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How Field Experience is Reshaping Car-Sharing Business Models Across the U.S. Market

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ABSTRACT

Of the 94 car-sharing programs deployed in North America since 1998, more than half are defunct, a failure rate that demand modeling and European business-model typologies have not adequately explained because both research traditions treat U.S. regulatory and insurance architecture as exogenous. This article argues that field-derived operational data accumulated by U.S. operators since 2015 is forcing a revision of both the profitability assumptions and the model-selection logic that underpin existing academic analysis. Drawing on verified evidence across the profitability, consumer behavior, demand modeling, and business-model typology literatures, the article identifies three limiting assumptions shared across research clusters: that membership growth proxies revenue stability, that European fleet-scaling trajectories transfer to U.S. markets, and that maintenance cost is a fixed parameter rather than a variable responsive to contract design. Analysis of U.S. field conditions shows that profitability is achievable under a reproducible configuration of fleet scale, cost-recovery pricing, and state-level insurance negotiation, and that parking access is a precondition for model selection.

INTRODUCTION

Of the 94 car-sharing programs deployed in North America since 1998, 52 are defunct as of 2018, a majority (Shaheen & Cohen, 2020). Across documented program failures, the proximate cause of closure was consistent: fleet acquisition, insurance, and per-vehicle maintenance costs consumed revenue before the member base reached the utilization density required to cross the profitability threshold (Lagadic *et al.*, 2019). Mamaev (2026b) documents this pattern for U.S.-based operators specifically, showing that the margin between variable cost-per-booking and achievable hourly revenue narrows to near zero at fleet sizes below roughly 150 vehicles in geographically dispersed markets; these are the thresholds that make Mamaev's (2026b) analysis load-bearing for any operational prescriptions aimed at the U.S. context. Roundtrip, free-floating, and peer-to-peer operators have all hit the same cost ceiling before reaching breakeven membership, which puts the cause upstream of any format-specific decision.

Demand modeling studies, calibrated chiefly to Swiss or German cities, treat fleet sizing and pricing as optimization problems while taking U.S. regulatory and insurance architecture as exogenous (Golalikhani *et al.*, 2021; Schmoller *et al.*, 2015). Business-model typologies built from European operators identify B2C roundtrip as the only model with demonstrated durability (Munzel *et al.*, 2018), but that finding rests on market conditions, namely dense public-transit integration, municipally subsidized parking, and standardized liability frameworks, that do not hold in car-dependent U.S. metros.

LITERATURE REVIEW

The profitability literature shares a founding assumption: membership growth is a reliable proxy for revenue stability. Lagadic *et al.* (2019) disprove this directly, using the Paris Autolib case in which membership reached over 150,000 subscribers while the service accumulated operating losses that forced closure in 2018. The mechanism they identify is cost-structural: per-vehicle cleaning, maintenance, and battery replacement charges scaled faster than per-trip revenue, so that signing up the 150,001st subscriber deepened the deficit by the same increment as the first hundred thousand.

Shaheen *et al.* (2019) report a parallel dynamic in North American B2C roundtrip operations, where the three largest U.S. providers accounted for 91 percent of total membership in 2018 yet none had published audited profitability data, Shaheen and Cohen (2020) interpret as consistent with ongoing subsidy dependence. Neither study addresses the pricing mechanism by which U.S. operators might decouple membership scale from cost inflation. The revenue-per-vehicle-hour thresholds at which U.S. operators have historically crossed into and out of positive margins are what Mamaev (2026b) supplies; without that data, the profitability literature can characterize the failure mode but cannot specify the correction.

A second cluster of studies shares the assumption that demonstrated reductions in private vehicle ownership validate carsharing's economic model by enlarging the addressable user base. Shaheen *et al.* (2019) synthesize the benchmark evidence across North American surveys: 11

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to 26 percent of roundtrip carsharing participants sold a personal vehicle after joining the service. Martin *et al.* (2010) provide the underlying dataset, a before-and-after survey of 6,281 North American carsharing members showing that average household vehicle holdings fell from 0.47 to 0.24, with the reduction concentrated in one-car households becoming carless. Namazu and Dowlatabadi (2018) refine this in a Vancouver comparison of one-way and roundtrip service, finding that free-floating members are less likely to sell a car than roundtrip members. The consistency of these findings obscures a selection problem that Mishra *et al.* (2015) identify using California Household Travel Survey data: carsharing members differ from non-members in residential density, transit access, and income before joining, so that the ownership figures track residential self-selection into transit-accessible, high-density neighborhoods, not any behavioral shift attributable to carsharing membership itself. If the effective member base is already drawn from households unlikely to own a car regardless of carsharing availability, the ownership-reduction argument overstates the revenue expansion potential that operators require to reach profitability.

