis suggests that this division is important. The original 2008 Epic cohort coincided with the 2008 financial crisis, making it difficult to

separate megapass-related capitalization from the housing market collapse and subsequent recovery. In addition, for many resort markets, ZHVI coverage begins only in the middle or end of the 2000s, leaving a thin pre-treatment window for the original Epic entrants.

The 2010–17 wave, which includes five Epic resorts, provides the most interpretable setting for estimating changes in nearby home values following megapass entry. This wave was not directly affected by the housing market collapse, and it occurred well before the COVID-19 pandemic and the associated mountain housing boom. The limitation is that the 2010–17 cohort includes only five treated resorts.

The 2018 cohort includes both Epic and Ikon resorts. Five resorts joined Epic in 2018, including major destination resorts such as Telluride and Crested Butte. The Ikon Pass was introduced in 2018, and its original U.S. wave included 28 resorts: 20 at launch and 8 later in 2018. These ranged from smaller resorts such as Loon Mountain and Bear Mountain to major resorts such as Mammoth Mountain, Jackson Hole, and Big Sky.

The larger 2018 wave is attractive because it greatly expands the treatment group, but it is also harder to interpret. First, the 2018 megapass expansion occurred less than two years before the COVID-19 pandemic, making early post-entry estimates difficult to separate from the pandemic-era shock to housing and tourism markets. Second, the launch of Ikon and the rapid expansion of Epic sharply reduced the pool of untreated major resorts and created a different market environment, with many simultaneous entries and greater scope for substitution across destinations. Finally, some resorts later switched affiliations. For example, Arapahoe Basin first left Epic and later joined Ikon, which could appear to violate the absorbing-treatment structure assumed in Callaway and Sant'Anna (2021). In the ZIP-level analysis, however, Arapahoe Basin does not create a separate treatment reversal because it shares ZIP 80435 with Keystone, which entered Epic in 2008. Because ZHVI is reported at the ZIP level, I define treatment by the ZIP's first entry into any megapass network and therefore keep Arapahoe Basin in the resort timeline.

I exclude resorts that first entered a megapass network in 2019 or later from the treated sample because their early post-entry windows overlap directly with the COVID-19 shock to housing and tourism markets.

The key empirical choice is to date treatment at the *public announcement* of a megapass affiliation rather than the season start. This timing is conceptually attractive because ski trips are often booked before lifts open, local expectations can update immediately once a resort joins the pass, and announcement dates are observed precisely while season-start dates are measured more coarsely.

3.2 Zillow Home Value Index (ZHVI)

I use the Zillow Home Value Index (ZHVI)[3] at the ZIP-code level, monthly frequency, from January 2000 through February 2026. ZHVI is a smoothed, seasonally adjusted measure of the typical home value in a given area, based on Zillow's proprietary Zestimate methodology applied to the stock of residential properties. I use the All Homes tier (single-family residences and condos, 35th–65th percentile). The outcome variable is log(ZHVI). In Supplement Section S3.4, I look at two alternative outcome series: the middle-tier single-family-residence ZHVI and the middle-tier condo-only ZHVI. The condo-only ZHVI often produces larger point estimates, but has thinner coverage; therefore, I do not use it in the baseline analysis. For the county-level robustness checks, I use Zillow's county ZHVI series.

A natural alternative outcome is the Zillow Observed Rent Index (ZORI), which may better capture rental market pressure and shorter-run housing demand. However, ZORI coverage is substantially more limited than ZHVI in resort ZIP codes, so I do not use it in my analysis.

[3]Downloaded from https://www.zillow.com/research/data/.

3.3 Sample Construction

I compile a cleaned resort dataset covering 469 U.S. alpine ski resorts from OpenSkiMap, Zillow, ACS, resort websites, Google Maps, OnTheSnow, and additional public industry sources. For each resort, I record geographic coordinates, vertical drop, skiable acreage, lift count, and pass affiliation. I then link resorts to ZIP codes using a hand-checked resort-to-ZIP crosswalk informed by geographic proximity, resort addresses, Google Maps evidence, and manual verification. For the main paper specifications, I restrict attention to the 271 resorts with at least five lifts and verified acreage.[4]

Table 1 summarizes the four treated ZIP cohorts that appear in the current paper: the Epic founding wave in 2008, the 2010–17 Epic cohort, the later Epic entrants in 2018, and the Ikon cohort in 2018. Treatment is defined at the ZIP level by the *first* megapass announcement affecting that ZIP. Thus, Park City and Canyons are not treated as separate observations: both are collapsed into ZIP 84060, dated to Epic's May 29, 2013 announcement. By the same logic, ZIP 84060 remains in the Epic cohort even though Deer Valley later brings Ikon into that ZIP, because Epic arrived first. The full ZIP-level treated roster appears in Supplement Table S1.

3.4 Summary Statistics

Table 2 presents summary statistics by treated wave and for the control group in the resort-ZIP panel. The treated cohorts differ sharply from one another. The 2008 Epic cohort is, on average, the largest and most expensive group; the 2010–17 Epic cohort contains smaller markets with lower second-home shares; and the 2018 Epic and Ikon cohorts appear more second-home intensive. Because resort characteristics differ across cohorts, and because the broader economic environment also changes over time, I treat the 2010–17 Epic cohort as

[4]Among resorts that joined Epic or Ikon between 2008 and 2018, the smallest by lift count is Aspen Highlands, with 6 lifts. The full 469-resort dataset includes many resorts with fewer than 5 lifts and limited publicly available information. I therefore exclude these very small resorts from the main analysis.

Table 1. Megapass Treated ZIP Cohorts in the Resort-ZIP Panel

Cohort	Pass	Treated ZIPs	First announcement	Last announcement	Example resorts
Epic 2008	Epic	5	2008-03-18	2008-03-18	Beaver Creek; Keystone; Breckenridge
Epic 2010–17	Epic	5	2010-10-25	2017-02-21	Northstar; Park City; Mount Brighton
Epic 2018	Epic	5	2018-01-29	2018-08-01	Telluride; Okemo; Crested Butte
Ikon 2018	Ikon	25	2018-01-25	2018-09-06	Bear Mountain; Big Sky; Copper Mountain

Notes: Entries summarize the treated ZIP cohorts used across the paper's main specifications in the 271-resort main estimation sample. Treatment is assigned at the ZIP level by the first public megapass announcement affecting that ZIP. For example, Park City remains in the Epic 2010–17 cohort because Epic reached ZIP 84060 before Ikon did. The full ZIP-level roster appears in Supplement Table S1. The 2018 Ikon wave includes 28 resort entries but 25 analysis ZIPs. Deer Valley maps to ZIP 84060, which is already Epic-treated through Park City. Alta and Snowbird share ZIP 84092; Solitude and Brighton share ZIP 84121. Taos Ski Valley's ZIP 87525 lacks Zillow coverage. Aspen Snowmass contributes two ZIPs, 81611 and 81615.

the baseline design and view the other waves as extensions instead of relying only on pooled estimates.

Because the analysis is conducted at the ZIP level, multiple resorts may map to the same ZIP. Table 2 is therefore constructed at the ZIP level and includes only the four focal treated cohorts plus controls that were not treated before the end of the estimation window in December 2021. Resorts that joined a megapass only in 2022 or later are included in the control group. Because some resort ZIPs are absent from the Zillow data and because multiple resorts may map to the same ZIP, the ZIP counts reported in the table need not match the broader resort-level coverage counts reported above. Supplement Table S2 provides the exhaustive ZIP accounting for the main sample, including the broader post-2018 treated cohorts and the decomposition of the paper control pool.

4 Empirical Strategy

The setting features staggered treatment adoption: different resorts joined the Epic Pass and Ikon Pass in different years between 2008 and 2018. As shown in Goodman-Bacon (2021),

Table 2. Summary Statistics by Treated Wave and Control Group

Group	N (ZIPs)	Mean ZHVI	Median ZHVI	Mean SH%	Mean Vert.	Mean Acres
Epic 2008	5	$399,811	$432,630	49.8	3498	3937
Epic 2010–17	5	$382,704	$323,743	31.6	1682	3163
Epic 2018	5	$318,631	$242,083	54.9	2398	1114
Ikon 2018	25	$382,210	$292,271	53.0	2508	2199
Control	178	$202,042	$180,320	24.4	1061	526

Notes: Mean and median ZHVI are computed across ZIP-level averages of the Zillow Home Value Index in the pre-2008 period. SH% is the second-home share from the ACS. Vert. is maximum vertical drop in feet; Acres is total skiable acreage within the ZIP. Reported values use the main 271-resort estimation sample. The 178-ZIP control pool shown here consists of resort ZIPs that remain untreated through December 2021 and have usable ZHVI coverage within that estimation window.

standard two-way fixed-effects estimators can be biased in such settings because they may rely on comparisons that use already-treated units as controls. I therefore use the estimator of Callaway and Sant'Anna (2021) in the main analysis. This approach constructs group-time average treatment effects, $ATT(g,t)$, from clean comparisons that avoid already-treated controls. Formally, $ATT(g,t) = \mathbb{E}[Y_t(g) - Y_t(0) \mid G = g]$, where G denotes the treatment cohort. I aggregate these estimates into overall ATT and dynamic event-study effects.

The Callaway and Sant'Anna (2021) estimator is implemented via the `did` package in R. Standard errors are multiplier bootstrap standard errors with 1,000 bootstrap iterations and default clustering at the analysis-unit level, while the event-study figures report 95% multiplier bootstrap uniform confidence bands. The estimator allows the control group to be defined either as never-treated units only or as never-treated plus not-yet-treated units. In the main specifications, the control group consists of all otherwise eligible ZIPs or counties that remain untreated by either Epic or Ikon throughout the relevant estimation window, even if they join a megapass after that window ends. Because the same ZIPs and counties are followed repeatedly over time, but coverage is not perfectly balanced in every specification, I estimate `att_gt()` in panel mode while allowing for unbalanced panels rather than treating the data as repeated cross sections.

I summarize treatment effects over the first 36 months after treatment. A shorter horizon may leave too little time for house prices to respond, while a much longer horizon increases the risk that other shocks will confound the post-treatment path.

The sample end date varies across specifications. For the baseline 2010–17 Epic wave, the monthly sample ends in February 2020 and the quarterly sample ends in March 2020. These endpoints allow Stowe to contribute a full three-year post-treatment window and stop before the subsequent pandemic-era mountain housing boom. In that specification, many additional resorts first become treated in 2018, shortly before the sample ends. Including them as not-yet-treated units would therefore create treated cohorts with little post-treatment information, changing the estimand while adding limited identifying variation. I therefore exclude them from the estimation sample when analyzing the 2010–17 Epic wave. As a robustness check, I vary the composition of the treated group and the sample period in Section 5.2.

For the 2008 Epic wave, the sample runs through December 2011, which provides three years of post-treatment data. For specifications that include the 2018 waves, the sample runs through December 2021. This provides sufficient post-treatment data, but it also raises the risk of conflating megapass effects with pandemic-era housing shocks. I exclude ZIPs first treated during 2019–21 from these specifications. ZIPs first treated after December 2021 remain eligible as controls. I do not extend the estimation window beyond 2021.

The Callaway and Sant'Anna (2021) estimator relies on a parallel-trends assumption: in the absence of treatment, home values in treated and control ZIP codes would have followed the same trajectory. I assess this assumption using event-study plots of pre-treatment coefficients. These plots are informative about differential pre-treatment trends, but they do not fully rule out anticipation effects or other forms of selection into megapass entry that are not visible in observed pre-treatment price dynamics.

For resort-specific estimation, I use the synthetic control method, implemented in R via the `augsynth` package (Ben-Michael et al., 2021). To allow for different pre-treatment levels

across units, I include unit fixed effects. In this setting, that adjustment is closely related to demeaning the outcome within unit over the pre-treatment period. The synthetic control method relies on the assumption that a weighted average of donor units provides a valid counterfactual for the treated unit, and that this relationship remains stable over time.

5 Results

5.1 Baseline Epic 2010–17 Results

I begin with the baseline 2010–17 Epic wave. Unless otherwise noted, the results in this section use the 271-resort main estimation sample. The preferred monthly ZIP-level estimate appears in the first row of Table 3. It implies that joining the Epic Pass between 2010 and 2017 is associated with a 5% increase in local home values over the first three post-treatment years, and the estimate is statistically significant at the 5% level. The upper-left panel of Figure 2 visualizes the corresponding event study. The pre-treatment coefficients remain close to zero, while the post-announcement estimates gradually rise, reaching roughly 10% by three years after the announcement.

One concern with my results is selection into treatment. Table 2 shows that treated resorts differ systematically from the control group on observable characteristics – they are larger, more expensive, and have higher second-home shares. I address this concern in two ways. First, I vary the observable characteristics screen applied to the control pool. Table 4 reports estimates of the four specifications from the first column of Table 3 across four sample definitions: the full active 469-resort sample, the preferred 271-resort main sample, a sample restricted to resorts with at least 50 acres, and a sample restricted to resorts with at least 100 acres.

Second, I apply a revealed preference screen: I restrict the control pool to resorts that megapass operators subsequently added to their networks, which serves as a proxy for latent destination appeal that operators can observe but I cannot. Table 5 implements this screen

Table 3. Baseline Epic Estimates and Robustness Checks

	2010–17 Epic	**2018 Epic**	**2010–18 Epic**
ZIP monthly	**0.050**	0.036	0.043
	(0.022)	(0.033)	(0.019)
ZIP quarterly	0.053	0.036	0.045
	(0.023)	(0.033)	(0.020)
County monthly	0.039	0.001	0.020
	(0.032)	(0.025)	(0.020)
County quarterly	0.048	−0.003	0.023
	(0.035)	(0.022)	(0.021)
Treated units	5	5	10
Control ZIPs/Counties	182/141	178/138	178/138
Sample end	2020-02/03	2021-12	2021-12

Notes: Entries report announcement-timed Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. Controls include all otherwise eligible ZIPs or counties untreated by either pass through the end of the relevant estimation window. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the analysis-unit level.

Table 4. Baseline Epic Robustness to Sample Restrictions

	Active 469	**Main 271**	≥ 50 **acres**	≥ 100 **acres**
ZIP monthly	0.053	0.050	0.049	0.051
	(0.025)	(0.022)	(0.025)	(0.024)
ZIP quarterly	0.056	0.053	0.052	0.054
	(0.026)	(0.023)	(0.025)	(0.025)
County monthly	0.041	0.039	0.038	0.036
	(0.037)	(0.032)	(0.033)	(0.032)
County quarterly	0.048	0.048	0.047	0.045
	(0.039)	(0.035)	(0.035)	(0.035)
Treated ZIPs	5	5	5	5
Control ZIPs	346	182	156	129

Notes: Entries report announcement-timed Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. All specifications use the baseline 2010–17 Epic design, ending in February 2020 for monthly data and March 2020 for quarterly data. "Main 271" requires at least five lifts and verified acreage; the acreage screens further restrict this sample. Controls include all otherwise eligible ZIPs or counties untreated by either pass through the end of the relevant estimation window. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the analysis-unit level.

by ending the estimation window in December 2017 and restricting controls to resorts that had not yet joined a megapass by then but entered in a later wave. The treated group corresponds to the "Early sample" from Table 7, since Stowe enters too late to contribute meaningful post-treatment information. I consider four specific control pools: resorts that first joined a megapass in 2018 only, in 2018 or later, in 2019 or later, and in 2018 or 2019 only. Across both exercises, the monthly ZIP estimates remain close to the baseline 5% estimate, indicating that the results are robust to the composition of the control group.

