



Changing Gears:

Exploring the car-sharing culture shift in Metro Vancouver

January 2018

Highlights

- Vancouver has more car-sharing vehicles per capita than any other North American city. The region's car-sharing fleet of about 3,000 vehicles is the largest in Canada, and is larger than fleets in key U.S. car-sharing cities such as Seattle, Portland and San Francisco.
- An October 2017 Vancity survey targeting more than 4,000 car-share members in B.C. found:
 - One in three joined a car-share program in the previous 12 months, while two in three joined within the last two years.
 - More than half of respondents now belong to two or more car-share programs.
 - The most common reasons for using car-share services are convenience (95%) and saving money (62%), the Vancity survey found, while concern for the environment was cited by 58%.
 - The strongest car-sharing benefits relate to psychological factors, such as sense of freedom and peace of mind. Getting to certain places are of less significance.
 - More than one-quarter of survey respondents have disposed of at least one private vehicle to car-share, while 40% have avoided acquiring a private vehicle due to a car-sharing preference.
 - Younger car-share members are the least likely to say they enjoy not owning a private vehicle. They are also the most likely to say they would sacrifice things such as chocolate and ice cream, an annual vacation and their sense of smell for 12 months, in exchange for the free use of a private car for a year.
- Vancouver has 4.22 car-share vehicles per 1,000 people, more than Milan and Berlin.
- In some neighbourhoods closest to Vancouver's downtown core, as many as 5% of all moving autos are car-share vehicles.
- Secondary research indicates newer, right-sized car-share vehicles can save around 30% of greenhouse gas (GHG) emissions over user-owned vehicles. Other research indicates some forms of car-sharing reduce overall vehicle kilometres travelled. However, more research is needed to determine whether car-sharing is "net green."
- As car-sharing use grows, and until more research can be done to determine whether it is net green, car-sharing companies should continue to look for opportunities to further reduce vehicle emissions.

Vancouver is the car-sharing capital of North America

Vancouver's car-sharing experience began two decades ago, with one small co-operative and a pair of cars in the city's West End neighbourhood. Today, car-share vehicles are such a common sight across Metro Vancouver that one might assume other cities have embraced car-sharing's benefits with the same gusto. Not so. With four different car-sharing options – Modo Co-operative, Evo Car Share, Car2Go Carsharing Canada Ltd. and Zipcar, Inc. – catering to thousands of local drivers, Vancouver can claim the title of North America's car-sharing capital.¹

The success of car-sharing programs in Metro Vancouver and on Vancouver Island raises a number of important questions: What accounts for car-sharing's quick growth in the region? Is the practice sustainable, and what are its benefits? Should it continue to be encouraged?

This report examines new, quantitative research from an October 2017 Vancity survey and includes secondary sources to define broader, historical experiences and identify areas of improvement for local car-sharing.

Membership continues to flourish, gaining momentum across Metro Vancouver

About 3,000 car-share vehicles traverse our busy streets. That is more than other West Coast trailblazers such as Seattle (1,900), Portland (1,060) and San Francisco (about 1,500).

Vancouver's car-sharing fleet easily eclipses those in Canada's two largest cities, Toronto (1,650) and Montreal (2,080). And last year, a transportation consultant compared Vancouver to Milan and Berlin, the two most notable car-sharing cities in Europe. Vancouver placed just behind Berlin in terms of the number of car-share vehicles, and beat both Milan and Berlin on a vehicle-per-capita basis, with 4.22 car-share vehicles per 1,000 people.²

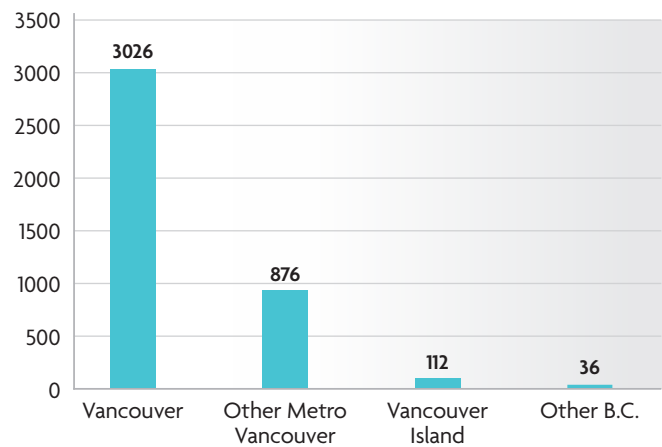
As the largest car-share services are effectively free to join and many members are inactive, membership counts are a less reliable indication of market size or growth than fleet size. Nonetheless, Vancity's October 2017 survey of B.C. car-share members suggests that local membership continues to grow at a quick pace. Of the more than 4,000 members who responded, one in three signed up less than a year ago and two in three joined within the last two years.

While three-quarters (75%) of survey respondents live in the city of Vancouver, other Metro Vancouver municipalities are attracting new members. With the recent expansion of Evo's service area, New Westminster accounts for the

largest share – 7.4% – of the region's new members surveyed. With a 7% share, Burnaby's efforts to promote car-sharing and more livable communities seem to be paying dividends. Meanwhile, North Vancouver claimed 6.8% of new members in the last 12 months.

The absence of a free-floating car-share service on Vancouver Island means very low penetration of car-sharing there. The geographical distribution of responses to the Vancity survey, shown in Figure 1, reflects very different levels of car-share penetration across B.C.

Figure 1: Geographic distribution of survey respondents



Number of respondents = 4,050
Source: Vancity car-share survey, October 2017

Car-share concentrations

While only about 0.5% of registered vehicles in Vancouver, New Westminster, North Vancouver and Burnaby are car-shares, their greater use means they make up 1.1% of all vehicles in motion. In Vancouver alone, where car-share concentrations are higher, 0.7% of all vehicles being car-shares, comprising 1.65% of all moving vehicles.^{3,4} In some neighbourhoods closest to Vancouver's downtown core, as many as 5% of all moving autos are car-share vehicles.⁵ Higher utilization rates emphasize the need to prioritize electric vehicles and fleet electrification.

Car-sharing market success factors: population density, good public transit and parking provisions

A key ingredient in any successful car-sharing program is high urban population density. It is no coincidence that the region's four largest car-sharing centres – Vancouver, New Westminster, North Vancouver and Victoria – are among Canada's most densely populated municipalities.⁶

Other suggested factors behind Metro Vancouver's car-sharing success include a limited supply of taxis, an absence of ride-hailing services such as Uber and Lyft, short supplies of affordable housing and parking, more environmentally conscious residents, a young urban population more likely to prioritize big city living over car ownership, and a large immigrant population (many unaccustomed to North America's car culture).⁷

There's also a correlation between good public transit systems and car-sharing. Transit options and availability must be present for car-sharing to be a realistic alternative to private vehicle ownership; people cannot – or will not – car-share for every trip they choose to make. Vancouver has a reasonable, and expanding, transit system that works well in combination with car-sharing.