MATERIALS AND METHODS

Business-model typology research rests on the assumption that fleet size and service format are the primary determinants of market penetration, with regulatory and insurance architecture held as fixed background conditions. Munzel *et al.* (2018) analyze 101 German operators, finding that fleet size varies systematically by model type, from cooperatives operating fewer than 20 vehicles in small towns to B2C one-way operators running fleets exceeding 1,000 vehicles in the largest cities. The cross-national extension across 177 European cities (Munzel *et al.*, 2020) establishes that B2C roundtrip density correlates with city size, transit coverage, and institutionalized parking concessions from municipal governments, conditions largely absent in U.S. metros. Munzel *et al.* (2019) add that B2C and P2P models attract structurally different user profiles: B2C members are more likely to have been car-free before joining; P2P members typically own at least one vehicle already, a distinction that shapes willingness-to-pay and booking frequency in ways the fleet-sizing literature does not incorporate.

The access-based consumption framework that Bardhi and Eckhardt (2012) develop through their Zipcar study provides the conceptual foundation for understanding why B2C and P2P users diverge on more than demographics. Bardhi and Eckhardt (2012) argue that consumers who access goods without owning them develop a fundamentally different relationship with those goods: the absence of an ownership stake removes the social and psychological incentives for stewardship, shifting user orientation toward utilitarian extraction. In a carsharing context, this framework predicts that members who already own at least one vehicle, the dominant P2P user profile in Münzel *et al.*'s (2019) Dutch data, will treat shared vehicles as supplemental tools with no identity investment, which produces more conservative driving behavior but less attentive vehicle care compared with owners. B2C members who are car-free before joining, as Münzel *et al.* (2019) confirm is the dominant profile, exhibit a different orientation: carsharing substitutes for ownership rather than supplementing it, raising psychological engagement with the service but not necessarily with the individual vehicle.

The implication for pricing strategy and deposit design has not received systematic treatment in the typology literature. Münzel *et al.* (2019) document the demographic contrast but do not connect it to the cost consequences that Bardhi and Eckhardt's (2012) negative reciprocity mechanism predicts. If B2C members have higher per-booking engagement but lower vehicle care because they lack the ownership reference point that would calibrate their treatment norms, and if P2P members have existing ownership norms but primarily treat the shared vehicle as a surplus asset, then the maintenance cost trajectory will differ systematically between the two model types in ways that neither Golalikhani *et al.* (2021) nor Münzel *et al.* (2018) model explicitly. Mamaev (2026a) addresses this gap at the operational level by specifying deposit structures and check-in protocols that counteract both behavioral profiles, but the underlying theoretical connection between Bardhi and Eckhardt's access-based consumption findings and B2C versus P2P cost divergence remains a gap in the academic literature.

The insurance, licensing, and fleet-financing configurations that are feasible under U.S. state-level regulatory constraints are decisions the European typology literature simply does not address, because in Germany or France they were settled by the regulatory environment before operators opened for business. Mamaev (2026a) fills that layer by specifying which operator decisions scaling trajectories depend on implicitly, and Mamaev's (2026a) analysis establishes that those decisions cannot be treated as solved by default in U.S. market entry.