Table 5. Baseline Epic Robustness with Future-Treated Controls

	2018 only	**2018+**	**2019+**	**2018–19 only**
ZIP monthly	0.047	0.048	0.055	0.052
	(0.027)	(0.024)	(0.025)	(0.026)
ZIP quarterly	0.052	0.052	0.058	0.058
	(0.029)	(0.027)	(0.028)	(0.029)
County monthly	0.023	0.042	0.057	0.039
	(0.047)	(0.039)	(0.038)	(0.042)
County quarterly	0.034	0.053	0.068	0.050
	(0.052)	(0.043)	(0.042)	(0.046)
Treated units	4	4	4	4
Control ZIPs	30	68	38	49
Control counties	25	53	28	40

Notes: Entries report announcement-timed Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. The treated group consists of the four early Epic ZIPs, and the sample ends in December 2017. Controls first join a megapass in the years indicated by the column headings. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the analysis-unit level.

Table 6 reports leave-one-out robustness checks for this baseline cohort. I omit one treated 2010–17 Epic resort at a time and re-estimate the same four DiD specifications. In the preferred monthly ZIP specification, the estimate ranges from about 4% when Afton Alps is omitted to about 7% when Northstar is omitted. The estimate also becomes substantially more precise when Northstar is excluded. This pattern is consistent with the later SCM evidence, where the Northstar estimates are smaller and less precise than those for Park City and Stowe. Overall, the leave-one-out results indicate that the positive baseline estimate is not driven by any single resort.

Table 6. Baseline Epic Leave-One-Out Robustness

	Baseline	Omit Stowe	Omit Mt. Brighton	Omit Afton Alps	Omit Park City	Omit Northstar
ZIP monthly	0.050	0.056	0.044	0.039	0.044	0.069
	(0.022)	(0.029)	(0.025)	(0.023)	(0.025)	(0.016)
ZIP quarterly	0.053	0.060	0.043	0.038	0.054	0.071
	(0.023)	(0.029)	(0.027)	(0.026)	(0.029)	(0.018)
County monthly	0.039	0.050	0.027	0.028	0.026	0.066
	(0.032)	(0.048)	(0.037)	(0.037)	(0.033)	(0.025)
County quarterly	0.048	0.060	0.032	0.032	0.037	0.076
	(0.035)	(0.047)	(0.036)	(0.039)	(0.040)	(0.029)

Notes: Entries report announcement-timed Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. Each non-baseline column omits the indicated treated ZIP from the baseline design in Table 3. Controls include all otherwise eligible ZIPs or counties untreated by either pass through the end of the relevant estimation window. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the analysis-unit level.

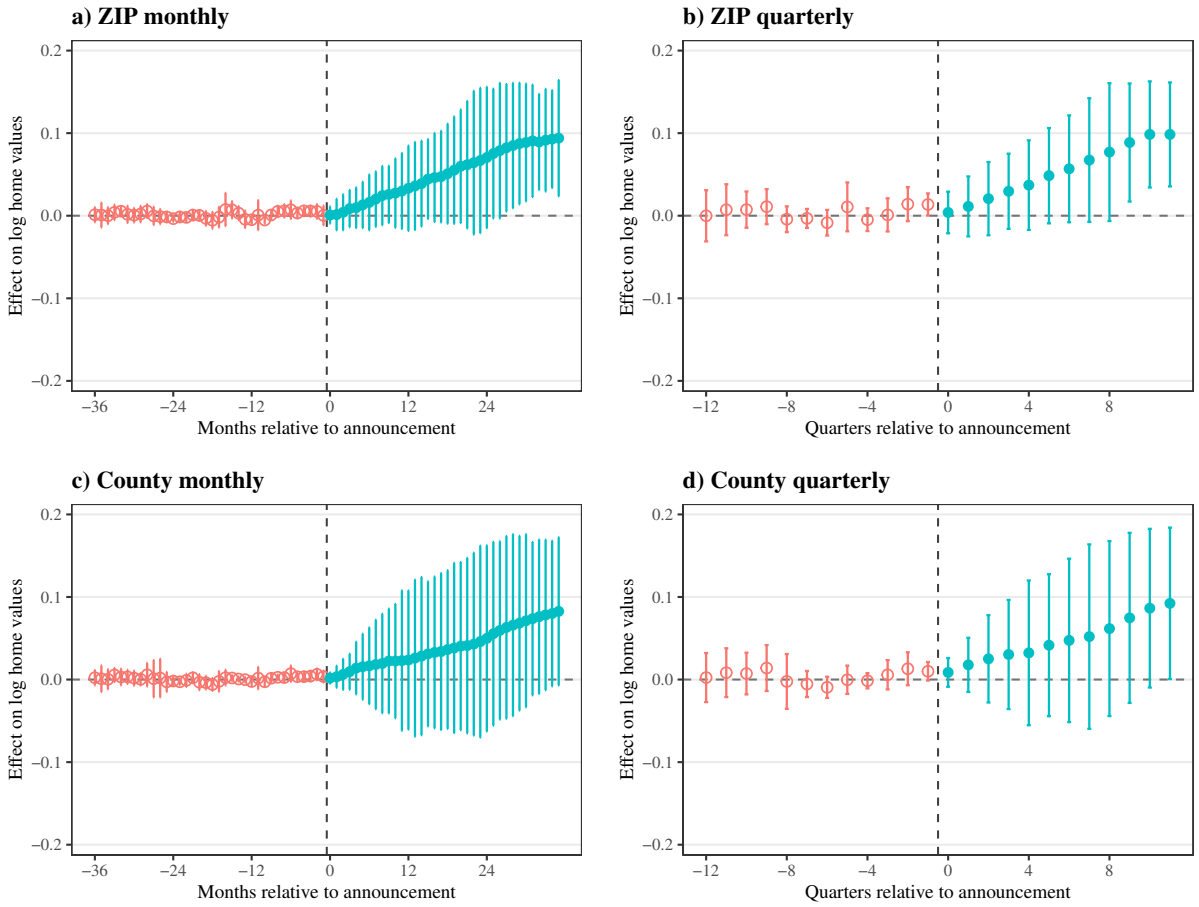
The remaining rows of the first column of Table 3 report the frequency and geography robustness checks for the same 2010–17 Epic design. The quarterly ZIP estimate is slightly larger than the monthly estimate, while the county-level estimates are smaller and less precise. The county comparison is substantively relevant because home-value capitalization around megapass entry may extend beyond a single ZIP code. At the same time, the attenuation at the county level suggests that this capitalization is fairly localized. The remaining three panels of Figure 2 plot the corresponding event studies for these alternative 2010–17 specifications.

Supplement Section S3.4 considers two alternative Zillow outcome series and finds results similar to the baseline. If anything, the estimates using the condo-only ZHVI are larger in magnitude than those using the all-homes ZHVI, but coverage is thinner, so these estimates are generally less precise.

5.2 Announcement Versus Season-Start Timing

Table 7 and Supplement Figure S6 report a substantive timing check for the Epic 2010–17 design. I vary two components of the specification. First, I vary the treated and control samples, as well as the estimation window. Specifically, I consider: (i) the four early Epic

Figure 2. Baseline Event Studies for the 2010–17 Epic Design



Notes: The figure reports announcement-timed Callaway and Sant'Anna (2021) event studies with multiplier bootstrap uniform confidence bands for the preferred 2010–17 Epic sample. Panel (a) is the headline monthly ZIP specification. Panels (b)–(d) show the corresponding robustness checks under quarterly ZIP aggregation and county treatment geography. All four panels share the same y-axis scale, fixed at [−0.20, 0.20].

resorts (Northstar, Mount Brighton, Afton Alps, and Park City) with the sample ending in December 2017; (ii) a version that adds Stowe and also ends in December 2017; (iii) a baseline-window version through February 2020 that keeps Stowe out of the sample; (iv) the baseline sample through February 2020 with Stowe included; and (v) a version of that baseline that restricts the control group to resorts that never joined a megapass between 2008 and 2026. In specifications (i)–(iv), controls include all otherwise eligible ZIPs untreated by either pass through the end of the relevant estimation window, including ZIPs that join a megapass later. Specification (v) excludes those later entrants as well. Second, within each

specification, I compare announcement timing with season-start timing, where the latter is defined as November 1 of the season in which the resort joined the Epic Pass.

This timing comparison allows local housing markets to respond at different points in time. Housing demand may shift at the announcement date, when skiers can begin planning trips and investors can react to new information, or it may respond more strongly at the start of the ski season, when additional visits actually occur.

Two patterns stand out. First, the announcement-timed estimates are consistently somewhat larger than the corresponding season-start estimates, consistent with capitalization beginning when pass entry becomes publicly known rather than only when the ski season begins. Second, the estimates remain positive across the alternative specifications, including when Stowe is omitted.

Table 7. Epic 2010–17 Timing Comparison in Monthly ZIP Data

	Early sample	**Add Stowe**	**Baseline window, no Stowe**	**Baseline sample**	**Never-treated controls**
Announcement timing	0.055	0.054	0.056	0.050	0.052
	(0.030)	(0.030)	(0.029)	(0.022)	(0.023)
Season-start timing	0.046	0.045	0.049	0.047	0.047
	(0.027)	(0.027)	(0.032)	(0.020)	(0.016)
Treated ZIPs	4	5	4	5	5
Control ZIPs	229	229	182	182	163
Observations	38,113	38,327	35,084	35,324	31,727
Sample end	2017-12	2017-12	2020-02	2020-02	2020-02

Notes: Entries report monthly ZIP Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. Sample definitions are described in Section 5.2. The first four columns use all otherwise eligible ZIPs untreated by either pass through the sample end; "Never-treated controls" excludes ZIPs joining either pass during 2008–2026. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the ZIP level.

5.3 Epic 2018 and Pooled Epic Extensions

I next turn to the resorts that joined the Epic Pass in 2018. This cohort is harder to study than the 2010–17 wave because the COVID pandemic began less than two years later, raising

the risk that the estimates are confounded by pandemic-era housing shocks. The second column of Table 3 reports the estimates for the 2018 Epic wave alone. At the ZIP level, the estimates are positive but smaller than those for the 2010–17 cohort, at roughly 3.5%, and they are imprecisely estimated. At the county level, the estimates are essentially zero. The last column of the table pools the 2010–17 and 2018 Epic cohorts. These pooled estimates remain positive at both the ZIP and county levels, although broadening the geographic unit attenuates the estimated coefficients. At the ZIP level, the pooled 2010–18 Epic estimate is about 4.3%.

Figure S7 shows the corresponding monthly ZIP event studies with multiplier bootstrap uniform confidence bands. The 2018 Epic event-study estimates are positive but noisy, while the pooled 2010–18 Epic estimates are somewhat smaller in magnitude than the baseline but more precisely estimated.

5.4 Broader Megapass Extension Designs

Finally, I turn to the 2008 Epic wave, which coincided with the financial crisis, and the 2018 Ikon wave, which was much larger than any of the Epic cohorts considered above. Table 8 reports the estimates for these additional cohorts and their pooled combinations. The 2008 Epic wave yields a small and noisy estimate, while the pooled 2008–18 Epic estimate is positive, at about 3.4%, with a standard error of 1.7 percentage points. The 2018 Ikon estimates are small and statistically insignificant. The pooled 2010–18 and 2008–18 Epic and Ikon estimates are statistically significant but much smaller than Epic-only estimates, at about 2%. Figure 3 presents the corresponding event studies.

5.5 Heterogeneity by Resort and Area Characteristics

Megapass entry may have heterogeneous effects on local housing markets depending on resort and area characteristics. A large destination resort located far from a metropolitan area is more likely to generate weekend or vacation demand that includes overnight stays

Table 8. Monthly ZIP Callaway & Sant'Anna Estimates for Extension Designs

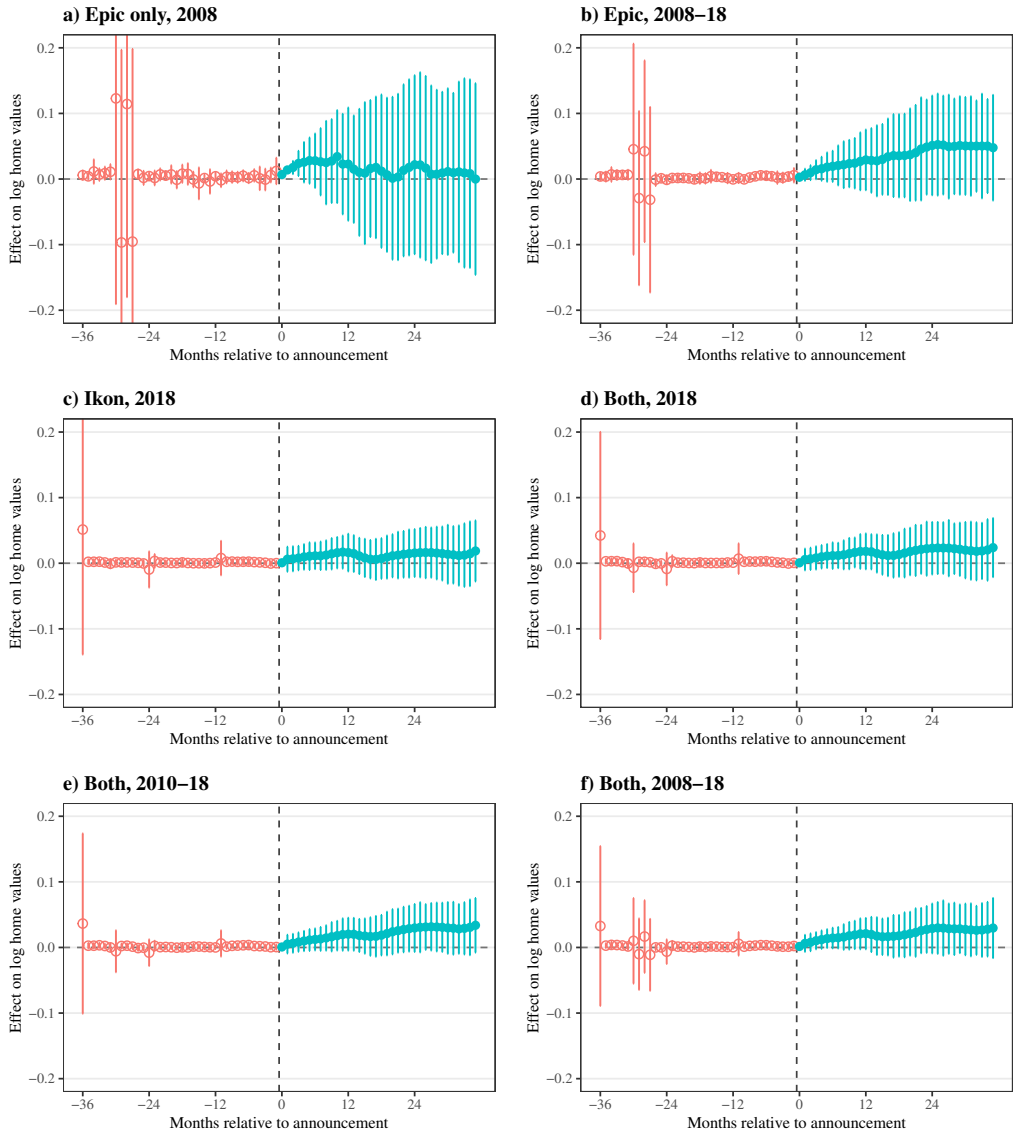
	Epic only, 2008	**Epic, 2008–18**	**Ikon, 2018**	**Both, 2018**	**Both, 2010–18**	**Both, 2008–18**
Estimate	0.015	0.034	0.012	0.016	0.021	0.020
	(0.041)	(0.017)	(0.010)	(0.010)	(0.009)	(0.009)
Treated ZIPs	5	15	25	30	35	40
Control ZIPs	198	178	178	178	178	178
Observations	22,614	40,850	42,301	43,428	44,661	45,891
Sample end	2011-12	2021-12	2021-12	2021-12	2021-12	2021-12

Notes: Entries report announcement-timed monthly ZIP Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. "Both" pools Epic and Ikon entrants. Controls include all otherwise eligible ZIPs untreated by either pass through the end of the relevant estimation window. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the ZIP level.

and second-home purchases. By contrast, a small local hill within driving distance of a city may attract many day skiers without creating the same housing market pressure. I use total skiable acreage in the treated ZIP as a proxy for resort scale and examine whether the estimates vary with this measure. I focus on the 2010–18 Epic specification, which includes 10 treated ZIPs, and on the broader specifications that include Ikon and contain at least 25 treated ZIPs. I split the treated group into two bins in the former case and three bins in the latter case using ZIP-level total skiable acreage.