Car-sharing won't succeed without supportive municipal governments. Local parking initiatives are especially important. Restrictive parking regulations forced BMW's DriveNow service out of San Francisco,⁸ and Toronto's mediocre car-sharing scene reflects drawn-out battles over parking rights.⁹

The City of Vancouver allows car-share vehicles to use permit-only parking spaces. However, it has been reluctant to permit car-shares at metered spaces, fearing reduced vehicle turnover. Yet "super permits" (or "golden tickets" granting the right to park almost anywhere) can work well: the Seattle Department of Transportation's evaluation concluded that free-floating (see *Car-sharing models explained*) vehicles spent less time in business district paid-parking spaces than most other vehicles, and found that "car share vehicle parking has not adversely impacted neighborhood business district access."¹⁰

The City of Vancouver has also encouraged car-sharing in new developments by reducing the number of parking stalls developers must build if a car-sharing service is included.

Car-sharing tends to flourish when all residents of a community – not just residents of a particular building – have access to car-share vehicles. To foster car-sharing, the UBC Properties Trust takes a levy from developers for each residential unit built in its jurisdiction. Cars are purchased only when demand justifies an additional vehicle for a building, a block or a neighbourhood. This maximizes the impact of every vehicle from the outset and helps facilitate community-oriented (not building-centric) carsharing stations.

Car-sharing models explained

There are three models of traditional car-sharing.

1. Round-trip or two-way station-based car-sharing is the classic model (Modo and Zipcar): Members book a vehicle and return it to the original "station" where it was picked up.
2. Free-floating car-sharing (car2go and Evo): Vehicles can be picked up and left anywhere within the operator's service area, or "home area."
3. One-way station-based car-sharing: Members may return a vehicle to a station other than where the journey started. There are no operators of this type in B.C.

Car-sharing should not be confused with ride-hailing or ride-sharing. *Car-sharing* gives members access to a commercial fleet of cars for their private use, with members driving the vehicle themselves. In contrast, *ride-hailing* has users going online to hail a ride as a passenger in a vehicle driven by its owner (Uber and Lyft are such examples).

Another close relation to car-sharing is peer-to-peer car-sharing. When participating owners are not using a private vehicle they can add it to a virtual fleet available for rent. Peer-to-peer car-sharing, from companies such as Turo and Getaround, is available in many U.S. cities and Toronto. Not every peer-to-peer service is a good substitute for the car-sharing models described in this report: Turo, for example, charges by the day and is more like car rental.

Ride-sharing entails vehicle pooling to improve vehicle occupancy levels and reduce fare costs. There are different types of ride-sharing but a primary distinction is whether or not the driver is making the trip to earn money. Sharing services such as Lyft Line and Uber Pool allow more than one person to hail a ride in the same vehicle (apps show which customers are going roughly the same way). The driver is still being paid. The second type uses a digital platform to allow drivers and riders going to the same place to find each other. The driver picks up one or more people and they share the cost of driving to a mutual destination. It can be thought of as a better organized, more equitable version of hitchhiking. Examples include Europe's BlaBlaCar, and two local companies, Pop a Ride and Spare Labs.

Another important model is microtransit, such as Ford's Chariot. This combines ride-sharing with professional drivers at the wheel of on-demand shuttles and vans.¹¹

Peer-to-peer car-sharing, and all the sharing services delivered by fare-charging drivers, are not yet available in B.C.

In Burnaby, a “swimming pool model” of car-share financing will be piloted to test utilization of a “free” car-share. The developer will pay for the amenity in full, as it would an on-site gym or pool. As the cost of the car-share is built into other residential fees, residents are expected to use the amenity and reconsider vehicle ownership.

Municipalities should be aware that the greatest benefits for all stakeholders are achieved when private vehicle use is actively discouraged (for example, also removing private vehicle parking spaces).¹² The most successful European car-sharing cities are those where governments actively discourage private vehicles from downtown districts. Milan, for example, has heavily restricted driving zones and congestion charges; these favour car-share vehicles, especially electric ones.¹³

The importance of vested local interest

Having two local service providers – Modo and Evo – entirely vested in the region is another success factor. Car-sharing fleets are typically owned by large rental car companies or global auto manufacturers. They have anticipated disruptions to their business, including a shift to Mobility as a Service (MaaS)¹⁴ alternatives which include car-sharing and driverless vehicles. International expansion is the norm.

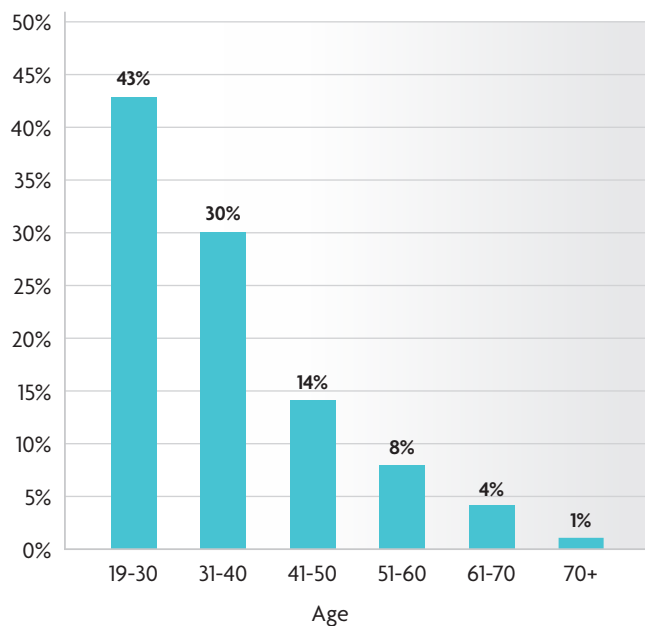
In contrast, Modo is a local co-operative with a passion for sustainable car-free living. The second home-grown service is Evo, from the British Columbia Automobile Association (BCAA). While day-to-day and month-to-month vehicle counts fluctuate, Evo is now our region’s largest car share provider at about 1,250 vehicles.¹⁵

Most car-sharers 40 years old or younger

The age distribution of our survey respondents reflects the dominance of free-floating vehicles in our region (Figure 2).¹⁶ Almost three-quarters (73%) of survey participants are 40 years old or under. Younger people gravitate towards free-floating cars, which are sometimes described as “self-drive taxis.” Free-floating vehicles can only be booked at short notice and are perfect for spontaneous trips, such as nipping downtown, going to a bar or restaurant, or perhaps getting to work when time is short.

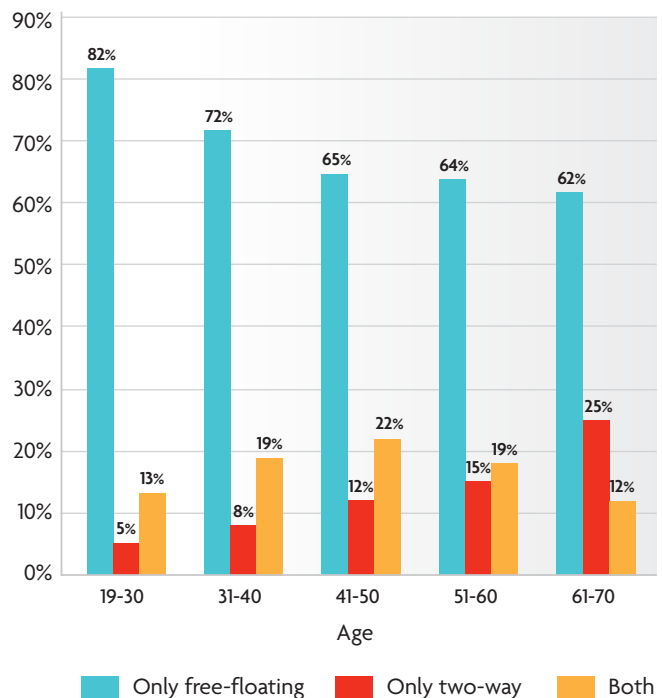
Older respondents are more likely to use two-way services as a substitute for a private vehicle. They typically use them to get to places poorly served by transit, to move large items such as furniture, and to shop for bulky items. Two-way car-sharing isn’t economically viable for commuting trips, and it tends to require more advance planning. The Vancity survey found that people in the middle age band (41-50) are most likely to be members of both models (Figure 3).