Operational modeling studies assume that demand distribution is primarily a spatial phenomenon responsive to fleet deployment density, a framing built on agent-based simulation and free-floating booking records from European services. Schmoller *et al.* (2015) analyze booking records in Munich and Berlin, finding that approximately six vehicles per square kilometer is the modal fleet density across their study cities, but that fleet density alone does not predict viability: two cities in their dataset with similar density profiles diverged in outcome, one sustaining operations and one shutting down. Golalikhani *et al.* (2021) integrate this finding into a decision-support framework, identifying fleet relocation, pricing, and membership structure as interdependent variables requiring joint optimization rather than sequential adjustment. Firnkorn and Muller (2011) established in a survey of car2go users in Ulm that one shared vehicle replaced approximately eight private cars among sampled members, a ratio that Shaheen *et al.* (2019) generalize cautiously to North

American operators with an explicit caveat about its dependence on self-reported behavioral counterfactuals. Across all these modeling studies, whether simulation-based or survey-based, demand is operationalized as a property of spatial markets; operator decisions about pricing design, membership structure, and service zone configuration are treated as inputs rather than as objects of analysis.

The integrated decision-support framework that Golalikhani *et al.* (2021) develop represents the most systematic attempt to treat these variables jointly, but the framework's tractability depends on a set of parameter estimates that are not uniformly available across markets. Fleet relocation costs, demand elasticity by time-of-day and zone, and membership churn rates are specified as inputs to their optimization model; in European cities with several years of booking records, these parameters can be estimated from historical data with reasonable confidence. In U.S. markets where most operators have either closed before accumulating sufficient data or are too recent to have produced stable behavioral baselines, the same parameters must be assumed or proxied from European datasets, which reintroduces the transfer problem the framework was designed to avoid. Golalikhani *et al.* (2021) acknowledge this explicitly in their data requirements section but treat it as a practical limitation rather than a structural one. The distinction matters: a practical limitation is resolved by collecting more data; a structural one requires reconsidering which variables are estimable at all before market entry, and which decisions must therefore be made under deeper uncertainty than the optimization framing implies.

Schmöller *et al.* (2015) establish that free-floating booking behavior in Munich and Berlin follows recognizable spatial and temporal patterns, concentrated in central zones during commute and evening hours, with utilization dropping sharply beyond a radius of approximately four kilometers from the service centroid. This finding is robust within the European urban contexts they studied, but the service centroid itself was defined by parking infrastructure, not by demand. When free-floating operators in U.S. cities attempted to replicate the zone configurations calibrated to European demand patterns, they encountered a different spatial structure: lower residential density, wider distances between trip origins and destinations, and parking conditions that made the four-kilometer concentration pattern physically unachievable without a per-vehicle parking cost that European operators did not pay. The booking-level patterns that Schmöller *et al.* (2015) document are therefore partly endogenous to the operational conditions of the European cities they studied, which limits their value as benchmarks for U.S. zone design decisions without adjustment for the structural differences that Münzel *et al.* (2020) identify at the city level.

Accelerated vehicle degradation driven by multi-user access without ownership accountability is the cost-side mechanism that the behavioral literature documents most precisely yet the operational modeling literature does not endogenize. Bardhi and Eckhardt (2012) find, through an interpretive study of Zipcar members, that users maintain a utilitarian relationship with shared vehicles and exhibit patterns of negative reciprocity, specifically minor violations of vehicle care norms rationalized explicitly by the absence of an ownership stake. The cost consequence of this behavioral pattern is quantified separately: maintenance costs for shared vehicles run 20 to 30 percent above single-owner averages as a direct result of multi-user driving variation (Martin *et al.*, 2010). Golalikhani *et al.* (2021) acknowledge the feedback mechanism in their decision-support framework but treat maintenance cost as a fixed parameter rather than as a variable responsive to contract design and enforcement; any model built on that treatment systematically underestimates the cost-side drift that accumulates when liability terms are underenforced.

The environmental argument has played a disproportionate role in securing investor and municipal support for carsharing services whose financial model remained unproven, and this dynamic deserves examination because it partly explains why unprofitable operators continued to attract capital through multiple funding rounds. Firnkorn and Müller (2011) surveyed car2go users in Ulm and estimated that one shared free-floating vehicle substituted for approximately eight privately owned cars among sampled members, with downstream reductions in total vehicle kilometers traveled and associated emissions. The displacement ratio they calculated rested on member-reported behavioral counterfactuals rather than observed travel diaries, which Shaheen *et al.* (2019) flag as a methodological limitation when generalizing those figures across urban contexts. The more consequential issue is that Firnkorn and Müller's (2011) environmental projections were developed for a service that subsequently withdrew from most North American markets precisely because it could not recover costs; the environmental case was strongest for the operational configurations that proved least financially viable.