Panel A of Table 9 reports exploratory monthly ZIP Callaway and Sant'Anna (2021) subgroup estimates for these acreage splits. I partition treated ZIPs using total skiable acreage within the ZIP, keep the parent design's control pool fixed within each subgroup, and re-estimate the monthly ZIP specification using the same 36-month announcement-timed setup as in the corresponding parent design. These subgroup results are substantially noisier than the main specifications because each split contains fewer treated units. Nevertheless, the acreage-based pattern is suggestive: estimates in the low-acreage terciles are close to zero or negative, while estimates in the medium- and high-acreage bins are generally larger. This pattern is consistent with stronger capitalization around larger destination resorts. Panel B

Figure 3. Monthly ZIP Event Studies for Extension Designs



Notes: All six panels report announcement-timed monthly ZIP Callaway and Sant'Anna (2021) event studies with multiplier bootstrap uniform confidence bands. The panels share the same y-axis scale, fixed at [−0.20, 0.20] for readability. Some pre-treatment confidence intervals in the "Epic only, 2008" and "Ikon, 2018" panels extend beyond the displayed range and are truncated in the main-text figure; the full-scale version appears in Supplement Figure S8.

reports analogous splits by local second-home share; those estimates reveal a less consistent pattern.

Table 9. Exploratory Monthly ZIP Heterogeneity by Acreage and Second-Home Share

Panel A: Resort Acreage			
Design	**Low**	**Mid**	**High**
2010–18 both	0.005	0.028	0.029
	(0.016)	(0.017)	(0.014)
2018 both	−0.012	0.029	0.031
	(0.011)	(0.019)	(0.016)
2018 Ikon	−0.012	0.014	0.032
	(0.013)	(0.011)	(0.018)
2010–18 Epic	0.035	—	0.051
	(0.021)		(0.029)
Panel B: Second-Home Share			
Design	**Low**	**Mid**	**High**
2010–18 both	0.031	0.027	0.007
	(0.011)	(0.019)	(0.015)
2018 both	0.015	0.028	0.005
	(0.008)	(0.021)	(0.018)
2018 Ikon	0.014	0.016	0.007
	(0.010)	(0.017)	(0.020)
2010–18 Epic	0.047	—	0.040
	(0.019)		(0.034)

Notes: Entries report exploratory announcement-timed monthly ZIP Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. Within each design and panel, treated ZIPs are split into approximately equal-sized terciles, except 2010–18 Epic, which uses halves. "Both" pools Epic and Ikon entrants. Each subgroup retains its parent design's 178 control ZIPs, untreated by either pass through December 2021. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the ZIP level.

5.6 Resort-Specific Heterogeneity

My baseline DiD estimates pool multiple treated resorts together, while the previous section suggests that capitalization may be heterogeneous. I therefore supplement the DiD evidence with resort-specific synthetic control exercises. SCM requires additional researcher choices, especially how to define the donor pool and the pre-treatment window. In principle, the donor pool may include hundreds of resorts, and even regional restrictions – for example, to the West for Northstar and Park City or to the Northeast for Stowe – still leave many

plausible donors. Hence, I further narrow the donor pool using ZIP-level total skiable acreage and focus on two pre-treatment windows, 60 months and 48 months.

I estimate SCM with unit fixed effects for the five Epic resorts in the 2010–17 wave and for two Ikon resorts, Mammoth Mountain and Bear Mountain. Table 10 summarizes the preferred donor filters used in each case. For the large destination cases, Park City and Stowe are compared to regional donor pools above the 65th percentile of total acreage within the region. Northstar and Mammoth use Western donors above the 50th percentile, Afton Alps uses Midwest donors above the 40th percentile, Mount Brighton uses an interior Midwest band between the 35th and 95th percentiles, and Bear Mountain is compared to low-acreage Western donors at or below the 25th percentile.

A small donor pool may not provide an adequate match for the treated unit, while a large pool may overfit pre-treatment outcomes. I restrict candidate donors to resort ZIPs of broadly comparable scale using the acreage cutoffs described above. These restrictions leave roughly 15–20 candidate ZIPs for each resort. I estimate each specification using 48 and 60 months of pre-treatment data.

Figure 4 reports the five Epic resort case studies. The SCM gaps for Park City remain clearly positive in both windows, with average 36-month post-treatment gaps of about 4–5%, while the Stowe gaps are also stably positive at roughly 3–4%. Northstar is more mixed, but both specifications produce modestly positive gaps rather than sharply negative ones. Afton Alps also has positive gaps in both windows, though the donor weights remain concentrated on a small set of nearby Midwest hills. Mount Brighton is the least stable case: the 60-month window is slightly negative, while the 48-month window turns mildly positive. These patterns are plausible given resort type. Park City and Stowe are destination markets, whereas Mount Brighton is a smaller local hill near a major metropolitan area.

Figure 4 also plots the corresponding SCM estimates for Mammoth Mountain and Bear Mountain, which joined Ikon in 2018. Both are in California and within driving distance of Los Angeles: Bear Mountain is roughly 100 miles away, while Mammoth is about 300 miles

Table 10. Resort-Specific SCM Variants

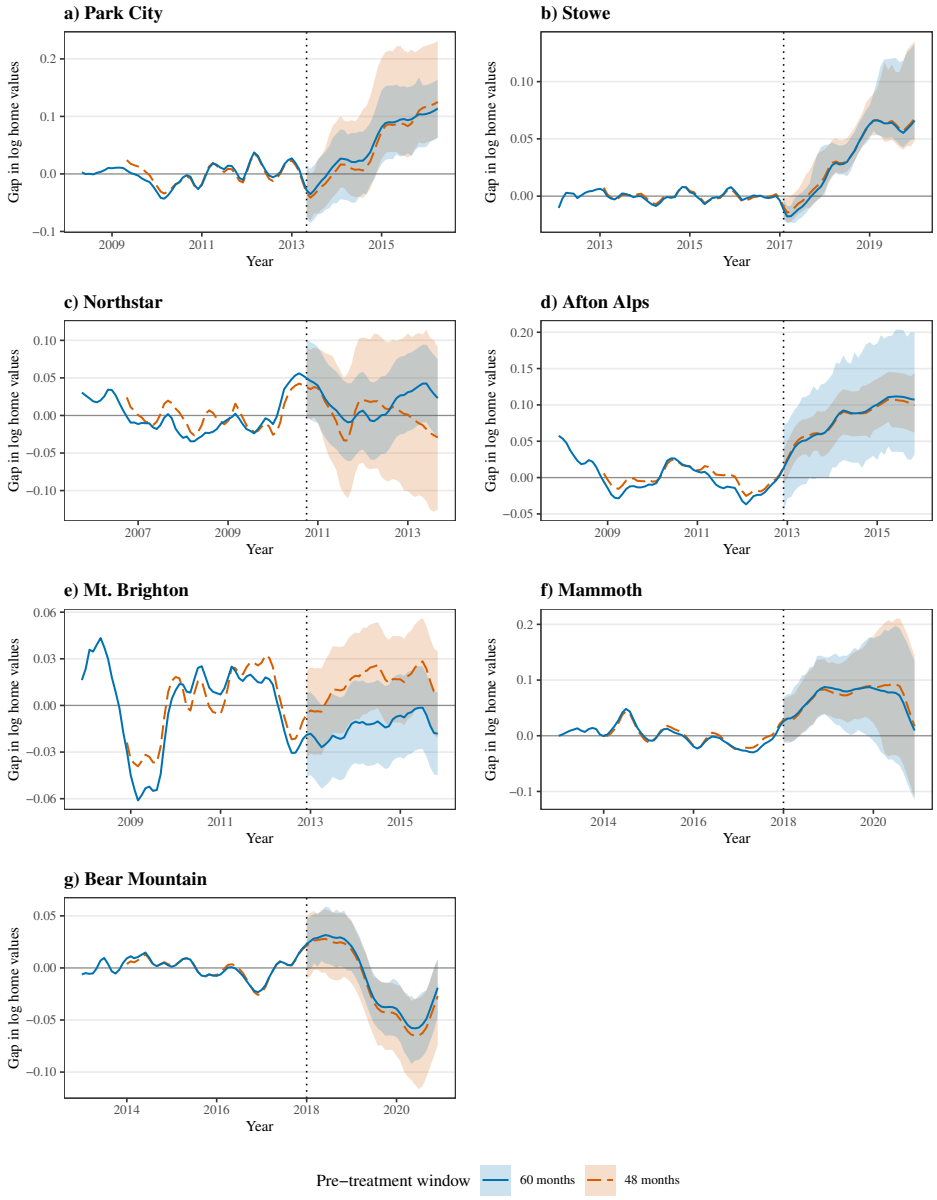
Resort and specification	Start	Active donors	Avg. post ATT (36m)	Pre RMSPE	Top weight
Park City: 60m pre, West $\geq$ 65th pct.	2008-05	15	0.051	0.017	0.540
Park City: 48m pre, West $\geq$ 65th pct.	2009-05	20	0.044	0.017	0.548
Stowe: 60m pre, Northeast $\geq$ 65th pct., end 2020-02	2012-02	18	0.032	0.004	0.388
Stowe: 48m pre, Northeast $\geq$ 65th pct., end 2020-02	2013-02	19	0.034	0.003	0.420
Northstar: 60m pre, West $\geq$ 50th pct.	2005-10	16	0.018	0.024	0.640
Northstar: 48m pre, West $\geq$ 50th pct.	2006-10	17	0.004	0.018	0.619
Afton Alps: 60m pre, Midwest $\geq$ 40th pct.	2007-12	18	0.080	0.022	0.814
Afton Alps: 48m pre, Midwest $\geq$ 40th pct.	2008-12	18	0.079	0.013	0.769
Mount Brighton: 60m pre, Midwest 35th–95th pct.	2007-12	17	−0.013	0.028	0.595
Mount Brighton: 48m pre, Midwest 35th–95th pct.	2008-12	17	0.014	0.022	0.850
Mammoth: 60m pre, West $\geq$ 50th pct.	2013-01	19	0.068	0.017	0.413
Mammoth: 48m pre, West $\geq$ 50th pct.	2014-01	19	0.069	0.017	0.559
Bear Mountain: 60m pre, West $\leq$ 25th pct.	2013-01	17	−0.012	0.009	0.534
Bear Mountain: 48m pre, West $\leq$ 25th pct.	2014-01	18	−0.016	0.010	0.495

Notes: Entries summarize the announcement-timed SCM specifications with unit fixed effects in Figure 4. "Active donors" counts ZIPs in the balanced estimation sample; "Avg. post ATT (36m)" is the mean gap over the first 36 post-treatment months; "Top weight" is the largest positive donor weight. Stowe excludes donors first treated in 2018 or 2019.

away. Before Ikon, some Southern California skiers may have viewed Bear Mountain as a closer, smaller, and lower-cost substitute for Mammoth. The Ikon Pass bundled access to both resorts under a common pass product. Although the pre-treatment fit is imperfect and the post-treatment paths are likely influenced by COVID-era housing dynamics, the SCM estimates suggest stronger home-value growth near Mammoth than near Bear Mountain following Ikon entry. This contrast is consistent with possible demand substitution across resorts and may help explain why the pooled Ikon estimates are weak: they may average over heterogeneous resort-level patterns.

Tables S9–S15 report the donor weights for the corresponding 60-month and 48-month SCM specifications.

Figure 4. Resort-Specific SCM Case Studies



Notes: Each panel overlays the 60-month (solid line) and 48-month (dashed line) announcement-timed SCM specifications with unit fixed effects. Blue and orange ribbons show the conformal confidence intervals for the 60-month and 48-month specifications, respectively. Dotted vertical lines mark treatment. Each series includes at most 36 post-treatment months. Vertical scales differ across resorts to show the full intervals. The first five panels are Epic cases; Mammoth and Bear Mountain are Ikon cases. Donor restrictions are reported in Table 10.

6 Discussion

My findings suggest that nearby home values may increase after a resort joins a megapass, but the estimates vary across cohorts and resorts. These estimates should be interpreted

as the combined consequences of joining a megapass network, since pass entry can coincide with broader changes in ownership, operations, branding, and investment. One reason for the heterogeneity may be that the adoption waves occurred in distinct economic environments: the 2008 Epic cohort coincided with the financial crisis and housing market collapse, the 2010–17 Epic wave occurred during the pre-COVID expansion, and the 2018 Epic and Ikon waves were followed shortly by the COVID-era housing boom. Another reason is that the treatment itself differs across waves. A megapass expansion involving one or a few resorts may produce more concentrated capitalization, whereas a larger simultaneous expansion may create greater scope for substitution across resorts within the same network. As a result, small or statistically insignificant average estimates may mask substantial underlying heterogeneity.

An additional limitation is the difficulty of defining the relevant treated geography. Ideally, the treated area would correspond to the housing market in which visitors tend to stay when skiing a given resort, but that object is not directly observed in the available data. Visitors may stay in the resort municipality itself, in nearby towns, or in a broader lodging corridor, and those margins likely differ across destination resorts and local hills. Because Zillow does not provide a finer, behavior-based measure of resort-specific lodging or second-home demand, the ZIP-level treatment geography should be interpreted as an observable proxy rather than a definitive market boundary.

A related issue is that the relevant spillover set is also difficult to define a priori. Substitution across resorts need not be local: a skier from New York may choose among destinations in Vermont, Utah, or Montana, while a California skier may substitute between Southern California, Tahoe, and Colorado. For that reason, simple geographic exclusions may not isolate the true counterfactual cleanly; they would impose a particular spillover structure rather than recover an obviously correct one.