Figure 2: Age distribution of respondents



Source: Vancity car-share survey, October 2017

Figure 3: Age and car-share model membership



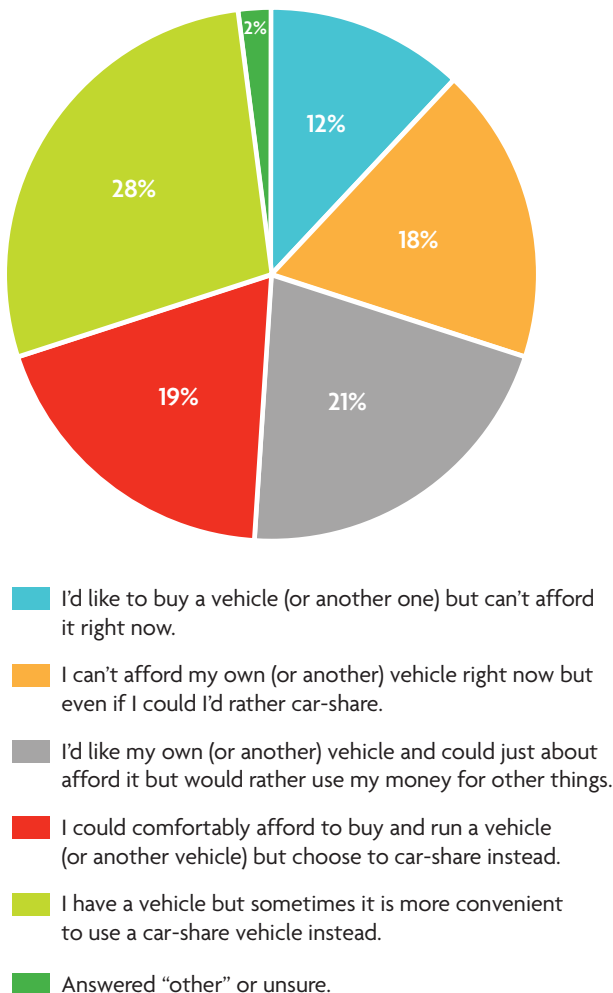
Source: Vancity car-share survey, October 2017

Why do British Columbians car-share?

In the Vancity survey, local car-share members explained why they joined one or more of the region's four programs, and what they value most about them. These findings provide a unique view into the minds of the region's car-sharers.

The very high cost of living in our region – notably rents and mortgages – was expected to weigh heavily on members' decisions to car-share instead of owning a vehicle.¹⁷ And many drivers are aware that purchasing and keeping a private vehicle on the road is an expensive proposition. The Canadian Automobile Association estimates the average cost of ownership in B.C. for a compact car is \$7,300 and for an SUV is \$11,500.¹⁸ This is no small change: the expense of owning an operating an SUV would practically feed a family of four for the entire year (estimated at \$11,948 in 2018).¹⁹ Yet affordability issues do not have as big an influence as anticipated, with only 12% saying they'd like to buy a car, but car-share because they can't afford one. (Figure 4).

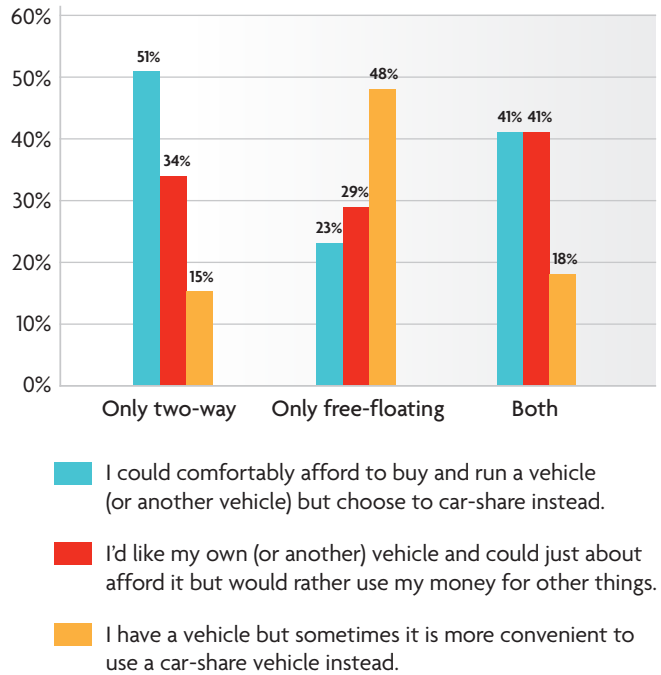
Figure 4: Financial situation of car-share members



Source: Vancity car-share survey, October 2017

Figure 5: Financial background – can afford a vehicle/ have a vehicle

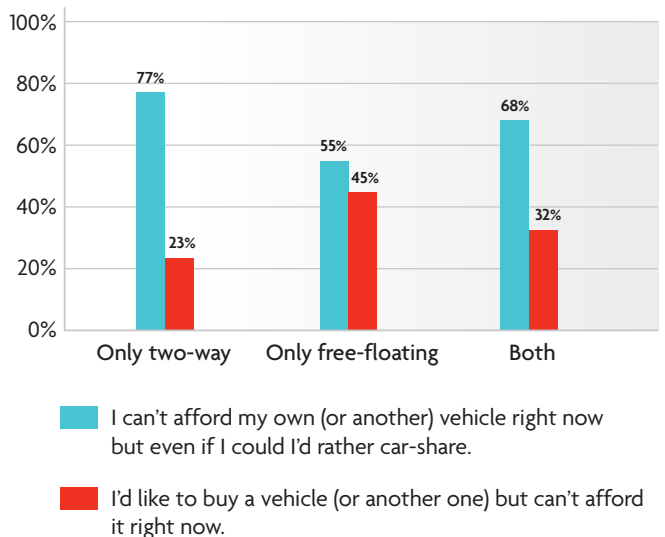
Q: How does your financial situation fit into your decision to car-share?



Number of respondents = 2,645
Source: Vancity car-share survey, October 2017

Figure 6: Financial situation – cannot afford a vehicle

Q: How does your financial situation fit into your decision to car-share?



Number of respondents = 1,186
Source: Vancity car-share survey, October 2017

Two-ways happier to car-share, and free-floating vehicle owners love the extra convenience

Two-way members appear more likely to car-share as a preference than free-floating members.

Figure 5 shows that of those who can afford to buy and run their own vehicle (or another one), two-way members are more than twice as likely as free-floating members to be able to do this comfortably while still choosing to car-share (51% versus 23%). Among respondents who cannot afford a vehicle (or an additional one) two-way members are once again more likely to say that, even if they could afford it, they would still rather car-share (77% versus 55%).