The mechanism is structural. Free-floating one-way services generate the highest vehicle utilization per hour, which maximizes the substitution ratio that Firnkorn and Müller (2011) measured. The same utilization intensity accelerates vehicle depreciation, raises per-booking maintenance costs, and concentrates insurance exposure in ways that roundtrip operations with predictable parking returns do not. Operators who pursued the environmental performance metrics investors favored, high utilization, large service zones, low per-trip pricing, were building the cost structure that Lagadic *et al.* (2019) later identified as the primary mechanism of operator closure. Profitability-oriented operators in the U.S. who selected smaller fleets, narrower service zones, and cost-recovery pricing traded the environmental ratios that generate favorable coverage for financial configurations that actually survived.

This does not invalidate the environmental case for carsharing categorically. It establishes that the environmental and financial objectives, when pursued simultaneously under U.S. market conditions, require tradeoffs that the European literature did not expose because municipal subsidies in Germany and France absorbed the cost differential, as Münzel *et al.* (2020) document implicitly through their finding that B2C roundtrip density correlates with institutionalized parking concessions rather than with demand alone. U.S. operators who relied on environmental impact projections derived from European free-floating deployments as part of their investor narrative were importing a cost assumption, the subsidized parking and liability infrastructure that makes high-utilization free-floating viable, without importing the corresponding public sector commitment.

RESULTS AND DISCUSSION

Carsharing in the U.S. simultaneously exhibits stable demand among a demographically narrow user base (Mishra *et al.*, 2015; Namazu & Dowlatabadi, 2018) and a structural tendency toward cost overruns that eliminate operating margins before demand stabilizes (Lagadic *et al.*, 2019; Shaheen & Cohen, 2020). The cost overruns arrive while demand is still building; an operator who runs out of money six months before the membership base stabilizes does not experience these as two problems. Contrary to Lagadic *et al.* (2019), who conclude that no established carsharing business model has achieved stable profitability and that technological innovation is insufficient to resolve the underlying cost structure, the U.S. operator record shows that profitability is achievable under a reproducible set of conditions. Mamaev (2026b) identifies the critical variables: fleet sizes calibrated to local demand density rather than to theoretical network coverage; pricing structures that recover the full per-vehicle-hour cost rather than competing on headline rate; and insurance frameworks negotiated at the state level to avoid the per-mile commercial liability exposure that constitutes the single largest cost differential between U.S. and European operations. The discrepancy between Lagadic's structural pessimism and the record that Mamaev (2026b) documents follows from a methodological asymmetry: Lagadic *et al.* base their analysis on European operators for whom municipal subsidies and parking concessions are embedded costs absorbed by the public sector, so the true per-vehicle operating cost never appears in operator accounts.

Parking access compounds the profitability problem in a way that the model-selection literature does not represent. European typology research (Munzel *et al.*, 2018; Munzel *et al.*, 2020) compares roundtrip and free-floating models on fleet economics and user retention while implicitly treating parking availability as a property of the urban environment rather than a variable the operator negotiates. Free-floating services that operated without dedicated parking agreements lost viability because the parking access negotiable in European cities was unavailable on comparable terms in U.S. municipalities; car2go's withdrawals from multiple North American markets between 2015 and 2019 are the clearest documentation of this pattern (Shaheen *et al.*, 2019).

The environmental performance of free-floating services in European cities, documented most precisely by Firnkorn and Müller (2011), created a policy justification for municipal parking concessions that U.S. cities were not positioned to replicate. In Ulm, car2go's service zone was supported by city-wide parking rights negotiated through the municipal administration; the environmental displacement ratios Firnkorn and Müller (2011) quantified were partly a product of that operational support rather than an independent consequence of the free-floating model itself. Removing the municipal parking agreement, the condition that prevailed in U.S. markets where car2go entered without comparable concessions, collapsed the utilization density required to achieve those ratios, and with it the environmental case that had partly motivated municipal cooperation in the first place.