Figure 5 illustrates this issue for four resorts: Park City, Mammoth Mountain, Northstar, and Alta/Snowbird. It shows the relevant ZIP as a shaded light blue region, the corresponding municipal boundaries as blue solid lines, and the resort itself as a red dot. Mammoth Mountain

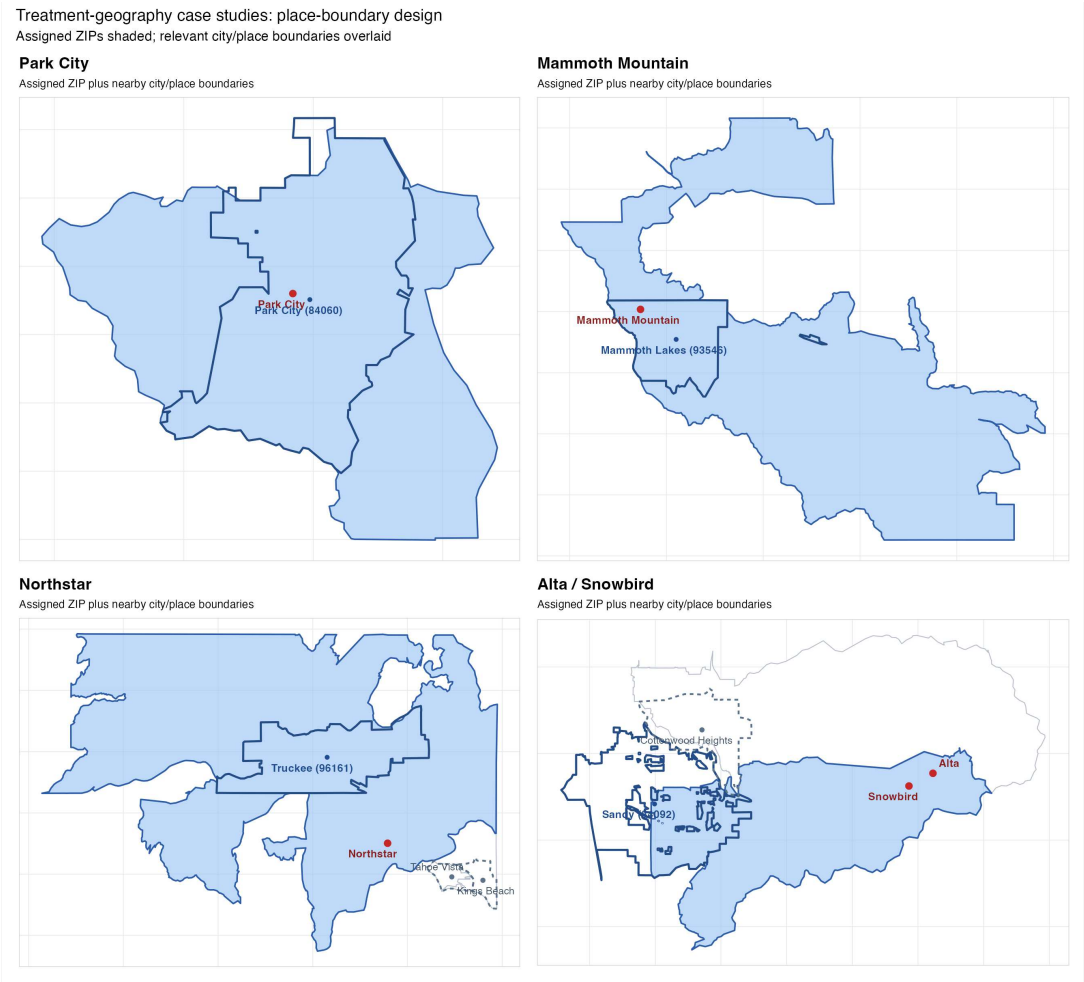
is assigned to ZIP 93546 in Mammoth Lakes and lies within the city itself; that is, the red resort dot lies within the blue lines that depict the city boundaries. Park City is assigned to ZIP 84060 and is likewise located in Park City. In these cases, the relevant lodging and housing market is plausibly local, so it is not surprising that the SCM exercises find clearer positive effects.

The situation is less straightforward for Northstar and Alta/Snowbird. Northstar is assigned to ZIP 96161 in Truckee, but nearby towns such as Tahoe Vista and Kings Beach, whose boundaries are shown as dashed blue lines in the figure, may also serve as bases for skiers, and Truckee is close to several other resorts, including Sugar Bowl and Palisades Tahoe. Alta and Snowbird are assigned to ZIP 84092 in Sandy, even though the resorts lie roughly 10 miles away and nearby areas such as Cottonwood Heights are similarly plausible bases for visitors. In such cases, it is harder to define the treated local market cleanly, and that geographic ambiguity may itself contribute to heterogeneity in the estimated effects.

Yet another concern is that resort entry into a megapass is not random. Clean pre-treatment event-study patterns help address the most direct version of this concern: that treated ZIPs were already on different house-price trajectories before treatment. However, they cannot fully exclude two harder possibilities. First, local markets may have partially anticipated megapass entry before the public announcement through negotiations, rumors, or other early signals. Second, resort operators may have selected markets with stronger latent housing demand that would not necessarily appear as differential pre-trends in observed ZHVI. Neither possibility is ruled out by the pre-treatment event studies.

A final question concerns the distribution of the capitalization gains. I do not have individual-level transaction data or rental prices, so I cannot characterize the distribution directly. Existing homeowners benefit from these gains mechanically, but the geographic incidence of those gains varies with local ownership patterns. The high second-home share in the 2018 Epic cohort suggests that a substantial share of any capitalization gains may accrue to owners who live elsewhere. If increased housing demand also raises rents, local renters and

Figure 5. Illustrative Resort–ZIP Geography Cases



Notes: The figure highlights four illustrative resort–ZIP assignments used in the paper's ZIP-level analysis. Focal resorts are shown in red, and the assigned analysis ZIP is shaded in blue and labeled with the associated city and ZIP. Municipal boundaries are shown as solid blue lines; dashed blue outlines indicate nearby cities included for geographic context.

workers may face higher housing costs without corresponding asset appreciation. The opening examples of the Steamboat housing constraint and the Park City ski patrol strike illustrate this tension. A full distributional analysis would require ownership- and transaction-level data and is a natural direction for future work.

These findings may inform resort operators' real estate investments and workforce planning, as well as local governments' housing and land-use decisions. Higher home values may benefit existing property owners and generate additional property tax revenue, depending

on assessment rules and tax policy. They may also increase purchase costs for prospective residents and, if rents rise, affordability pressures for renters and workers. These potential gains and costs do not establish a net welfare effect, and the estimates do not identify the effectiveness of particular housing policies. Evaluating the distributional and welfare consequences requires additional evidence on rents, wages, housing supply, and ownership.

7 Conclusion

I find that ski megapass expansion is associated with an increase in home values in resort communities, but the estimates vary substantially across treatment waves and locations. The clearest evidence comes from the 2010–17 Epic wave: in the preferred announcement-timed monthly resort-ZIP specification, joining Epic is associated with a 5% increase in home values over the first three post-treatment years. The corresponding estimates remain positive under quarterly aggregation and when treatment is measured at the county level. Extending the analysis to later Epic entrants yields weaker but still positive results: the 2018 Epic cohort shows a smaller and less precisely estimated increase of around 3.5%, while pooling the 2010–18 Epic waves produces a positive and statistically significant estimate of about 4.3%. By contrast, the original 2008 Epic launch cohort shows no clear increase in home values, and the 2018 Ikon wave yields a small, statistically insignificant estimate. Throughout, the estimates are best interpreted as capturing capitalization patterns around joining a megapass operator's network rather than the effect of pass access alone.

The resort-level evidence points to substantial heterogeneity. Park City and Stowe show the clearest positive capitalization patterns in the synthetic control exercises, whereas Northstar is more muted, Mount Brighton is close to zero, and Afton Alps is positive but donor-concentrated. The Ikon case studies likewise suggest that some destinations may benefit more than others, with positive SCM gaps for Mammoth and near-zero to mildly negative gaps for Bear Mountain. These estimates suggest that megapass expansion may be

associated with higher nearby home values, but the magnitude of that association depends on the type of resort and the surrounding market.

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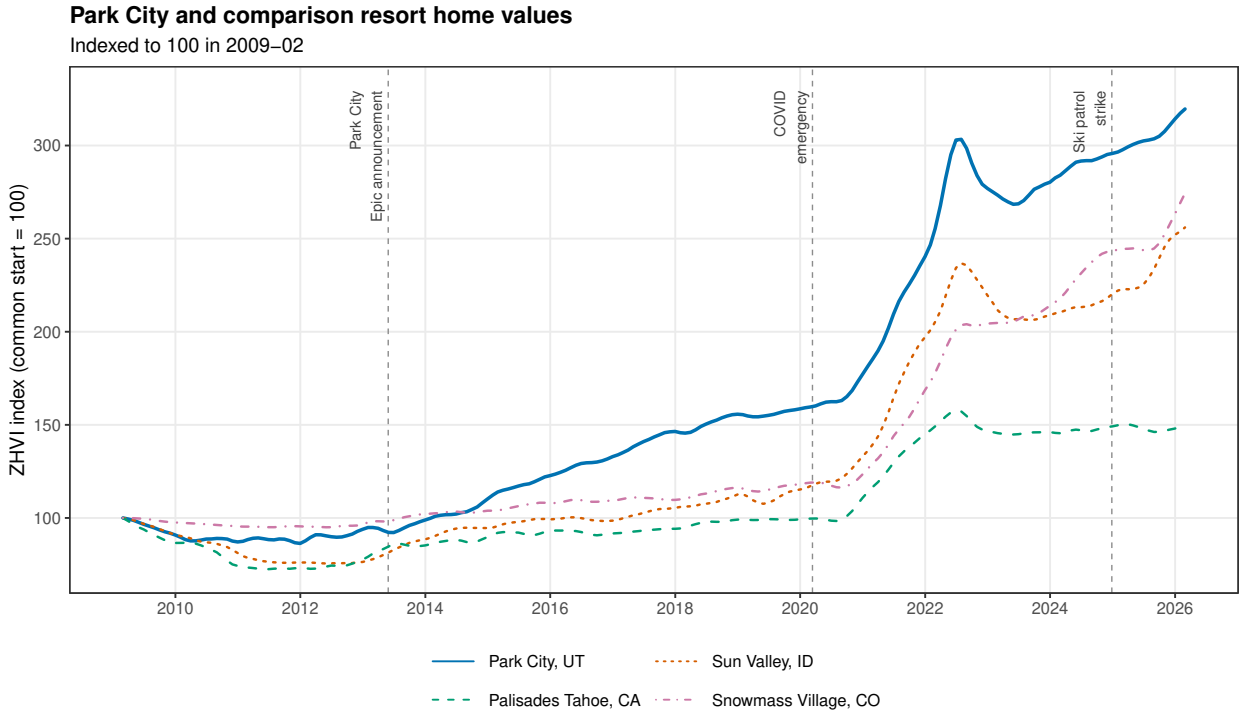
Ski Megapasses and Local Housing Values

Online Supplement

This supplement contains data construction details, additional estimates and robustness checks, and supporting tables and figures. Tables and figures prefixed S are in this supplement; unprefixed numbers refer to the main article.

S1 Park City Comparison

Figure S1. Park City Relative to Comparison Resort Markets, Full Sample



Notes: This version in the supplement extends Figure 1 through February 2026. The series are indexed to 100 in February 2009. Vertical lines mark Park City's Epic announcement on May 29, 2013, the onset of the COVID emergency in March 2020, and the December 2024 ski patrol strike.

S2 Data and Sample Construction

S2.1 Treated Cohorts

Main-text Table 1 summarizes the four treated ZIP cohorts and their announcement dates. The full ZIP-level roster is provided below in Table S1.

S2.2 Treated ZIP Roster

Supplement Table S1 lists the treated ZIPs used across the paper's cohort definitions. The roster is organized by the first megapass announcement to reach each ZIP, which is the same rule used for the cohort summary in Table 1.

Table S1. Full Treated ZIP Roster by Megapass Cohort

Cohort	ZIP	Location	County	Announcement	Resort(s)
Epic 2008	80424	Breckenridge, CO	Summit County	2008-03-18	Breckenridge
Epic 2008	80435	Keystone, CO	Summit County	2008-03-18	Arapahoe Basin — Keystone
Epic 2008	81620	Avon, CO	Eagle County	2008-03-18	Beaver Creek
Epic 2008	81657	Vail, CO	Eagle County	2008-03-18	Vail
Epic 2008	96150	South Lake Tahoe, CA	El Dorado County	2008-03-18	Heavenly
Epic 2010–17	96161	Truckee, CA	Nevada County	2010-10-25	Northstar
Epic 2010–17	48116	Brighton, MI	Livingston County	2012-12-06	Mount Brighton
Epic 2010–17	55033	Hastings, MN	Dakota County	2012-12-06	Afton Alps
Epic 2010–17	84060	Park City, UT	Summit County	2013-05-29	Canyons — Park City
Epic 2010–17	05672	Stowe, VT	Lamoille County	2017-02-21	Stowe
Epic 2018	81435	Telluride, CO	San Miguel County	2018-01-29	Telluride
Epic 2018	03255	Newbury, NH	Merrimack County	2018-03-14	Mount Sunapee
Epic 2018	05149	Ludlow, VT	Windsor County	2018-03-14	Okemo
Epic 2018	81225	Mount Crested Butte, CO	Gunnison County	2018-03-14	Crested Butte
Epic 2018	98288	Skykomish, WA	King County	2018-08-01	Stevens Pass
Ikon 2018	03251	Lincoln, NH	Grafton County	2018-01-25	Loon Mountain
Ikon 2018	04261	Newry, ME	Oxford County	2018-01-25	Sunday River
Ikon 2018	04947	Kingfield, ME	Franklin County	2018-01-25	Sugarloaf
Ikon 2018	05155	Londonderry, VT	Windham County	2018-01-25	Stratton
Ikon 2018	05751	Killington, VT	Rutland County	2018-01-25	Killington/Pico
Ikon 2018	26209	Snowshoe, WV	Pocahontas County	2018-01-25	Snowshoe Mountain
Ikon 2018	59716	Big Sky, MT	Gallatin County	2018-01-25	Big Sky
Ikon 2018	80443	Frisco, CO	Summit County	2018-01-25	Copper Mountain
Ikon 2018	80466	Nederland, CO	Boulder County	2018-01-25	Eldora

Continued on next page

Table S1. Full Treated ZIP Roster by Megapass Cohort (continued)

Cohort	ZIP	Location	County	Announcement	Resort(s)
Ikon 2018	80482	Winter Park, CO	Grand County	2018-01-25	Winter Park
Ikon 2018	80487	Steamboat Springs, CO	Routt County	2018-01-25	Steamboat
Ikon 2018	81611	Aspen, CO	Pitkin County	2018-01-25	Aspen Snowmass
Ikon 2018	81615	Snowmass Village, CO	Pitkin County	2018-01-25	Aspen Snowmass
Ikon 2018	83025	Wilson, WY	Teton County	2018-01-25	Jackson Hole
Ikon 2018	84092	Sandy, UT	Salt Lake County	2018-01-25	Alta — Snowbird
Ikon 2018	92315	Big Bear Lake, CA	San Bernardino County	2018-01-25	Big Bear Mountain Resort
Ikon 2018	93529	June Lake, CA	Mono County	2018-01-25	June Mountain
Ikon 2018	93546	Mammoth Lakes, CA	Mono County	2018-01-25	Mammoth Mountain
Ikon 2018	96146	Olympic Valley, CA	Placer County	2018-01-25	Palisades Tahoe
Ikon 2018	05674	Warren, VT	Washington County	2018-02-22	Sugarbush
Ikon 2018	84121	Cottonwood Heights, UT	Salt Lake County	2018-08-27	Brighton — Solitude
Ikon 2018	49713	Boyne Falls, MI	Charlevoix County	2018-08-29	Boyne Mountain
Ikon 2018	49740	Harbor Springs, MI	Emmet County	2018-08-29	Boyne Highlands
Ikon 2018	98068	Snoqualmie Pass, WA	Kittitas County	2018-08-29	The Summit at Snoqualmie
Ikon 2018	98022	Enumclaw, WA	King County	2018-09-06	Crystal Mountain

Notes: Entries list treated ZIPs in the 271-resort main sample. Each ZIP enters once, dated by its first megapass announcement. Table 1 explains why resort and ZIP counts differ.