Yet free-floating members who can afford a vehicle are more than three times as likely to have a vehicle and car-share for convenience as two-way members (48% versus 15%).

Annual household income is an important consideration. Not surprisingly, lower-income households are less likely to afford a vehicle. As household incomes rise, respondents are more likely to own a vehicle and car-share for additional convenience (Figure 7).

One in four have “thrown away a key” to car-share

The decision to car-share can affect private vehicle ownership on two levels. First, 26% of respondents have disposed of at least one private vehicle to car-share (Figure 8). Second, of members who were able to answer “yes” or “no,” 53% said they would have acquired a private vehicle had car-sharing not been available to them. This is known as “vehicle

avoidance.” In total, 40% of the wider sample of members indicate that they have avoided acquiring a private vehicle due to car-sharing (Figure 9).

Both types of vehicle reduction rise with household income. Among respondents in households with an income of more than \$150,000, almost one-third (32%) disposed of a private vehicle and two-thirds (66%) avoided buying one because car-sharing is available (Figure 9).

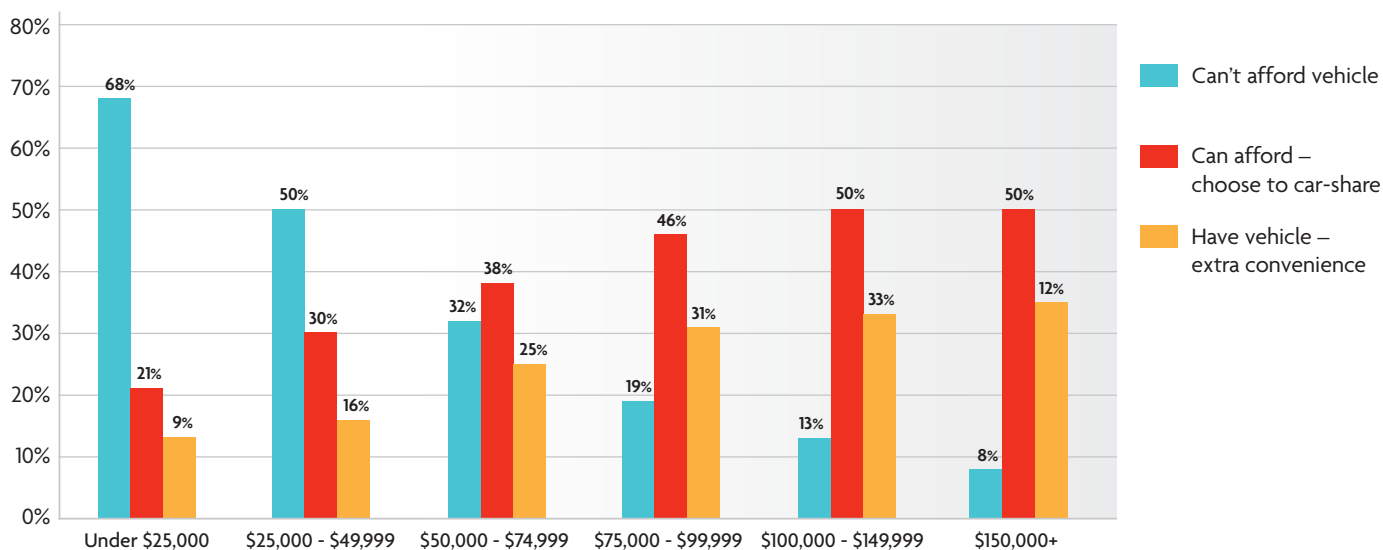
In line with Metro Vancouver’s 2014 study,²⁰ the Vancity survey found that holding both two-way and free-floating memberships produces a larger impact on household vehicle reduction. Respondents who are members of both car-sharing models have the highest rate of vehicle avoidance (61%).

Close attention must be paid to how the free-floating model affects vehicle ownership. It dominates the local car-share market and will likely account for the lion’s share of future growth.²¹ While the rate of vehicle disposal among two-way respondents is twice that of free-floating members (42% versus 21%), their rates of vehicle avoidance are identical (51%). Therefore, while two-way car-sharing reduces more private vehicle holdings per member, the much larger scale of free-floating operations also produces a material reduction in private vehicle ownership.

Regionally, our two-way member respondents on Vancouver Island are the most likely to have disposed of a vehicle (40%). Vancouver’s suburbs, where vehicle ownership is more of a necessity for getting around, show the lowest rate of vehicle disposal (22%).

Figure 7: Car-sharing is used as a convenience by higher income groups

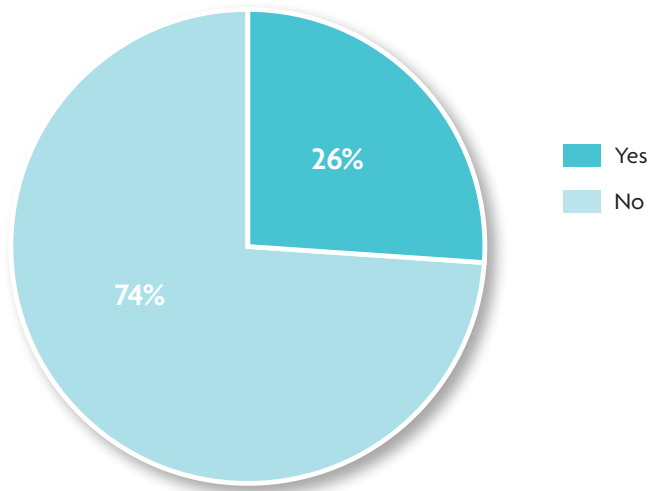
Q: How does your financial situation fit into your decision to car-share?



Source: Vancity car-share survey, October 2017

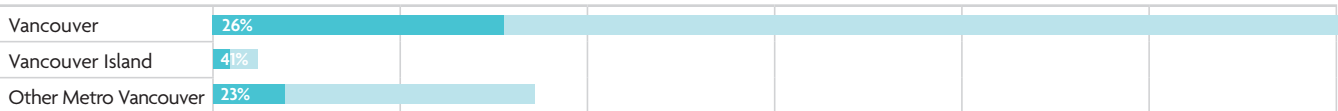
Figure 8: Vehicle disposal

Q: Has your household disposed of one or more privately owned vehicles and used carsharing instead?