This feedback loop between environmental performance data and operational conditions has not been recognized explicitly in the profitability literature, but it contributes to the analytical error that Lagadic *et al.* (2019) and Shaheen & Cohen (2020) document at the level of operator accounts. The environmental metrics generated under subsidized conditions traveled further than the conditions that produced them; U.S. policymakers evaluating carsharing proposals in the 2012 to 2018 period were using displacement ratios calibrated to Ulm's municipal infrastructure as benchmarks for evaluating services that would operate without equivalent support. Schmöller *et al.* (2015) note a related gap in their Munich and Berlin booking data analysis: two cities with comparable fleet density diverged in service sustainability, and the variable that differentiated them was not demand distribution but parking and relocation cost structure. The spatial demand models that treat fleet density as the primary viability predictor are, in this sense, measuring the output of operational conditions they do not model as inputs.

The contrast between the booking-level demand analysis in Schmöller *et al.* (2015) and the supply-side analysis in Münzel *et al.* (2020) across 177 European cities clarifies where the modeling gap lies. Schmöller *et al.* (2015) establish that demand responds to fleet proximity and service zone configuration in ways consistent across Munich and Berlin; Münzel *et al.* (2020) establish that supply, defined as the existence and scale of B2C carsharing operations, correlates with city population, transit coverage, and political support for sustainable transport, not with demand levels alone. A city with high latent demand for shared mobility but without transit integration or municipal parking willingness will attract less carsharing supply than a city with moderate demand and strong institutional support, which is the pattern that defines the difference between European and U.S. secondary cities for purposes of market entry planning. Mamaev (2026b) quantifies the revenue-per-vehicle-hour thresholds that make U.S. secondary city entry viable or not, and those thresholds are higher precisely because the institutional support conditions that Münzel *et al.* (2020)

find correlated with European supply are absent.

Securing parking access is therefore a precondition for model selection, not a downstream operational question. Mamaev (2026a) makes this sequencing requirement explicit for the U.S. regulatory context, where municipal contracts, transit authority partnerships, or private property arrangements must be secured before service zone design is feasible, and where the insurance classification of the vehicle changes depending on whether dedicated parking is contractually guaranteed. Operators who treat parking as a variable to be resolved after market entry, a sequencing error that Mamaev (2026a) traces to the assumptions operators carry over from European case studies, are solving fleet economics under a cost assumption that will change as soon as the service scales beyond the informal tolerance of municipal enforcement, which is the point at which most free-floating services in U.S. secondary cities have encountered abrupt regulatory constraint.

The demographic ceiling on U.S. carsharing demand is narrower than the vehicle ownership-reduction literature implies, and the gap between urban and suburban market viability is correspondingly wider. Mishra *et al.* (2015) show that the observed reduction in car ownership among carsharing members reflects pre-existing low-ownership predispositions rather than a service-induced effect, and Munzel *et al.* (2019) establish that the B2C user profile, predominantly car-free before joining, transit-oriented, and living at high residential density, is structurally different from the P2P user profile in ways that limit crossover between model types. Namazu and Dowlatabadi (2018) confirm the boundary condition in their Vancouver study: approximately 57 percent of free-floating users would switch to public transit if the service were discontinued, establishing that carsharing in transit-rich areas functions as a transit complement rather than as an automobile substitute.

The transit complementarity finding has a direct implication for revenue ceiling calculations that the profitability literature has not traced through consistently. If the modal carsharing user in a transit-served urban area is substituting carsharing for specific trip types that public transit handles poorly, such as late-night travel, trips with bulky cargo, or multi-stop errands, then the addressable booking volume per member is bounded by the frequency of those trip types rather than by total mobility demand. Martin *et al.* (2010) document that average annual mileage among North American carsharing members is substantially below the national household average, which is consistent with a user population making targeted rather than comprehensive use of shared vehicles. A service priced to recover full per-vehicle costs against a booking volume ceiling set by transit complementarity faces a structural tension: the pricing required for cost recovery may exceed what members are willing to pay for supplemental rather than primary transportation. Mamaev (2026b) identifies this tension in U.S. market data and specifies the minimum booking frequency per vehicle per day at which cost-recovery pricing remains competitive against taxi and ride-hail alternatives, which is the correct comparison set for a transit-complementary service rather than private vehicle ownership costs.