S2.3 Exhaustive ZIP Cohort Accounting

Supplement Table S2 reports the exhaustive ZIP accounting behind the main 271-resort sample. Unlike Table 2, which keeps the main-text summary statistics aligned with the headline estimation sample, this table in the supplement makes explicit the later-treated 2019+ cohorts and shows how the paper control pool combines never-treated ZIPs with ZIPs first treated only after the paper's December 2021 estimation window.

Table S2. Exhaustive ZIP Cohort Accounting in the Main 271-Resort Sample

Group	ZIPs	Description
Epic 2008	5	ZIPs first reached by Epic in 2008.
Epic 2010–17	5	ZIPs first reached by Epic between 2010 and 2017.
Epic 2018	5	ZIPs first reached by Epic in 2018.
Epic 2019+	21	ZIPs first reached by Epic in 2019 or later.
Ikon 2018	25	ZIPs first reached by Ikon in 2018.
Ikon 2019+	17	ZIPs first reached by Ikon in 2019 or later.
Never treated	163	Never-treated ZIPs with usable Zillow coverage for the paper-facing estimation sample.
Treated after 2021 in paper control group	15	Later-treated ZIPs that still belong to the paper's December 2021 control pool.
Paper control group	178	Control ZIPs used in the December 2021 monthly ZIP specifications for Epic, Ikon, and both passes.
Total ZIPs in accounting sample	241	Distinct ZIPs in the main-sample accounting universe after excluding never-treated ZIPs without usable Zillow coverage.

Notes: The accounting universe excludes never-treated ZIPs without usable Zillow coverage through December 2021. The 178-ZIP control pool combines 163 never-treated ZIPs with 15 first treated after 2021. The latter subset and the control total are memo rows that overlap with the cohort rows.

Supplement Table S3 then reports the same summary-stat columns as Table 2 for those accounting groups, so the late-treated cohorts and the paper control decomposition can be compared on the same scale as the main-text table.

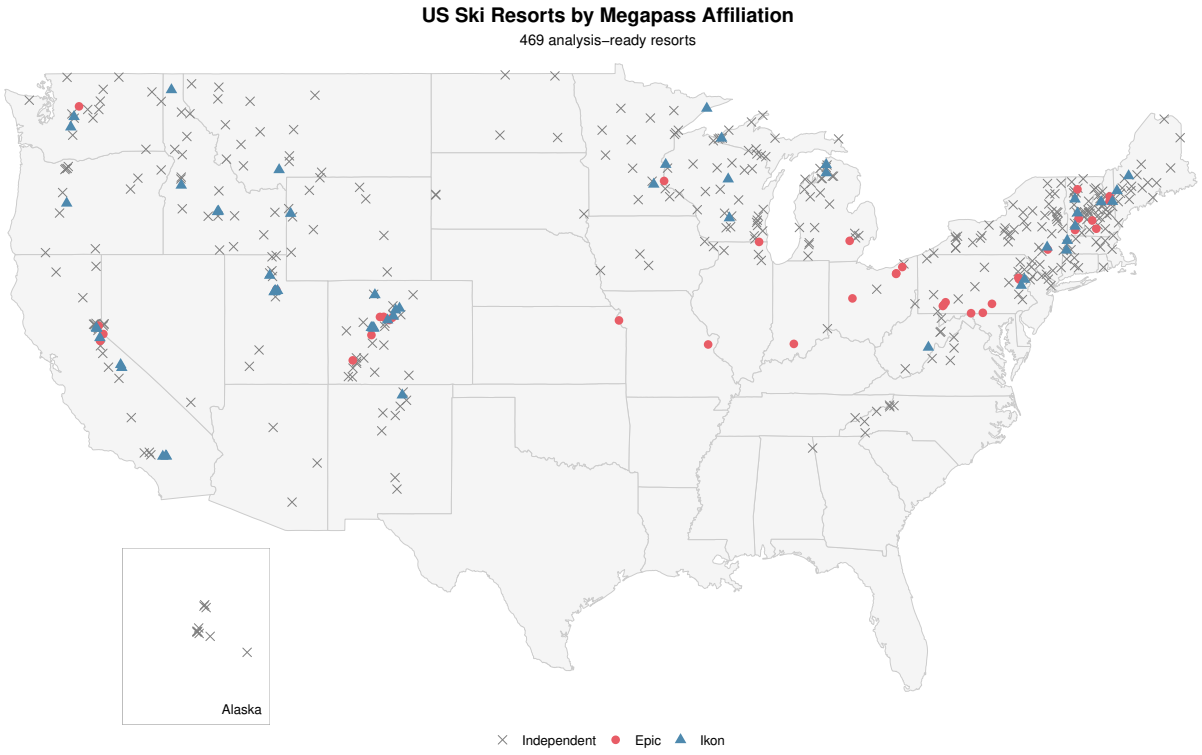
Table S3. Summary Statistics for the Exhaustive ZIP Cohort Groups

Group	N (ZIPs)	Mean ZHVI	Median ZHVI	Mean SH%	Mean Vert.	Mean Acres
Epic 2008	5	$399,811	$432,630	49.8	3498	3937
Epic 2010–17	5	$382,704	$323,743	31.6	1682	3163
Epic 2018	5	$318,631	$242,083	54.9	2398	1114
Epic 2019+	21	$168,255	$166,149	27.6	887	405
Ikon 2018	25	$382,210	$292,271	53.0	2508	2199
Ikon 2019+	17	$190,283	$172,766	31.1	1238	797
Never treated	163	$203,084	$180,328	23.9	1058	520
Treated after 2021	15	$188,105	$172,766	30.5	1094	596
Paper control group	178	$202,042	$180,320	24.4	1061	526

Notes: Variable definitions follow Table 2; cohort definitions follow Supplement Table S2. The final two rows overlap with the cohort rows: 15 ZIPs first treated after 2021 form part of the 178-ZIP December 2021 control pool.

S2.4 Resort Map

Figure S2. US Ski Resorts by Megapass Affiliation (469 Analysis-Ready Resorts). Circles = Epic Pass; Triangles = Ikon Pass; Crosses = Independent.



S2.5 Resort Universe and Canonical Resort Spine

The sample construction begins from a broad resort universe that contains downhill ski areas in the OpenSkiMap GeoJSON extract.[1] The OpenSkiMap GeoJSON includes information such as resort name, operating status, country and state, locality, approximate coordinates, website links, and statistics on lifts and runs. I restrict the sample to active (operating) downhill resorts located in the United States.

The OpenSkiMap operating downhill extract contains 600 U.S. resort rows. I then clean the raw resort universe for duplicate identities, stale aliases, and non-comparable facilities, including private hills, snowcat-only or other non-lift-served operations, and rows with zero

[1] Available at https://tiles.openskimap.org/geojson/ski_areas.geojson.

lifts or zero downhill runs in the source statistics. Resort names are harmonized across the resort master, pass timelines, and geography layers using a canonical-name system that preserves the original raw labels but maps them to a single cleaned identity. This is important for multi-mountain systems and renamed resorts. For example, Aspen Mountain, Aspen Highlands, and Buttermilk are kept as separate resort rows where that matters for geography or resort attributes, but they are also linked to the broader Aspen Snowmass system in the pass timeline. Likewise, older naming conventions such as Squaw Valley/Alpine Meadows are harmonized to Palisades Tahoe. These cleaning and exclusion steps leave a final analysis-ready resort universe of 469 resorts. Table S4 summarizes the main exclusion categories.

Table S4. From the OpenSkiMap Operating Extract to the Analysis-Ready Resort Universe

Category	**Rows**
OpenSkiMap U.S. downhill operating extract	600
Exclude: zero lifts or zero downhill runs in source statistics	109
Exclude: private or otherwise non-comparable hills/facilities	11
Exclude: duplicate identities or alias rows	5
Exclude: non-lift-served operations (including snowcat-only) or nordic-only operations	2
Exclude: closed historic resorts	2
Exclude: unclear or blank identities	2
Final analysis-ready resort universe	469

Notes: Exclusions remove duplicate identities and non-comparable facilities from the operating OpenSkiMap extract. Closed resorts were initially classified as operating and removed after manual review.

S2.6 ZIP Assignment and Conflict Resolution

The ZIP assignment procedure is applied to the 469-resort analysis-ready universe remaining after the exclusions summarized in Table S4. It uses multiple evidence layers rather than a single source. The first layer is coordinate-based: each OpenSkiMap downhill area is assigned a candidate ZIP-like geography (ZIP or ZCTA) by intersecting its viewport center with 2020 Census ZCTA polygons. The second layer is address-based: official resort websites are scraped for postal addresses, and the corresponding five-digit ZIP is extracted when

available. Neither source is treated as the final analysis ZIP on its own. A resort is marked confirmed if the coordinate-based and address-based ZIPs agree exactly.

Otherwise, I collect additional evidence from Google Maps addresses. If Google Maps confirms a coordinate-only or address-only case, the resort is marked as confirmed. If not, I verify the location and assign the ZIP manually. Disagreement cases often involve resorts that span several mountains in different locations or resorts located near ZIP boundaries. Table S5 summarizes the number of confirmations of each type in the final sample of 469 resorts.

Table S5. ZIP Confirmation Methods in the Final Resort Universe

Confirmation method	**Resorts**
Coordinate-address match or address-ZCTA crosswalk	223
Third-source confirmation (Google Maps)	110
Manual resolution	136
Total confirmed resorts	469

Notes: Coordinate-address matches include exact matches and ZIP-to-ZCTA crosswalks. Google Maps provides third-source confirmation. Manual resolution includes documented confirmations and overrides.

Three short examples illustrate the logic. Snow Summit is a straightforward "Coordinate-address match" case: both the coordinate-based and website-based evidence point to ZIP 92315, so that ZIP is marked confirmed without further intervention. Big Boulder is a "Third-source confirmation (Google Maps)" case: the coordinate layer points to ZIP 18624, the official website does not provide a usable ZIP, and Google Maps confirms the coordinate-based ZIP. Boyne Mountain is a "Manual resolution" case: the coordinate layer points to ZIP 49713, the website address points to ZIP 49770, and the final analysis ZIP is manually set to 49713 based on the resort's base-area geography and official contact information. More generally, among the 91 resort rows linked to the megapass timeline, 58 required either documented manual match confirmation or an explicit manual ZIP override.

The resort universe and ZIP assignments are built from the geographic and resort-level evidence described above. The preferred estimation sample then applies the lift-count and

acreage screens in Section 3.3; the lift-count threshold was informed by the size of resorts entering Epic or Ikon during 2008–2018. The megapass timeline determines treatment timing and control eligibility, and Zillow coverage determines which ZIPs contribute usable outcome observations. ZIP assignments were not revised in response to estimated treatment effects.

S2.7 Pass Timeline Assembly

The pass timeline is assembled from manually curated Epic and Ikon resort files and a separate announcement-date layer. For each resort-pass episode, the workflow records both the first season of pass access and the public announcement date when available. This distinction matters because the main paper uses announcement timing in the difference-in-differences specifications, while the timing-robustness checks compare announcement timing to the season-start convention. The cleaned timeline also records whether the resort entered as an owned resort or as a partner, though the treatment in the paper is defined as megapass entry itself rather than ownership status.

Several safeguards were added to the timeline-construction process. In particular, ambiguous name-only matches across states are blocked, so a resort such as Crystal Mountain in Michigan does not inherit timing from Crystal Mountain in Washington. The timeline builder then creates the fields used in the empirical analysis: Epic and Ikon treatment dates, Epic and Ikon announcement dates, and pooled "any-pass" timing variables defined by the first pass to reach the resort or ZIP. These resort-level timing fields are later collapsed to ZIPs and counties by the first announcement affecting that geography.

Table S6 gives seven illustrative entries from the cleaned pass timeline together with the linked source used to document the public announcement date.

Table S6. Illustrative Entries from the Cleaned Pass Timeline

Resort	Pass	Entry type	Announcement	Source link
Northstar	Epic	Owned	2010-10-25	Vail Resorts release
Afton Alps	Epic	Owned	2012-12-06	Vail Resorts release
Park City	Epic	Owned	2013-05-29	Vail Resorts release
Stowe	Epic	Owned	2017-02-21	Vail Resorts release
Telluride	Epic	Partner	2018-01-29	Vail Resorts release
Mammoth Mountain	Ikon	Owned	2018-01-25	Alterra release
Alta	Ikon	Partner	2018-01-25	Alterra release

Notes: "Owned" denotes entry through ownership or direct operator control; "Partner" denotes entry through a partnership agreement.

S2.8 Acreage, Lift Counts, and Other Resort Characteristics

The sample-construction process also assembles resort characteristics used for heterogeneity analysis and descriptive tables. Lift counts come from the cleaned resort master and related source files. The default raw lift count is a simple count of lifts in OpenSkiMap's nested lift statistics: it is defined as the sum of the reported 'count' fields across lift types in the source 'statistics_json' block, rather than a capacity-weighted measure. This definition is the one used for the main lift-count filters, including the requirement that resorts in the preferred 271-resort sample have at least five lifts. Skiable acreage data are compiled in several steps because no single source provides complete coverage of the resort universe. The acreage layer combines manually verified official resort figures where available, systematically extracted fallback figures from OnTheSnow and Indy Pass, and a final manual-review layer for unresolved or ambiguous cases. When sources disagree on acreage, manually verified official resort figures take precedence, followed by OnTheSnow and then Indy Pass, while discrepant or complex cases are reserved for manual review.

Complex multi-mountain ZIPs are treated separately from standalone resorts so that ZIP-level total skiable acreage can be aggregated transparently across all resorts in the same ZIP. For ZIPs containing multiple resorts, the acreage measure used in the heterogeneity analysis is

the sum of skiable acreage across all resorts mapped to that ZIP. This matches the ZIP-level treatment concept used throughout the paper. For example, ZIP 84060 aggregates the post-merger Park City Mountain Resort, which combines the pre-2015 Park City Mountain and Canyons, together with Deer Valley Resort, while ZIP 84092 aggregates Alta and Snowbird. Vertical drop is carried from the same resort master and auxiliary source layers used in resort-characteristic collection, with manual review for unresolved cases. Second-home share is the ACS five-year estimate of the share of housing units classified as seasonal, recreational, or occasional use, linked to each analysis ZIP via the Census ZCTA-to-ZIP correspondence; Census ZCTAs and USPS ZIPs are treated as equivalent throughout.

The main heterogeneity sample includes 271 resorts with at least five lifts and verified acreage, after excluding a small number of non-comparable cases. This is the preferred sample for analyses involving resort scale, including the heterogeneity tables and acreage-based synthetic-control donor-pool restrictions. The broader universe of 469 active resorts is used to document resort coverage and produce the map figures.

S2.9 Zillow Outcome Data

The paper's main outcome is Zillow's ZIP-level all-homes ZHVI for the 35th–65th percentile tier. I use this all-homes middle-tier series as the baseline because it provides the broadest and most stable ZIP-level coverage across resort markets while still matching the single-family and condo-only middle-tier files used in the robustness checks in the supplement. The county specifications use the corresponding Zillow county ZHVI series rather than an aggregation of ZIP-level ZHVI.

Coverage is an important practical constraint. In the broad 469-resort active universe, 436 unique analysis ZIPs are assigned and 415 of them appear in the all-homes ZIP-level ZHVI file. In the preferred 271-resort main sample, 254 unique analysis ZIPs are assigned and 244 of them appear in the baseline ZHVI file; 241 have usable nonmissing ZHVI before January 1, 2022. The alternative ZIP-level rent series, ZORI, is much thinner: in the preferred 271-resort

sample it covers only 59 of the 244 ZIPs that appear in the ZHVI panel. Among the 40 focal treated ZIPs used in the paper's main treated cohorts, ZORI is available for only 17, which is why it is not used as a main outcome. Taos Ski Valley (ZIP 87525) is the clearest treated example of this coverage constraint: it is omitted from the 2018 Ikon treated roster because Zillow does not provide ZIP-level ZHVI coverage for that ZIP.