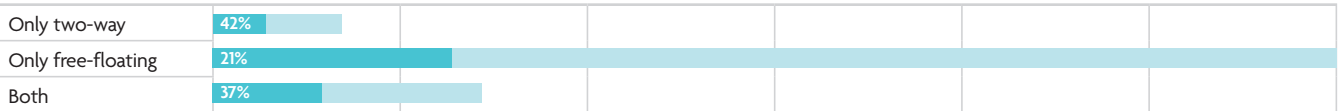


Responses by category

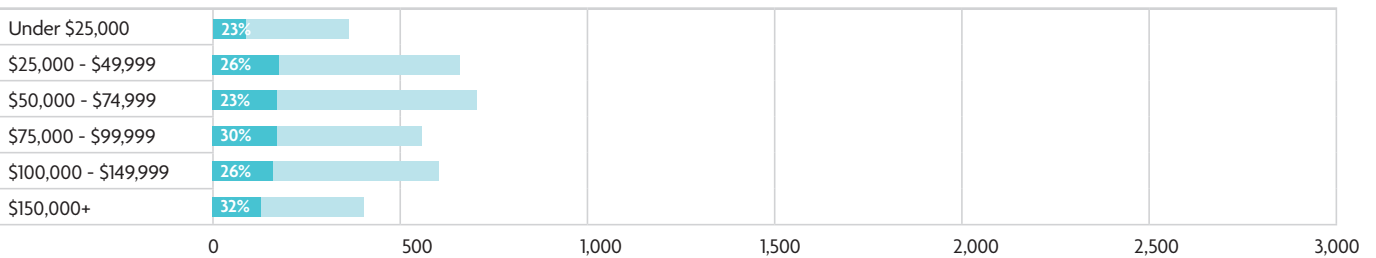
Region



Type of car-sharing used



Household income



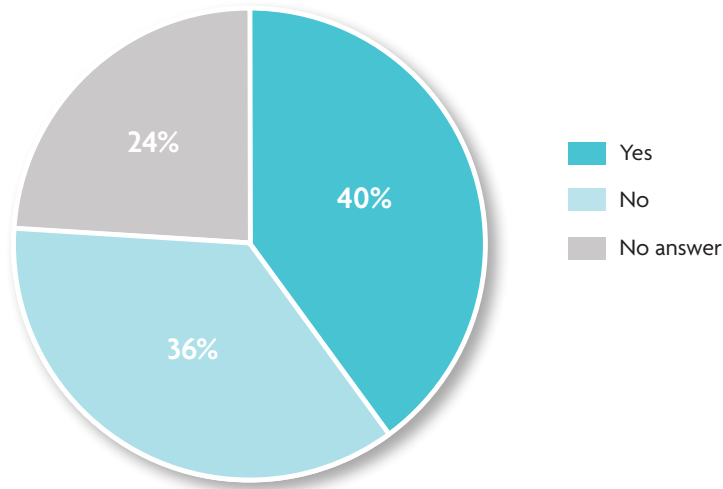
Number of respondents by category

Yes No

Source: Vancity car-share survey, October 2017

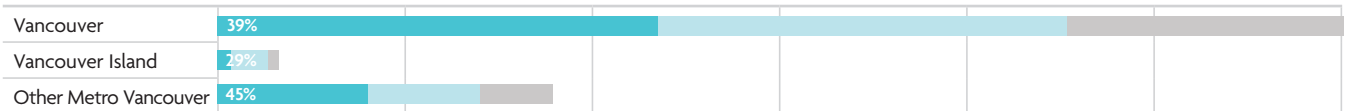
Figure 9: Acquiring a vehicle

Q: If car-sharing was not available, would you have bought or acquired a vehicle?

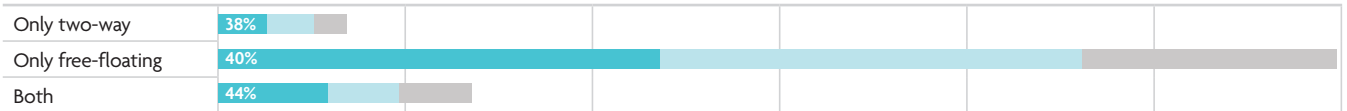


Responses by category

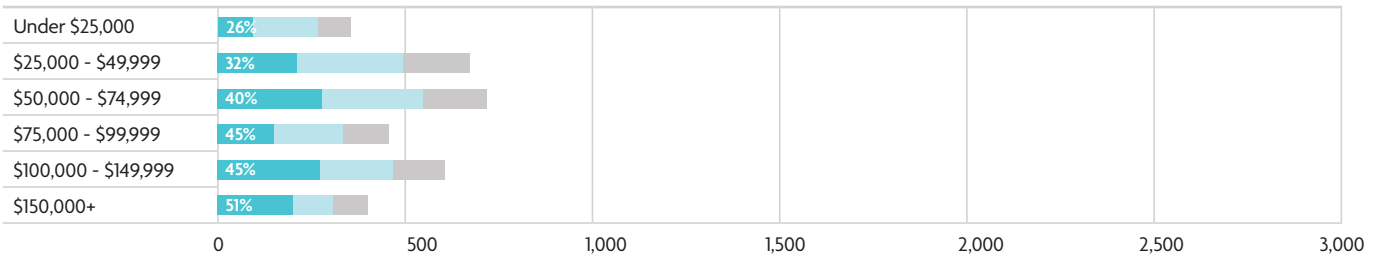
Region



Type of car-sharing used



Household income



Number of respondents by category

Yes No No answer

Source: Vancity car-share survey, October 2017

Convenience is king

With 95% of respondents in agreement, convenience trumps every other reason to car-share by a wide margin (Figure 10). This finding held across every demographic and geographic variable. Even a vast majority of two-way members – who cannot end their trip “anywhere” they choose – agree with the convenience factor (88%). (This is not to say that car-sharing is always a convenient user experience – see *Car-sharing is not perfect*, page 12.)

Multiple memberships offer a convenience boost by increasing the number of vehicles a member can access. With a greater choice of vehicles, it’s easier to find one closer, or better suited to the trip. Of the survey respondents, 46% held a single membership, while 42% held two, and 12% held three or more. Free access to privileged parking can also be highly convenient.

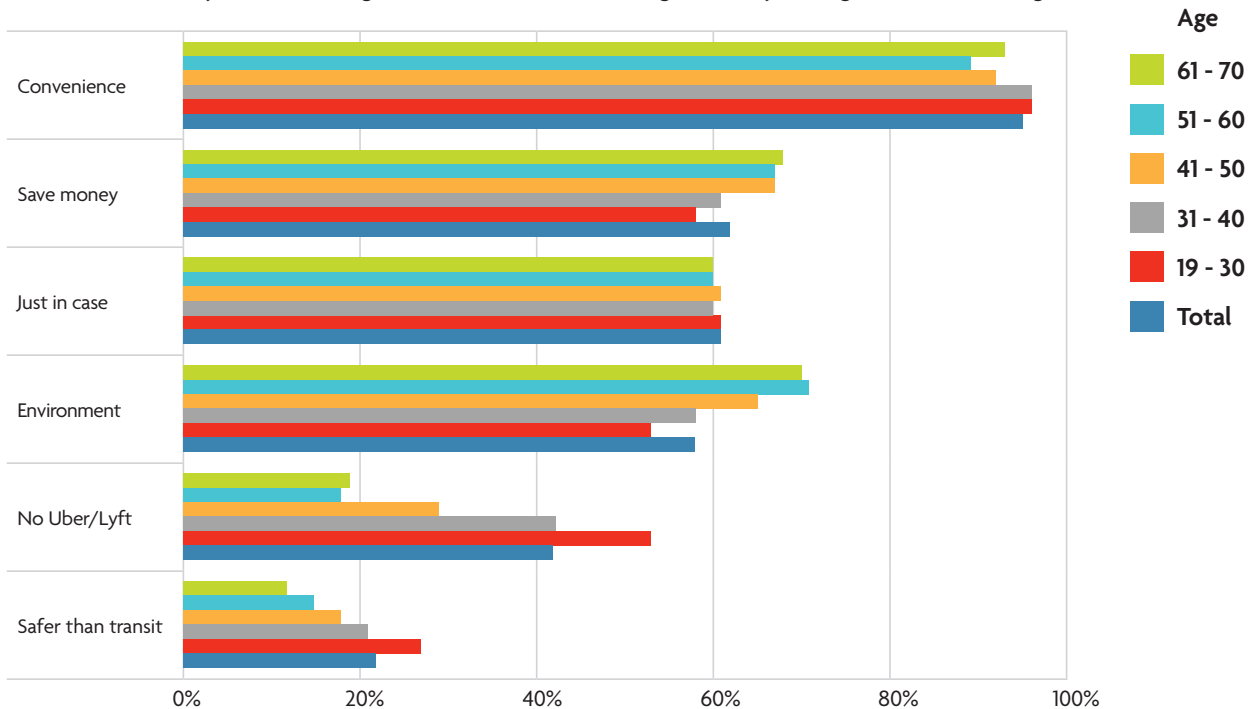
Almost six in 10 of respondents cited the environment as a reason to car-share. On Vancouver Island, the environment was cited by almost eight in 10. And older car-share enthusiasts are the most environmentally motivated (Figure 10).