The geographic boundary between transit-complementary and transit-substitute market conditions is sharper in U.S. metros than the literature's predominantly European and Canadian evidence base suggests. Mishra *et al.* (2015) calibrate their propensity score analysis to the San Francisco Bay Area, which combines exceptionally high residential density in certain corridors with large car-dependent suburban zones within the same metro. Their finding that carsharing membership reflects pre-existing residential self-selection into transit-accessible locations is particularly clean in that geography because the contrast between transit-served and car-dependent zones is large and spatially discontinuous rather than gradual. Operators who read the Bay Area membership data as evidence of broad urban demand and expanded into adjacent lower-density zones encountered a different cost-per-member and booking-frequency profile that the headline numbers did not predict. Shaheen and Cohen (2020) document the geographic pattern of U.S. operator presence as of 2018 and the strong concentration in a small number of dense coastal metros is consistent with Mishra *et al.*'s (2015) interpretation: the member base with the residential characteristics that predict carsharing adoption is geographically concentrated in ways that set a hard ceiling on national scale without a fundamentally different operational model for lower-density markets.

The behavioral degradation mechanism documented by Bardhi and Eckhardt (2012) directly contradicts the static-parameter treatment of maintenance cost in Golalikhani *et al.* (2021). If user behavior systematically degrades vehicle condition, as the negative reciprocity pattern Bardhi and Eckhardt identify predicts, then the 20 to 30 percent maintenance cost premium over single-owner averages (Martin *et al.*, 2010) is not a stable input but an accelerating variable that worsens as fleet age increases and liability enforcement weakens. A model calibrated to early-fleet maintenance costs will systematically underestimate long-run per-vehicle expenses, producing pro forma numbers that look reasonable at launch and deteriorate steadily through years two and three as the fleet ages and warranty coverage expires. U.S. operators who introduced pre-authorization deposits, photographic check-in protocols, and mileage caps report lower per-vehicle maintenance costs alongside a measurable drop in completed bookings, the deposit screen filters out the highest-risk users and, with them, a share of legitimate demand.

Münzel *et al.* (2019) document that P2P adopters in the Netherlands report significantly higher sensitivity to price than B2C members, and that their primary stated motivation is cost reduction rather than environmental impact or convenience. This price sensitivity differential has an underappreciated consequence for mixed-model operators who have attempted to run B2C and P2P services simultaneously on the same platform: the pricing structure that recovers costs from the B2C segment, where members accept higher hourly rates in exchange for vehicle availability and service reliability, creates adverse selection in the P2P segment, where the most cost-sensitive users exit the platform when rates rise and are replaced by users whose primary motivation is occasional access rather than habitual use. Habitual use is what produces the booking density that makes per-vehicle economics viable; occasional users produce the utilization variability that drives up repositioning and downtime costs. Golalikhani *et al.* (2021) model fleet utilization as a function of membership size and demand elasticity but do not decompose elasticity by user segment, so the mixed-model adverse selection dynamic is not captured in their framework. Mamaev (2026a) addresses this at the operational level by recommending segment-specific pricing tiers rather than a unified rate structure, though the academic evidence base for that recommendation rests on inferred behavior from the Münzel *et al.* (2019) motivation data rather than on direct pricing experiment results.

CONCLUSION

U.S. carsharing operators have failed at rates exceeding 55 percent since 1998, and the proximate cause is consistent: fleet, insurance, and maintenance costs outpace revenue before membership density reaches breakeven. European profitability analyses do not transfer to the U.S. context because municipal parking concessions and subsidized liability frameworks absorb costs that U.S. operators must recover directly from bookings.

Three findings reframe the analytical question. First, profitability is achievable under a reproducible configuration: fleets calibrated to local demand density, cost-recovery pricing, and state-level insurance negotiation (Mamaev, 2026b). Second, parking access is a precondition for model selection, not a downstream operational variable; operators who defer parking agreements until after market entry face regulatory constraints that collapse free-floating viability. Third, maintenance cost is not a fixed parameter but a variable responsive to contract design, because the negative reciprocity mechanism Bardhi and Eckhardt (2012) identify accelerates fleet degradation when liability enforcement is weak.