S2.10 ZIP- and County-Level Panel Construction

After the resort master and timing layers are cleaned, the analysis panels are built by collapsing resort information to geography-time cells and merging those cells to Zillow housing series. The main evidence is at the ZIP-by-month level, where treatment is assigned by the first megapass announcement affecting a ZIP. This means that multiple resorts can map to the same treated ZIP and that a ZIP enters treatment only once. Park City and Canyons, for example, are absorbed into a single treated ZIP, 84060, dated to the first Epic announcement reaching that ZIP. The same first-arrival rule is used throughout the cohort definitions in the paper.

County panels are constructed separately from Zillow's native county series rather than by aggregating ZIP-level Zillow measures. Quarterly panels are then formed by averaging monthly 'log(ZHVI)' within each geography-quarter cell. No interpolation or carrying-forward is applied to missing ZHVI values: ZIP-months with missing ZHVI simply remain missing and drop out of estimation samples once log(ZHVI) is formed, and the paper does not impose a separate minimum pre-treatment coverage threshold beyond requiring usable data in the relevant sample window. ACS variables (second-home share, vacancy rates, median values) and ZIP-level total skiable acreage are joined to the resort master and then propagated into the analysis panels through the confirmed analysis ZIPs. The panel-building scripts preserve the distinction between the resort-level geography layer and the final Zillow-linked analysis geography, which makes the pipeline easier to audit when a resort's ZIP assignment changes.

S2.11 Final Estimation Samples and Control Definitions

The final paper uses several nested samples. The broad active universe contains 469 cleaned analysis-ready resorts. The preferred main sample for the baseline difference-in-differences and heterogeneity analysis contains 271 resorts with at least five lifts and verified acreage. At the ZIP level, the treated cohorts are defined by the first megapass announcement to affect the ZIP, while the control group is defined relative to the estimation window in each specification. Thus, a resort or ZIP first treated after the end of a given sample window can still appear in the control group for that specification, whereas resorts treated within the sample window are excluded from the control pool.

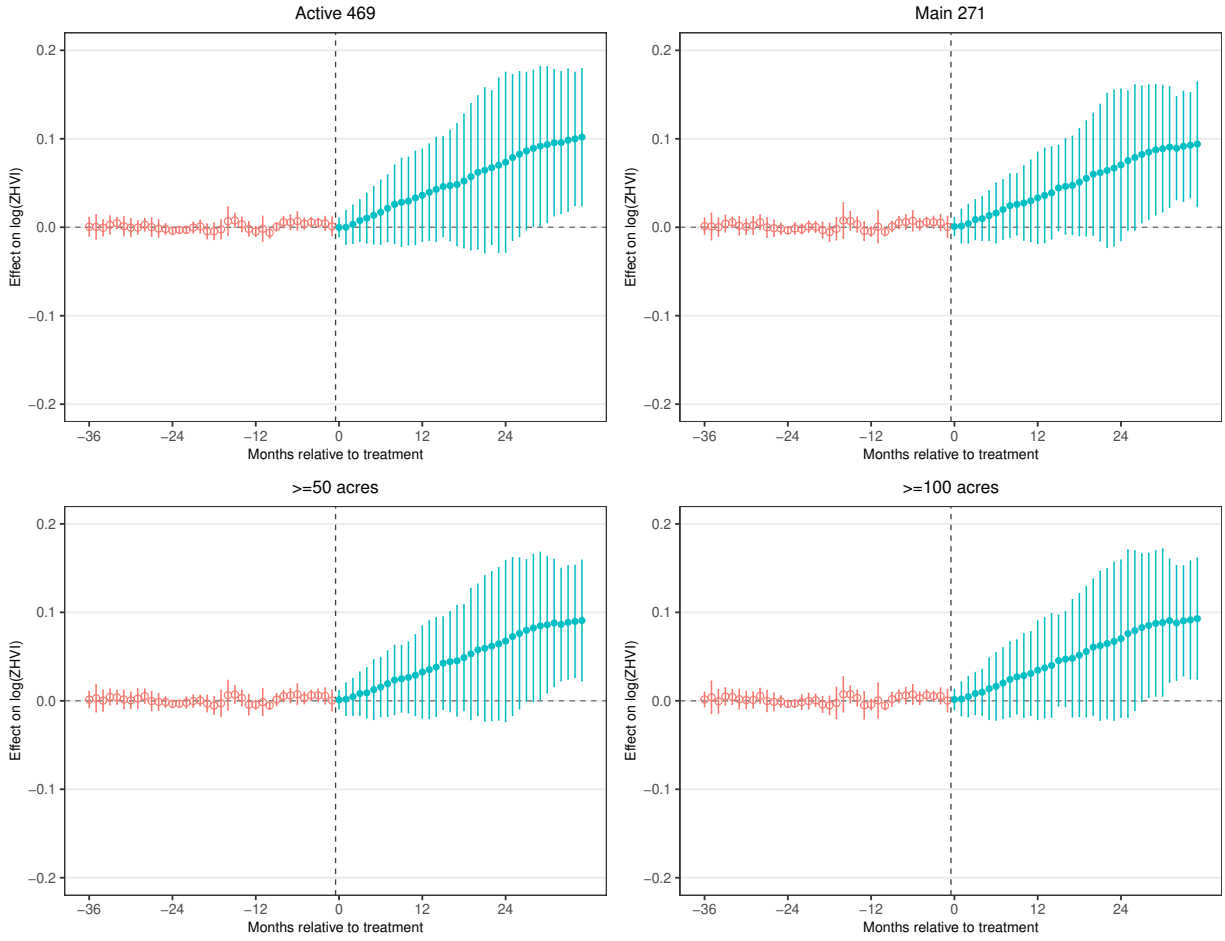
This distinction explains why resort counts, treated ZIP counts, and control ZIP counts need not match one another exactly across tables. The December 2021 monthly ZIP specifications use the same 178-ZIP control pool: resort ZIPs that remain untreated through December 2021 and have usable ZHVI coverage within that estimation window. By contrast, the baseline 2010–17 Epic timing specification in Table 7 reports 182 control ZIPs because its sample window ends in February 2020, allowing four later-treated ZIPs to remain in the control pool. Both windows exclude the same three ZIPs that lack usable ZHVI coverage before the relevant sample end.

S3 Baseline Robustness

S3.1 Sample Restrictions

Main-text Table 4 compares the paper's baseline 2010–17 Epic estimates across four sample definitions: the full active 469-resort sample, the preferred 271-resort main sample, and stricter acreage screens that retain only resorts with at least 50 acres or at least 100 acres. The estimates remain very similar across all four samples. Figure S3 shows the corresponding monthly ZIP event studies.

Figure S3. Monthly ZIP Event Studies Across Sample Restrictions



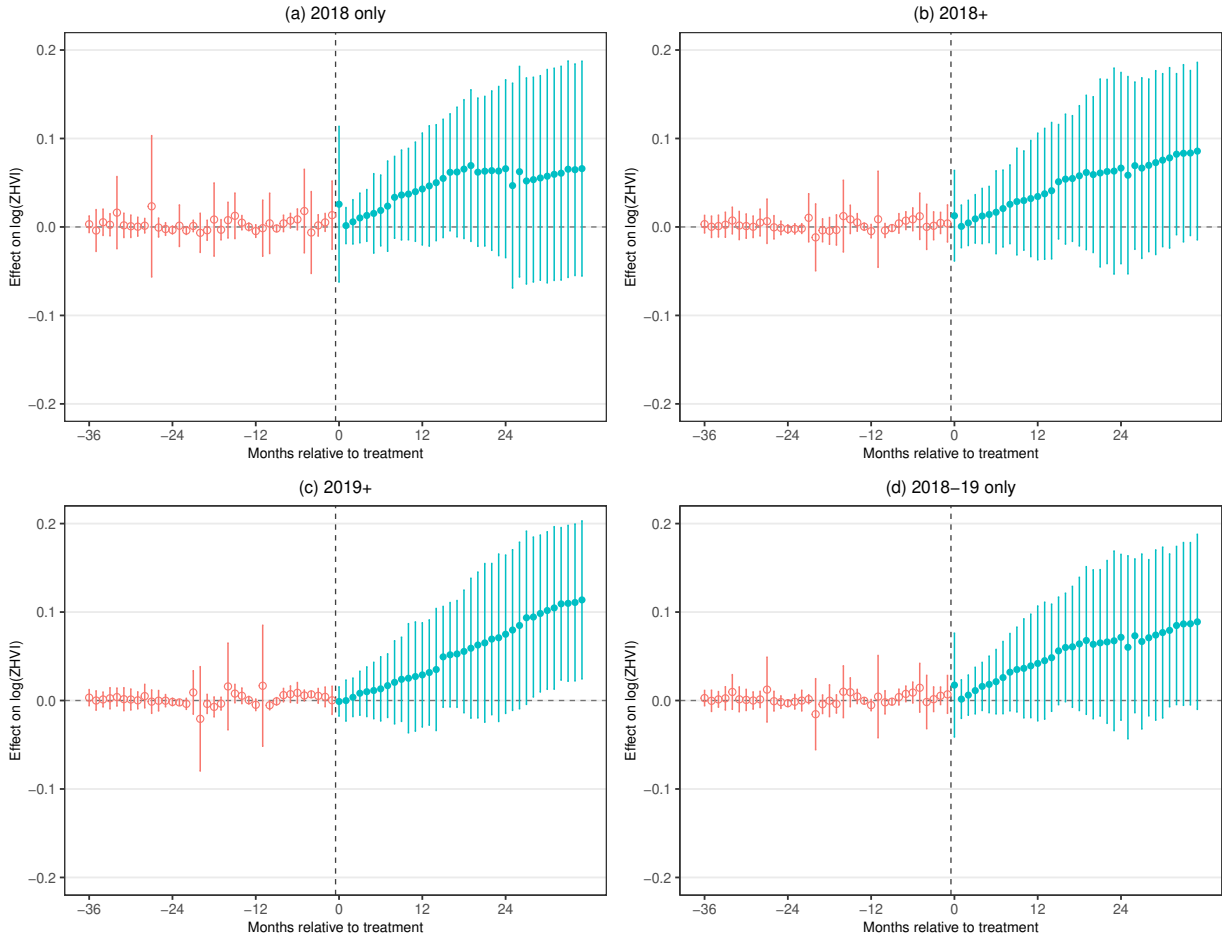
Notes: The figure presents the baseline 2010–17 Epic monthly ZIP Callaway and Sant'Anna (2021) event studies in four panels: the full active 469-resort sample, the paper's preferred 271-resort main sample, a $\geq$ 50-acre sample, and a stricter $\geq$ 100-acre sample. The four panels correspond to the four sample definitions in Table 4. The plotting style matches the main-text event-study figures, including 95% multiplier bootstrap uniform confidence bands and common y-axis scaling across panels.

S3.2 Future-Treated Controls

Main-text Table 5 reports an additional robustness exercise for the baseline 2010–17 Epic design. Instead of comparing the treated ZIPs to all controls that remain untreated through the end of the estimation window, I restrict the control group to resort markets that themselves join a megapass only after the sample ends, which in this case is December 2017. This exercise uses the same four treated ZIPs as the "Early sample" in Table 7, because

Stowe does not contribute meaningful post-treatment information before December 2017. I consider four alternative control pools: resorts first treated in 2018 only, resorts first treated in 2018 or later, resorts first treated in 2019 or later, and resorts first treated in 2018 or 2019 only. Figure S4 presents the corresponding event studies. The estimates are less precise because the treated group contains only four ZIPs and the control pool is smaller than in the baseline, but the ZIP-level point estimates remain close to the baseline estimates.

Figure S4. Monthly ZIP Event Studies Across Future-Treated Control Restrictions

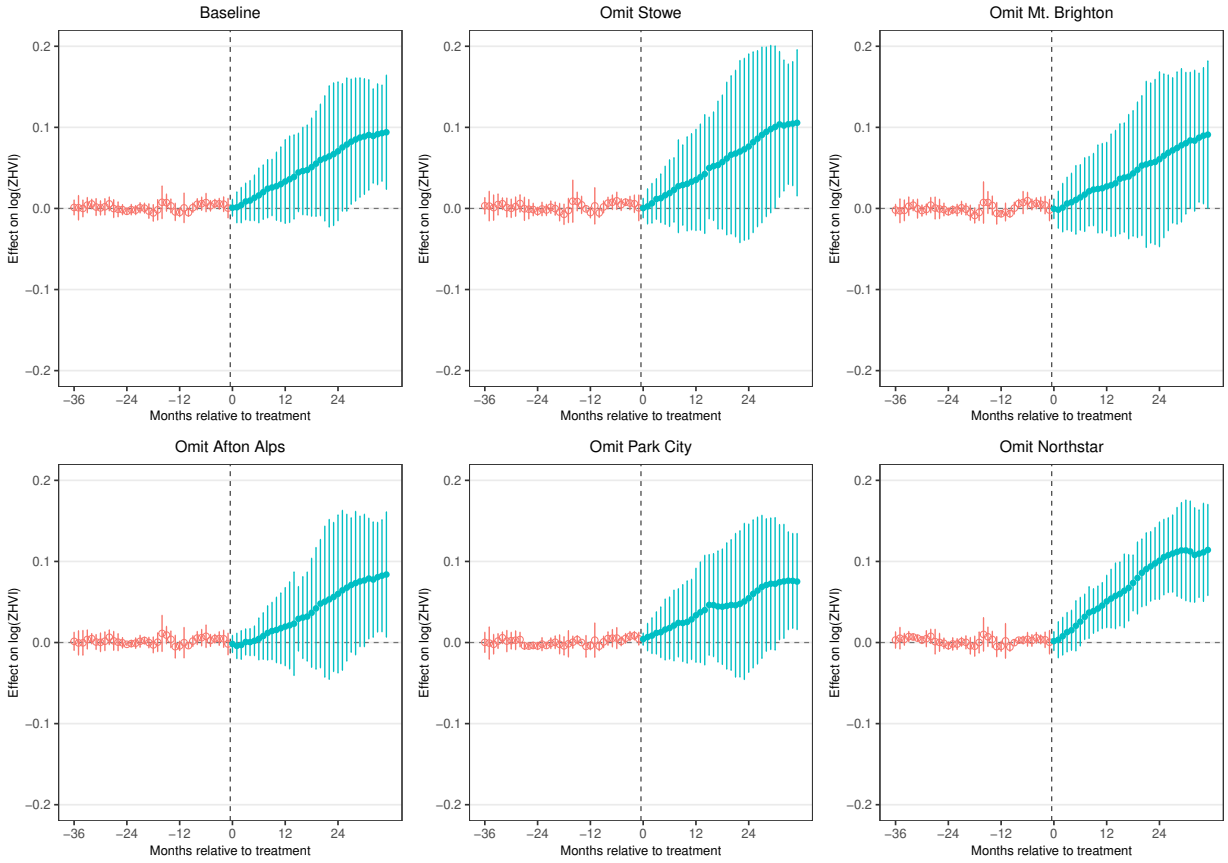


Notes: The figure presents the early-Epic monthly ZIP Callaway and Sant'Anna (2021) event studies from Table 5 in four panels, one for each future-treated control rule: resorts first treated in 2018 only, in 2018 or later, in 2019 or later, and in 2018 or 2019 only. All panels use the same four treated ZIPs as the "Early sample" in Table 7, 95% multiplier bootstrap uniform confidence bands, and a common y-axis scale of [−0.20, 0.20].