An absence of ride-hailing is another reason some respondents choose to car-share. Not surprisingly, younger free-floating member respondents have an appetite for ride-sharing: 53% of those aged 19-30 agree that the absence of Uber and Lyft is a reason for them to car-share. This falls to just 18% of respondents aged 51-60. Latent, unmet demand for ride-sharing was 43% across respondents in both Metro Vancouver and Vancouver, but much lower on Vancouver Island (19%) where members are not seeking taxi-like alternatives. This is not to suggest that members will flee car-sharing if ride-hailing eventually arrives in B.C. Expert opinion in the U.S. is that car-sharing is the preferred choice of the cost-conscious, as well as perhaps our inner “control-freak.”²² The U.S. car-sharing market has declined only slightly in tandem with the growth of other forms of on-demand mobility.²³

Other reasons to car-share include saving money (62%), “just in case you need it” (61%) and “safer than transit” (22%). Female respondents were more likely than males to see car-sharing as the safer option (25% versus 18%). Younger and lower income respondents – who typically use transit more and stay out later at night – also see safety as more relevant: 33% of respondents in the lowest income group feel safety is a reason to car-share.

Figure 10: Reasons respondents car-share (agree and mildly agree)

Q: Please indicate your level of agreement with the following reasons you might use car-sharing.



Source: Vancity car-share survey, October 2017

Car-sharing's greatest benefits are intensely personal

The Vancity survey explored what people do and where they go when they get behind the wheel of a car-share vehicle. The benefit of “getting stuff done more efficiently,” including errands, meetings and shopping, is more widely appreciated than being able to meet people (60% compared to 54%) or getting to more places in the city (48%) and outside the city (26%) (Figure 11).

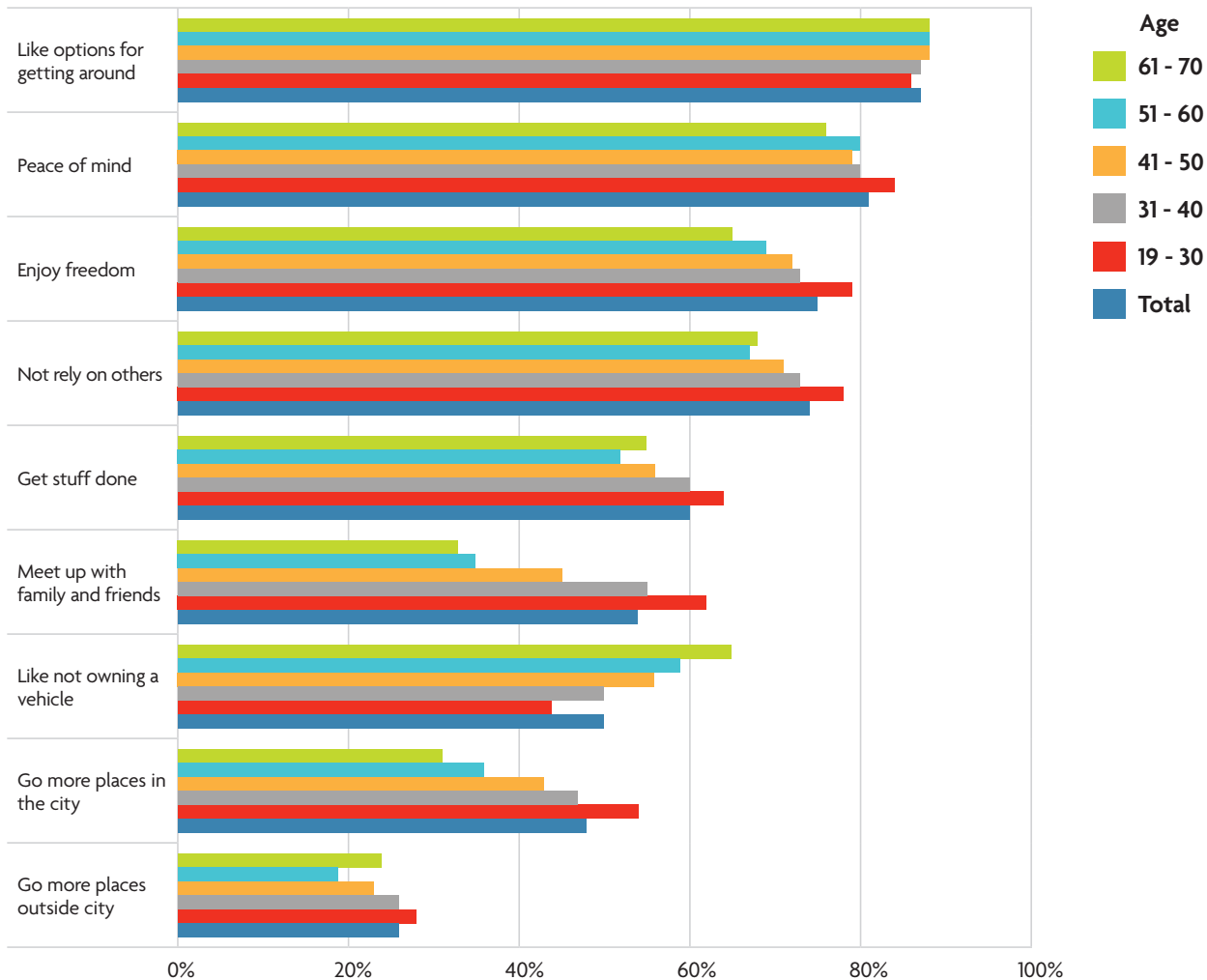
Yet the strongest car-sharing benefits do not actually relate to places where members want to drive. Respondents were far more likely to identify with a host of psychological benefits, including a sense of freedom (75%), not having to rely on others for a ride (74%), peace of mind (81%) and having “options for getting around” (87%).

Myth: Younger drivers don't value car ownership

Only 44% of our youngest respondents agreed that they like not owning a vehicle (Figure 11). This challenges the perception that millennials car-share because they are less attached to the idea of vehicle ownership. A common view has been that millennials are less likely to view cars as an important status symbol or as a measure of success, and, conversely, are more likely to opt for “access over ownership.”²⁴ The reality is, younger car-share respondents are simply less likely to afford to own a vehicle than other age groups (Figure 12).