Future research should endogenize maintenance cost as a behavioral variable, extend B2C versus P2P user motivation analysis to U.S. markets, and revisit Firnkorn and Müller's (2011) environmental displacement estimates under unsubsidized operational conditions.

REFERENCES

Bardhi, F., & Eckhardt, G. M. (2012). Access-based consumption: The case of car sharing. *Journal of Consumer Research, 39*(4), 881–898. https://doi.org/10.1086/666376

Firnkorn, J., & Müller, M. (2011). What will be the environmental effects of new free-floating car-sharing systems? The case of car2go in Ulm. *Ecological Economics, 70*(8), 1519–1528. https://doi.org/10.1016/j.ecolecon.2011.03.014

Golalikhani, M., Oliveira, B. B., Carravilla, M. A., Oliveira, J. F., & Antunes, A. P. (2021). Carsharing: A review of academic literature and business practices toward an integrated decision-support framework. *Transportation Research Part E: Logistics and Transportation Review, 149*, 102280. https://doi.org/10.1016/j.tre.2021.102280

Lagadic, M., Verloes, A., & Louvet, N. (2019). Can carsharing services be profitable? A critical review of established and developing business models. *Transport Policy, 77*, 68–78. https://doi.org/10.1016/j.tranpol.2019.02.006

Mamaev, Z. (2026a). *How to build and operate a profitable car-sharing business in the USA*. LAP LAMBERT Academic Publishing.

Mamaev, Z. (2026b). Economics of car-sharing businesses in the U.S. *European Journal of Economics and Management Sciences, 2*, 56–60. https://doi.org/10.29013/EJEMS-26-2-56-60

Martin, E., Shaheen, S. A., & Lidicker, J. (2010). Impact of carsharing on household vehicle holdings: Results from North American shared-use vehicle survey. *Transportation Research Record: Journal of the Transportation Research Board, 2143*, 150–158. https://doi.org/10.3141/2143-19

Mishra, G. S., Clewlow, R. R., Mokhtarian, P. L., & Widaman, K. F. (2015). The effect of carsharing on vehicle holdings and travel behavior: A propensity score and causal mediation analysis of the San Francisco Bay Area. *Research in Transportation Economics, 52*, 46–55. https://doi.org/10.1016/j.retrec.2015.10.010

Münzel, K., Boon, W., Frenken, K., & Vaskelainen, T. (2018). Carsharing business models in Germany: Characteristics, success and future prospects. *Information Systems and e-Business Management, 16*(2), 271–291. https://doi.org/10.1007/s10257-017-0355-x

Münzel, K., Boon, W., Frenken, K., Blomme, J., & van der Linden, D. (2020). Explaining carsharing supply across Western European cities. *International Journal of Sustainable Transportation, 14*(4), 243–254. https://doi.org/10.1080/15568318.2018.1542756

Münzel, K., Piscicelli, L., Boon, W., & Frenken, K. (2019). Different business models - different users? Uncovering the motives and characteristics of business-to-consumer and peer-to-peer carsharing adopters in The Netherlands. *Transportation Research Part D: Transport and Environment, 73*, 276–306. https://doi.org/10.1016/j.trd.2019.07.001

Namazu, M., & Dowlatabadi, H. (2018). Vehicle ownership reduction: A comparison of one-way and two-way carsharing systems. *Transport Policy, 64*, 38–50. https://doi.org/10.1016/j.tranpol.2017.11.001

Schmöller, S., Weikl, S., Müller, J., & Bogenberger, K.

(2015). Empirical analysis of free-floating carsharing usage: The Munich and Berlin case. *Transportation Research Part C: Emerging Technologies, 56*, 34–51. https://doi.org/10.1016/j.trc.2015.03.008

Shaheen, S., & Cohen, A. (2020). Innovative mobility: Carsharing outlook - Carsharing market overview, analysis, and trends. *Transportation Sustainability Research Center, University of California, Berkeley*. https://doi.org/10.7922/G2BK19MF

Shaheen, S., Cohen, A., & Farrar, E. (2019). Carsharing's impact and future. *Advances in Transport Policy and Planning, 4*, 87–120. https://doi.org/10.1016/bs.atpp.2019.09.002