S3.3 Leave-One-Out Checks

Main-text Table 6 re-estimates the four baseline 2010–17 Epic specifications after omitting each treated ZIP in turn. The leave-one-out estimates remain positive across all four frequency and geography variants. Figure S5 shows the corresponding monthly ZIP event studies for the baseline specification and the five leave-one-out samples.

Figure S5. Monthly ZIP Event Studies for Baseline and Leave-One-Out Samples



Notes: Each panel reports the announcement-timed monthly ZIP Callaway and Sant'Anna (2021) event study for the baseline 2010–17 Epic design after omitting the named treated ZIP from the sample. The upper-left panel reproduces the baseline specification with all five treated ZIPs included. All panels use 95% multiplier bootstrap uniform confidence bands, the same 2020-02 sample end date, the same decontaminated control rule that removes 2018-treated ZIPs from the comparison group, and a common y-axis scale of [−0.20, 0.20].

S3.4 Alternative ZIP-Level Housing Outcomes

Table S7 reports the three headline Epic monthly ZIP Callaway and Sant'Anna (2021) specifications using two alternative Zillow outcome series: the middle-tier single-family-residence ZHVI and the middle-tier condo-only ZHVI. The single-family results remain close to the baseline all-homes series for the 2010–17 and pooled 2010–18 Epic designs, while the Epic-only 2018 estimate becomes smaller and remains imprecise. The condo-only series also gives positive baseline and pooled-Epic estimates, but coverage is much thinner, especially for the later-wave designs, so those entries should be interpreted more cautiously.

Table S7. Alternative Outcome Robustness for Headline Epic Monthly ZIP Designs

Specification	All homes	SFR middle tier	Condo middle tier
Epic only, 2010–17	0.050	0.055	0.050
	(0.022)	(0.024)	(0.039)
Epic only, 2018	0.036	0.015	0.055
	(0.033)	(0.024)	(0.041)
Epic, 2010–18	0.043	0.035	0.052
	(0.019)	(0.015)	(0.028)

Notes: Entries report announcement-timed monthly ZIP Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. Sample windows and control rules follow Table 3. All outcomes use Zillow's 35th–65th percentile tier; SFR denotes single-family residences. Condo coverage retains only 3 treated ZIPs for Epic 2018 and 8 for pooled Epic 2010–18. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the ZIP level.

Table S8 extends the same comparison to the six monthly ZIP wave-extension designs from Table 8. The condo-only series often shows the largest later-wave effects, especially for the pooled any-megapass specifications, but those runs also use much smaller control groups and fewer treated ZIPs than the all-homes and single-family panels.

Table S8. Alternative Outcome Robustness for Monthly ZIP Extension Designs

Specification	All homes	SFR middle tier	Condo middle tier
Epic only, 2008	0.015	0.001	−0.001
	(0.041)	(0.042)	(0.053)
Epic, 2008–18	0.034	0.024	0.034
	(0.017)	(0.017)	(0.027)
Ikon, 2018	0.012	0.011	0.019
	(0.010)	(0.010)	(0.013)
Both, 2018	0.016	0.012	0.024
	(0.010)	(0.009)	(0.015)
Both, 2010–18	0.021	0.019	0.030
	(0.009)	(0.008)	(0.015)
Both, 2008–18	0.020	0.016	0.025
	(0.009)	(0.009)	(0.016)

Notes: Entries report announcement-timed monthly ZIP Callaway and Sant'Anna (2021) ATT estimates with standard errors in parentheses, summarized over 36 post-treatment months. Sample windows and control rules follow Table 8. All outcomes use Zillow's 35th–65th percentile tier; SFR denotes single-family residences. Condo coverage retains 18 treated ZIPs for Ikon 2018, 21 for Both 2018, 26 for Both 2010–18, and 31 for Both 2008–18. Standard errors use the `did` package's multiplier bootstrap with 1,000 iterations and default clustering at the ZIP level.

S4 Announcement Versus Season-Start Timing

Figure S6 presents the event-study plots corresponding to the timing comparisons in main-text Table 7.

Figure S6. Monthly ZIP Event Studies Across Five Timing-Robustness Specifications

Announcement timing

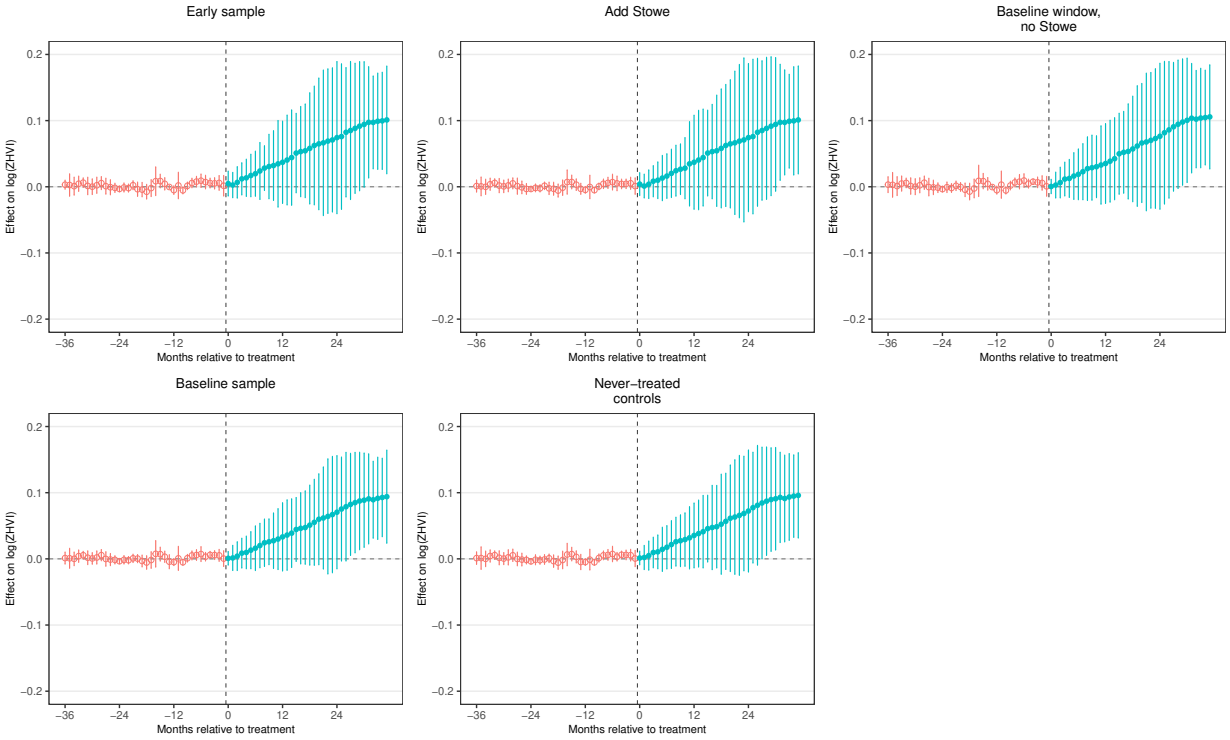
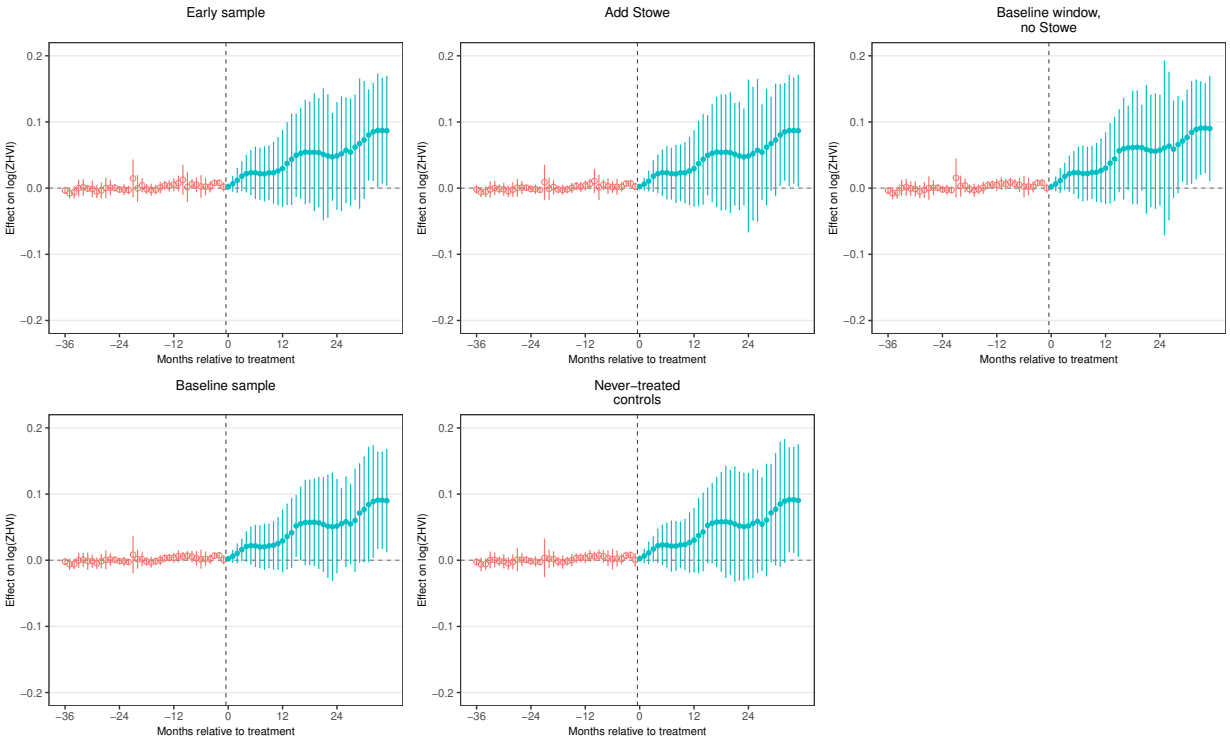


Figure S6. continued

Season-start timing

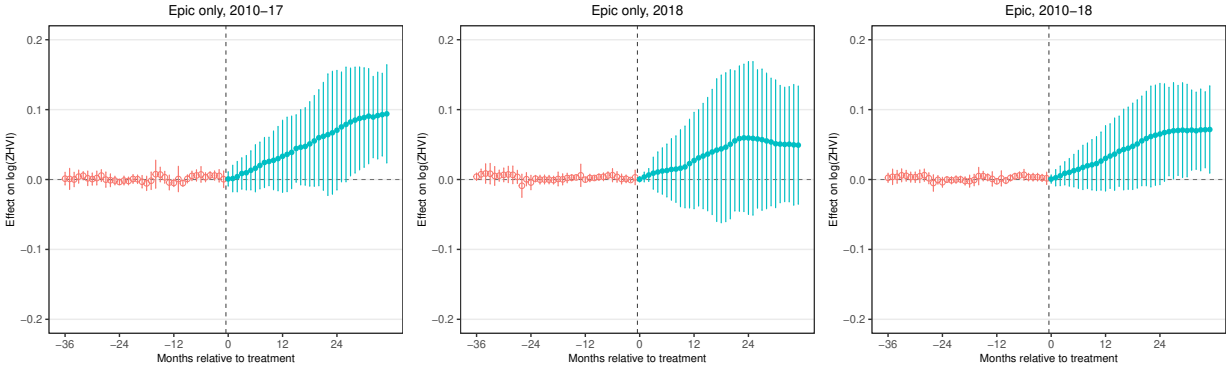


Notes: The figure reports five separate Callaway and Sant'Anna (2021) monthly ZIP event studies under announcement timing and season-start timing that correspond to Table 7, using multiplier bootstrap uniform confidence bands and a common y-axis scale fixed at $[-0.20, 0.20]$ across both panel groups.

S5 Extension Event Studies

S5.1 Headline Epic Designs

Figure S7. Monthly ZIP Event Studies for Headline Epic Designs

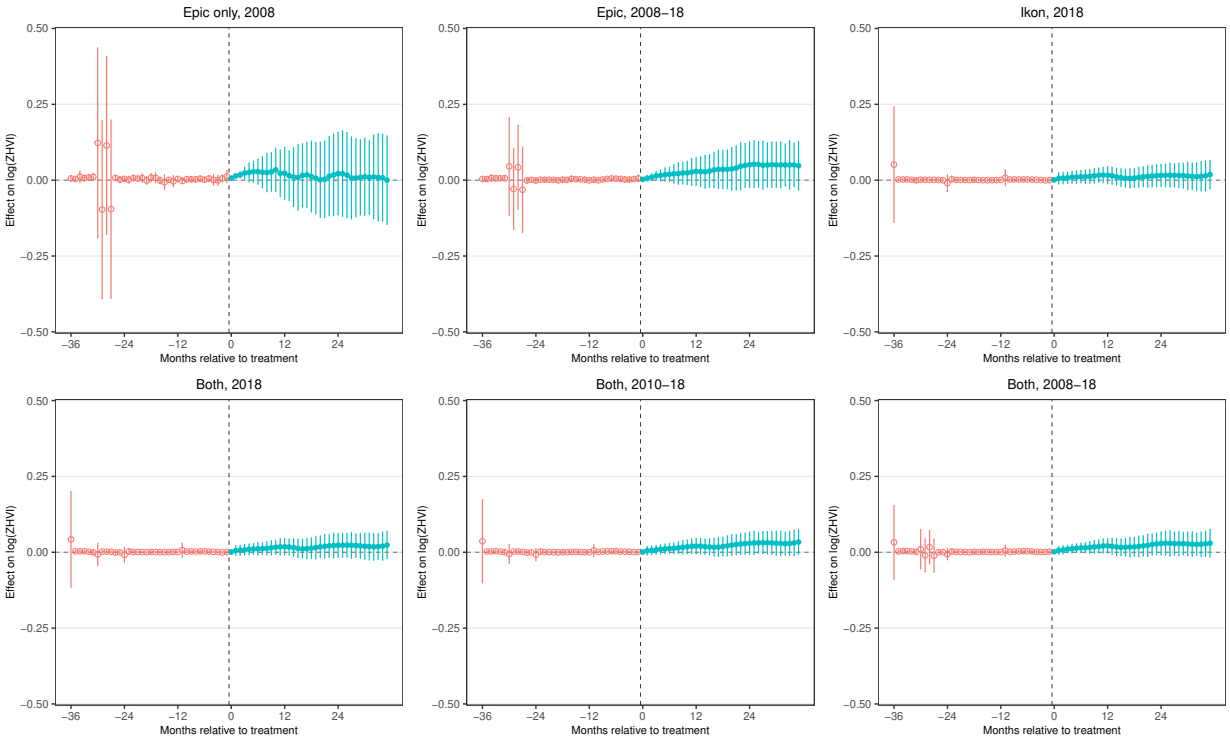


Notes: All three panels report announcement-timed monthly ZIP Callaway and Sant'Anna (2021) event studies with multiplier bootstrap uniform confidence bands. The panels share the same y-axis scale, fixed at $[-0.20, 0.20]$ for readability.

S5.2 Full-Scale Extension-Design Event Studies

Figure S8 collects the six monthly ZIP Callaway and Sant'Anna (2021) event studies for the extension designs without clipping the y-axis. Several pre-treatment confidence intervals in the "Epic only, 2008" panel and the earliest pre-treatment interval in the "Ikon, 2018" panel exceed the main figure's displayed range.