Figure 11: The benefits of car-sharing (top two box scores)

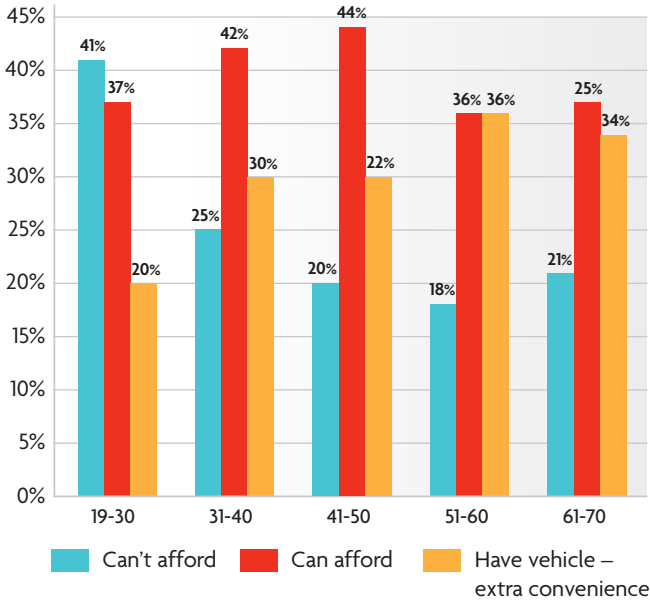
Q: Please tell us whether or not car-sharing benefits you in the following ways (1-5 scale, where 1 = no benefit to 5 = major benefit).



Source: Vancity car-share survey, October 2017

Figure 12: Personal finances by age and the decision to car-share

Q: How does your financial situation fit into your decision to car-share?



Source: Vancity car-share survey, October 2017

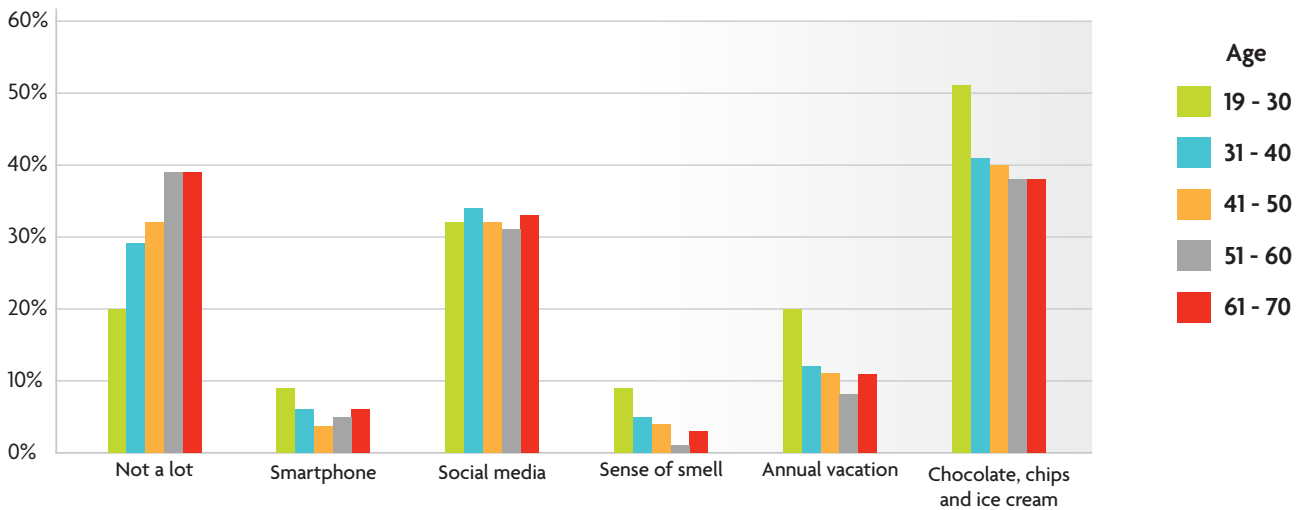
Exploring the ideal of vehicle ownership in non-financial terms, the survey asked respondents what they would be prepared to sacrifice in exchange for an all-expenses paid vehicle for a year. Options ranged from a sacrificing their annual vacation to giving up chocolate and ice cream. Only a small number (20%) of 19-30s answered that they wouldn't sacrifice a lot, because they "don't value vehicle ownership that highly." The youngest respondents were more likely to make just about every sacrifice than older respondents (Figure 13). Perhaps most startling, 9% would even give-up their sense of smell, compared with just 1% of those aged 51-60.

While the results may suggest that younger respondents do prioritize things like technology over vehicle ownership, they also lay to rest the idea that millennial members do not value vehicle ownership. Other research is increasingly showing this to be the case, too.²⁵

Older, two-way respondents on Vancouver Island were most likely to be living the car-free dream (77%) compared with just 45% of respondents in more transit-challenged Metro Vancouver²⁶ (excluding Vancouver).

Figure 13: Sacrifices made for an all-expenses paid vehicle for a year

Q: Now for a little fun. What would you be prepared to sacrifice for 12 months for an all-expenses-paid vehicle of your own for the year?



Source: Vancity car-share survey, October 2017

Car-sharing is a net benefit

Vancity's research adds to growing evidence that car-sharing benefits both users and society, and in numerous ways.

- **The environment:** Car-sharing reduces households' private vehicle holdings through disposal and purchase avoidance. Households disposing of vehicles consolidate trips and drive less,²⁷ and the driving they do in car-share vehicles is usually in more fuel-efficient and "right-sized" vehicles (think less single-occupancy commuting in an SUV). An analysis of Modo's fleet in Metro Vancouver has shown that newer, right-sized car-share vehicles save around 30% of GHG emissions over user-owned vehicles.²⁸
- **Car-sharing strengthens multi-model travel:** Urban planners recognize that more sustainable transportation choices often require multiple modes of transport in a single journey. For example, people grab a bike-share after the SeaBus, and car-share to the train station.
- **Reducing congestion:** Two-way car-sharing reduces vehicle kilometres travelled.²⁹ Less driving means less congestion. Congestion costs our region dearly, and with one million more people living in Metro Vancouver by 2045, business inefficiencies and reduced business activity related to congestion are forecast to double or triple if nothing is done.³⁰
- **Parking efficiency:** Under the right conditions, car-share vehicles leave parking spots more quickly than private vehicles, reducing demand for parking space. This can be used as a mechanism to free up public space and improve urban livability.
- **Individual quality of life:** Car-sharing gives affordable access to vehicle transportation and its less tangible benefits, such as peace of mind, which make living without a vehicle less of a sacrifice.

Concerns are sometimes raised that free-floating car-sharing displaces passengers from transit. Yet the key metric is not displaced transit trips but whether the overall impact of free-floating car-sharing is a net increase or a net reduction in total vehicle kilometres driven. This is also just the tip of a larger threat facing public transit. Other forms of on-demand and autonomous mobility are on their way. In November 2017, for example, Alphabet Inc.'s Waymo announced commercial autonomous vehicle services commencing in 2018 in Arizona,³¹ while Uber agreed to buy 24,000 Volvo autonomous vehicles.³² These vehicles may take longer to reach B.C., but they are likely to come.

Car-sharing is not perfect

Most member frustrations are due to "not enough" car-shares, rather than the nature of the service.

Here's what they said they wanted:

- **Expand free-floating service areas** to Burnaby, Richmond and the rest of Vancouver: "The 'wall' at Boundary Road is annoying."
- **More vehicles.** Finding a free-floating vehicle, especially at peak times in certain neighbourhoods, can be "impossible." Provide more vehicles at transportation hubs.
- **More parking.** Parking can be a deal-maker, but also a deal-breaker: "...it takes so long to find parking it ends up not being cost effective."
- **Kid-friendly.** Solutions are needed for members with small children requiring car seats.
- **Eco-friendly.** Use more hybrid and electric vehicles.

And here's what they don't want:

- **Inaccessible or "hidden" vehicles,** especially in parkades. "It was easier to wait for a bus."
- **Cost increases.** "I do think it's too expensive now." "Easy and fast, but only cheaper than taxi."
- **Dirty vehicles.**

Our autonomous future

Experts see the convergence of three major trends in mobility – autonomous vehicles, ride sharing and electric vehicles – providing cities with cheaper, cleaner and ultra-convenient transportation.³³ Shared autonomous electric vehicles will become standard. It appears that car-sharing, together with taxis, ride-hailing, peer-to-peer car-sharing and rental cars, may eventually become part of one super convenient, undifferentiated fleet of shared autonomous electric vehicles for hire.

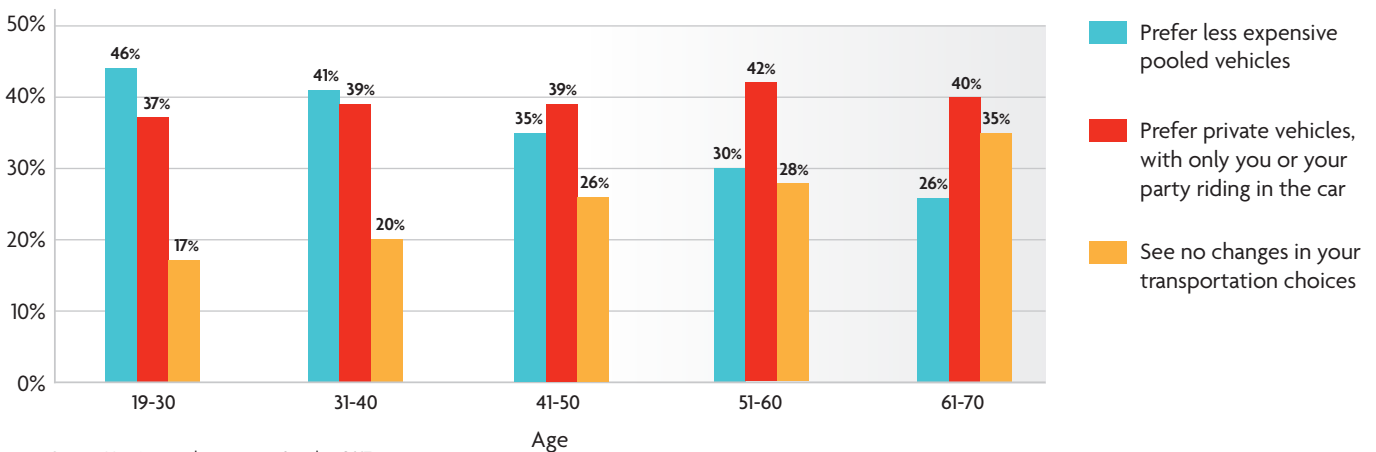
But unless we share these autonomous electric vehicles, the future doesn't look quite so rosy. The Boston Consulting Group predicts that up to 20% of public transit miles will shift to shared autonomous electric

vehicles in Chicago. Congestion may worsen with empty vehicles roaming the streets, and there will be little incentive to cut distances travelled when people ride door-to-door cheaply and in comfort. Related potential downsides to autonomous vehicles include urban sprawl, loss of public spaces and fewer transit options for the poor.³⁴

The Vancity survey asked respondents how they think their mobility choices will be affected by the arrival of shared autonomous electric vehicles. Older people who are already reluctant to relinquish their private vehicles are least likely to consider pooled shared autonomous electric vehicles.³⁵

Figure 14: Will car-sharers prefer shared or private driverless vehicles?

Q: It is predicted by some that the future of personal mobility is very closely tied to driverless vehicles. In the future, these vehicles will come to you and drop you off at your destination. You will have the option of sharing the ride (like 'carpooling') so others get on and off during your trip, or you can pay more and be the only rider. Would you:



Source: Vancity car-share survey, October 2017

Recommendations

Car-sharing is our region's first experience with shared, on-demand mobility. To date, the experience has been positive. The further growth of shared use vehicles is vital to our communities, our economy and the environment. To encourage wider and more beneficial car-sharing practices, the following should be considered:

Governments

- Municipalities should act on the recommendation for further research made in the 2014 Metro Vancouver Car Share Study.³⁶
- More research from objective parties such as governments is needed to determine the extent to which car-sharing is “net green” and reduces overall vehicle kilometres travelled.
- Municipalities should work with car-share providers on opportunities for fleet electrification.³⁷
- Do not unnecessarily restrict potential users of a car-share vehicle by limiting access and parking. Local governments should pilot test a scheme giving car-share vehicles the right to park at meters and time-limited parking zones. If successful, explain to the public why car-sharing should be granted privileged parking access, and the value gained by allocating public parking spaces downtown.
- Municipal governments should work with planners and developers to facilitate community-centric (not building-centric) car-sharing stations.

Car-share providers

- Car-share companies should test consumer appetite for increasing the occupancy of car-share vehicles (that is, like Uber Pool).
- Be creative when testing different car-share models and share results with local governments.
- Continue to improve fleet inventory and offer model options to suit different needs.

Developers

- Developers should consult with experienced players for advice on parking relaxation variances offered by municipalities, ideal stall locations and size, vehicle visibility and security issues.
- Industry experts should determine where car-sharing is a good fit and how many vehicles a particular development can support.
- Marketing should be done to sell car-share opportunities with condos.

Drivers

- Consider giving up a vehicle you don't often use. Fewer cars helps the environment and you'll save money by car-sharing.
- Join more than one car-share service. Having the option to use either a free-floating or two-way service will provide more opportunities to car-share, and will make the experience more convenient.
- Combine your car-share use with public transit.

Methodology

Vancity conducted an online survey of 4,050 British Columbian car-share members between October 5 and 22, 2017 (margin of error $\pm 2\%$). Survey participants were recruited via car-share services' monthly newsletters, an in-app notification tool and social media. A prize draw for car-share credits was offered as an incentive to participate.

As with any research where respondents self-select to complete an optional survey, the results will not be representative of the car-share member population as a whole. Our respondents are likely to be more active and involved than the wider population.

Primary and secondary research for this report were conducted by Erica Evans, PhD, of Leap Research, with expertise and advice from Professor Hadi Dowlatabadi of the Institute for Resources, Environment and Sustainability at the University of British Columbia, and with guidance and operational support from Modo, Evo and car2go. Neither Vancity nor Leap Research is responsible for the accuracy of secondary research contained within this report.

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