Figure S8. Monthly ZIP Event Studies for Extension Designs: Full Y-Axis

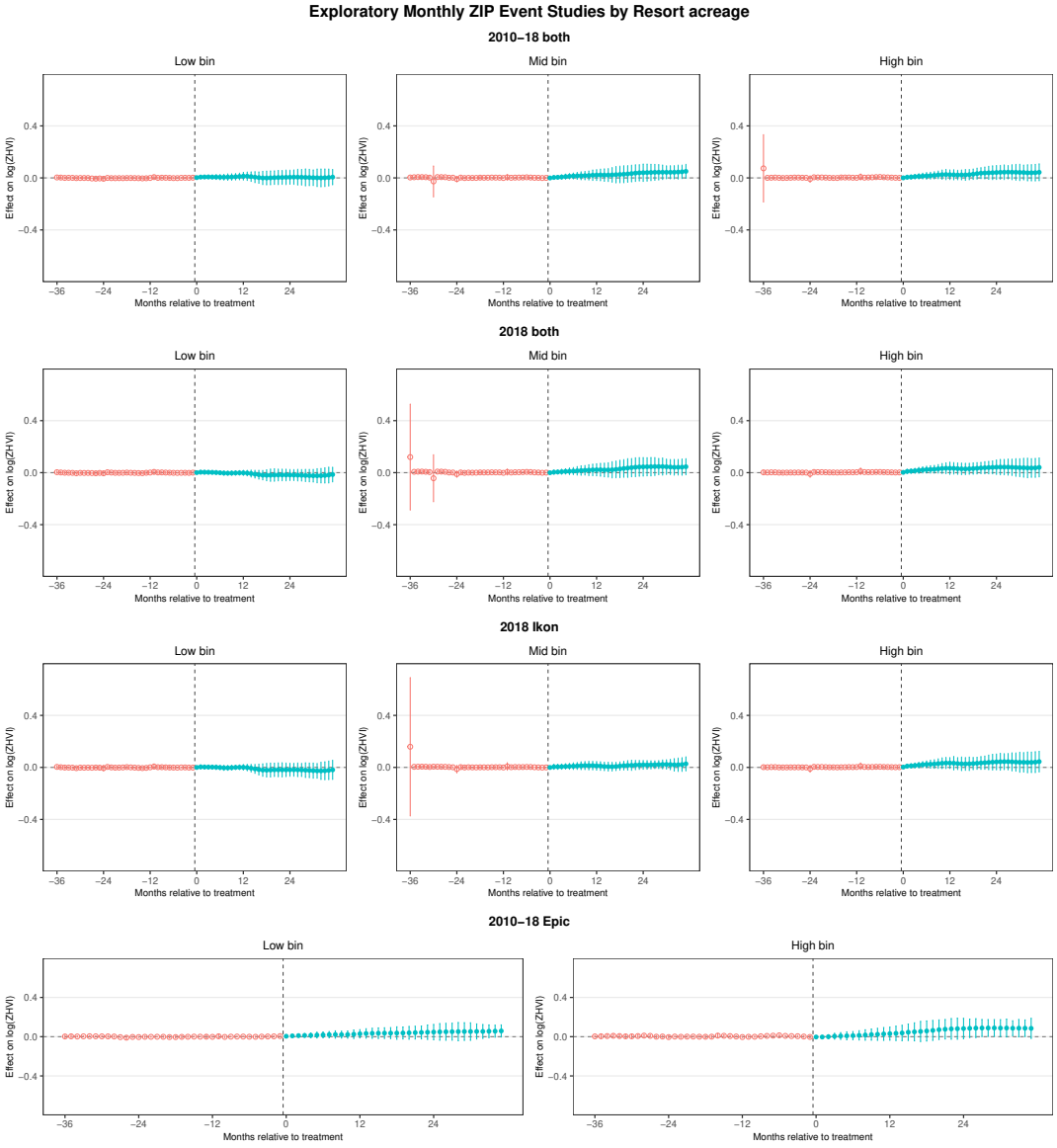


Notes: This supplement figure reproduces the six extension-design monthly ZIP event studies from Figure 3, but now uses the full common y-axis implied by the estimated confidence intervals rather than the clipped $[-0.20, 0.20]$ scale used in the main text.

S6 Exploratory Heterogeneity

S6.1 Resort Acreage

Figure S9. Exploratory Monthly ZIP Event Studies by Resort Acreage

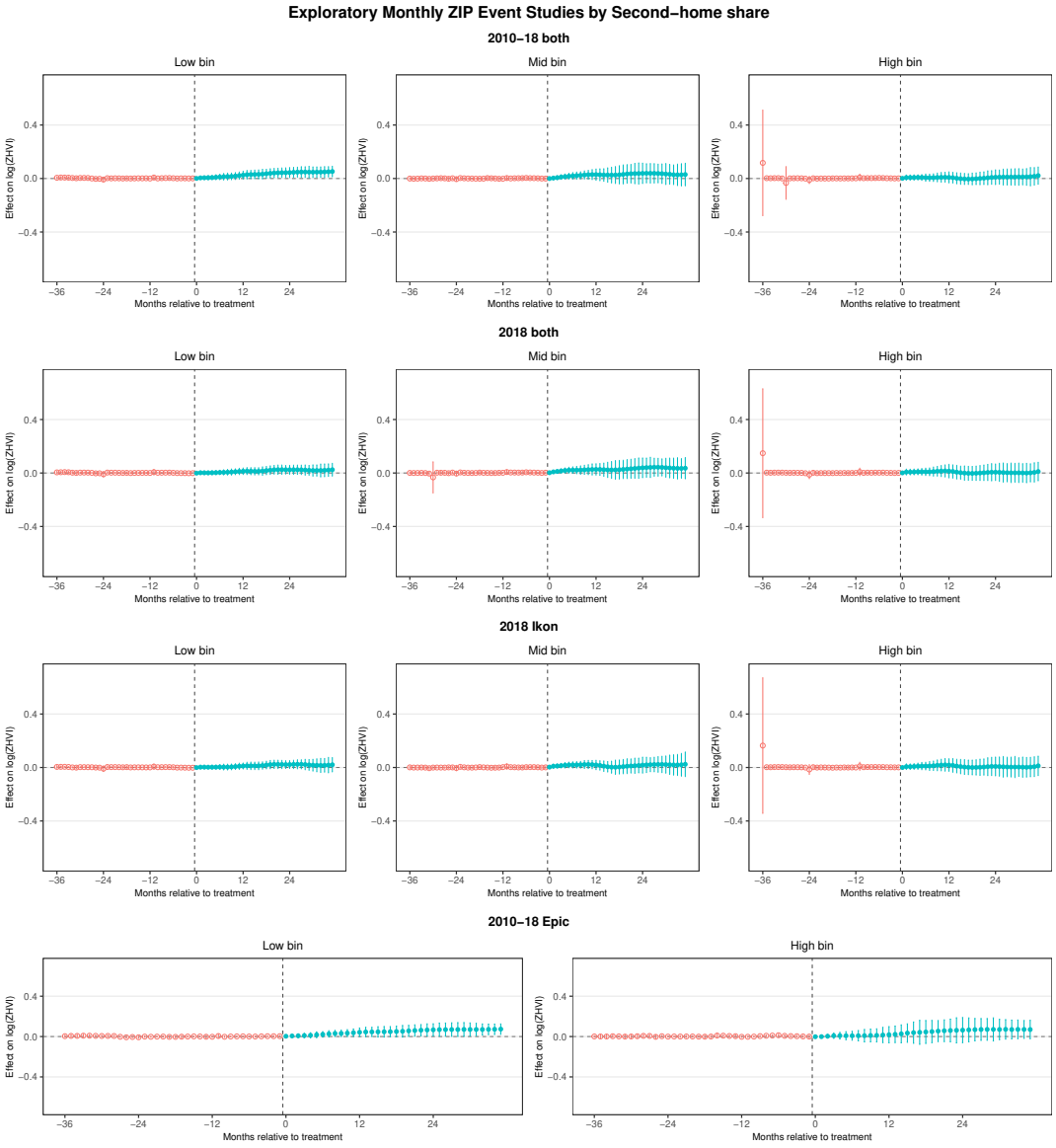


Notes: The figure reports announcement-timed monthly ZIP Callaway and Sant'Anna (2021) event studies with multiplier bootstrap uniform confidence bands for the total-acreage subgroup splits in Panel A of Table 9. The top three rows show terciles for, respectively, 2010–18 Epic and Ikon, 2018 Epic and Ikon, and 2018 Ikon. The bottom row shows the two 2010–18 Epic halves. Panels share a common y-axis scale.

S6.2 Second-Home Share

Panel B of main-text Table 9 reports the heterogeneity exercise that bins treated ZIPs by local second-home share rather than acreage. These estimates do not show a consistent relationship with second-home share, so I treat them as suggestive but not central.

Figure S10. Exploratory Monthly ZIP Event Studies by Second-Home Share



Notes: The figure reports announcement-timed monthly ZIP Callaway and Sant'Anna (2021) event studies with multiplier bootstrap uniform confidence bands for the second-home-share subgroup splits in Panel B of Table 9. The top three rows show terciles for, respectively, 2010–18 Epic and Ikon, 2018 Epic and Ikon, and 2018 Ikon. The bottom row shows the two 2010–18 Epic halves. Panels share a common y-axis scale.

S7 Synthetic Control Details

Tables S9–S15 report the announcement-timed SCM donor weights used in the paper. To keep the tables readable, I omit weights below 0.01. Park City's lead donor weight is stable across the 60-month and 48-month windows even though its secondary donor mix changes, while Stowe's donor composition is more similar across windows. Afton Alps and Mount Brighton rely more heavily on a single donor ZIP. Northstar and Mammoth use small Western donor pools, although the donors are generally smaller in acreage than Northstar or Mammoth itself. Bear Mountain distributes its weights more evenly across several donor resorts.

Table S9. Park City Donor Weights Across SCM Specifications

Panel A: 60m pre, West ≥ 65th pct.		
Location	Resort(s)	Weight
Mount Hood Parkdale, OR	Cooper Spur Ski Area / Mt. Hood Meadows Ski Resort	0.540
Winter Park, CO	Winter Park Resort	0.293
Boise, ID	Bogus Basin Mountain Recreation Area	0.167
Panel B: 48m pre, West ≥ 65th pct.		
Location	Resort(s)	Weight
Mount Hood Parkdale, OR	Cooper Spur Ski Area / Mt. Hood Meadows Ski Resort	0.548
Big Sky, MT	Big Sky Resort	0.452

Notes: Entries are positive donor weights exceeding 0.01 for the Park City SCM specifications in Figure 4.

Table S10. Stowe Donor Weights Across SCM Specifications

Panel A: 60m pre, Northeast ≥ 65th pct.		
Location	Resort(s)	Weight
Malone, NY	Titus Mountain	0.388
Easton, NH	Cannon Mountain	0.230
Troy, VT	Jay Peak Resort	0.175
Champion, PA	Seven Springs Mountain Resort	0.148
Waterville Valley, NH	Waterville Valley Resort	0.034
North Creek, NY	Gore Mountain	0.026
Panel B: 48m pre, Northeast ≥ 65th pct.		
Location	Resort(s)	Weight
Malone, NY	Titus Mountain	0.420
Easton, NH	Cannon Mountain	0.201
Troy, VT	Jay Peak Resort	0.119
Champion, PA	Seven Springs Mountain Resort	0.102
Londonderry, VT	Magic Mountain Resort / Magic Mountain Ski Area	0.058
Waterville Valley, NH	Waterville Valley Resort	0.058
Danbury, NH	Ragged Mountain Resort	0.043

Notes: Entries are positive donor weights exceeding 0.01 for the Stowe SCM specifications in Figure 4. All specifications end in February 2020 and exclude donors first treated in 2018 or 2019.

Table S11. Northstar Donor Weights Across SCM Specifications

Panel A: 60m pre, West ≥ 50th pct.		
Location	Resort(s)	Weight
Avery, CA	Bear Valley	0.640
Twin Bridges, CA	Sierra-at-Tahoe Ski Resort	0.195
Snowmass Village, CO	Aspen Snowmass	0.164
Panel B: 48m pre, West ≥ 50th pct.		
Location	Resort(s)	Weight
Twin Bridges, CA	Sierra-at-Tahoe Ski Resort	0.619
Welches, OR	Mt. Hood Skibowl / Timberline Lodge Ski Area	0.213
Snowmass Village, CO	Aspen Snowmass	0.134
Avery, CA	Bear Valley	0.033

Notes: Entries are positive donor weights exceeding 0.01 for the Northstar SCM specifications in Figure 4.

Table S12. Afton Alps Donor Weights Across SCM Specifications

Panel A: 60m pre, Midwest ≥ 40th pct.		
Location	Resort(s)	Weight
Sugar Creek, WI	Alpine Valley Resort	0.814
Holly, MI	Mt. Holly Ski & Snowboard Resort	0.074
Taylors Falls, MN	Wild Mountain	0.058
Welch, MN	Welch Village	0.053
Panel B: 48m pre, Midwest ≥ 40th pct.		
Location	Resort(s)	Weight
Sugar Creek, WI	Alpine Valley Resort	0.769
Taylors Falls, MN	Wild Mountain	0.216
Welch, MN	Welch Village	0.015

Notes: Entries are positive donor weights exceeding 0.01 for the Afton Alps SCM specifications in Figure 4.

Table S13. Mount Brighton Donor Weights Across SCM Specifications

Panel A: 60m pre, Midwest 35th–95th pct.		
Location	Resort(s)	Weight
Traverse City, MI	Hickory Hills	0.595
Clarkston, MI	Pine Knob Ski & Snowboard Resort	0.364
Northfield, OH	Brandywine Ski Resort	0.041
Panel B: 48m pre, Midwest 35th–95th pct.		
Location	Resort(s)	Weight
Traverse City, MI	Hickory Hills	0.850
Northfield, OH	Brandywine Ski Resort	0.082
East Liberty, OH	Mad River Mountain	0.068

Notes: Entries are positive donor weights exceeding 0.01 for the Mount Brighton SCM specifications in Figure 4.

Table S14. Mammoth Mountain Donor Weights Across SCM Specifications

Panel A: 60m pre, West ≥ 50th pct.		
Location	Resort(s)	Weight
Missoula, MT	Montana Snowbowl	0.413
Philipsburg, MT	Discovery Ski Area	0.361
Avery, CA	Bear Valley	0.226
Panel B: 48m pre, West ≥ 50th pct.		
Location	Resort(s)	Weight
Avery, CA	Bear Valley	0.559
Philipsburg, MT	Discovery Ski Area	0.441

Notes: Entries are positive donor weights exceeding 0.01 for the Mammoth SCM specifications in Figure 4.

Table S15. Bear Mountain Donor Weights Across SCM Specifications

Panel A: 60m pre, West ≤ 25th pct.		
Location	Resort(s)	Weight
Wrightwood, CA	Mountain High	0.534
Angel Fire, NM	Angel Fire Resort	0.235
Brian Head, UT	Brian Head Resort	0.126
Los Alamos, NM	Pajarito Mountain	0.105
Panel B: 48m pre, West ≤ 25th pct.		
Location	Resort(s)	Weight
Wrightwood, CA	Mountain High	0.495
Angel Fire, NM	Angel Fire Resort	0.251
Los Alamos, NM	Pajarito Mountain	0.163
Brian Head, UT	Brian Head Resort	0.092

Notes: Entries are positive donor weights exceeding 0.01 for the Bear Mountain SCM specifications in Figure 4.