Trails Manitoba
Sentiers Manitoba

2020 E-Bike Survey

Perspectives of Trail Users on E-bikes

Photo credit: David Ristau

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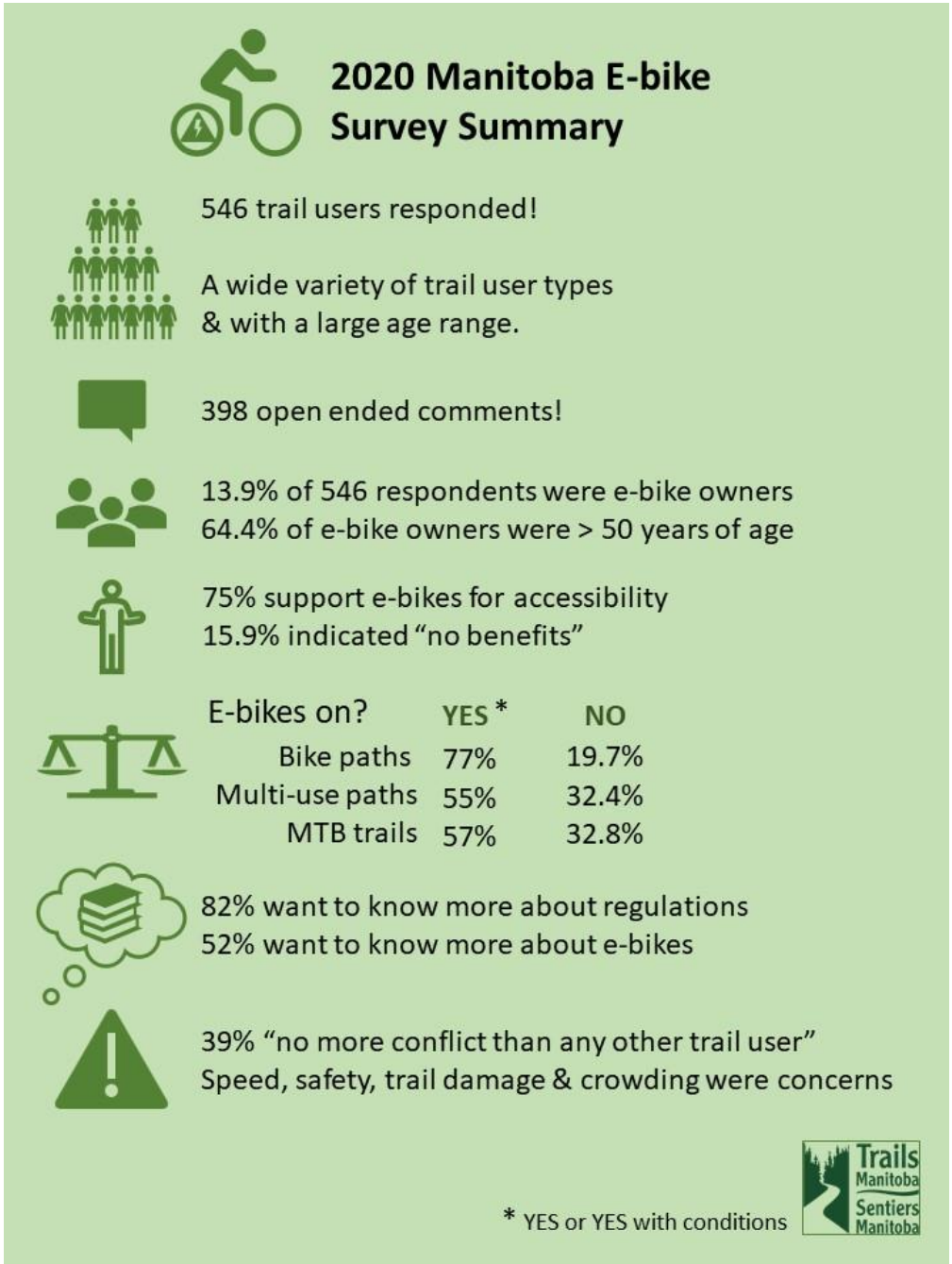
PURPOSE

This survey was designed to gain an understanding of the current perspectives of Manitoba trail users regarding electric motor assisted bikes (e-bikes).



BACKGROUND

There has been significant growth in the e-bike sector, especially during the pandemic, with sales increases reported up to 300% (year over year). Almost all major manufacturers of bikes offer e-bike designs for city, trail, and off-road. Design types of e-bikes available in Canada include foldable, tandem, trike, recumbent bike and trike, retro or "mini-bike" style, child cargo, trolly cargo, fat, and fat trike (See Appendix 1). The major manufacturers are catering to new markets of e-bike users by offering convenience, speed, greater distance, and more fun. These e-bike designs are also being joined by a fleet of other electric assist "wheeled vehicles" including scooters, kick bikes (scooters), skateboards, unicycles, hoverboards and even snow bikes with ski and tread.

There are a number of attractors to e-bikes. First, there is no doubt that e-bikes offer improved accessibility to cycling activities for people with different physical abilities. Second, if users are shifting from gas operated vehicles to electric, there would be a shift toward improved environmental sustainability. Third, there is an increased interest, especially during the pandemic, toward the use of commuter vehicles other than cars. Finally, the current and ever-expanding diversity of e-bikes offerings provides for added growth through catering to a wider variety of interests.

CLASSIFICATIONS AND REGULATIONS

The Canadian federal classification system under the Motor Vehicle Safety Regulations (C.R.C., c. 1038) defines e-bikes as distinct from mopeds (gas or electric) and motorbikes. They use the term power assisted bicycle. Below is an extract of the Canadian Motor Vehicle Safety Regulations (C.R.C., c. 1038) which describes the characteristics of a power assisted bicycle.

Power-assisted bicycle means a vehicle that:

- **(a)** has steering handlebars and is equipped with pedals,
- **(b)** is designed to travel on not more than three wheels in contact with the ground,
- **(c)** is capable of being propelled by muscular power,
- **(d)** has one or more electric motors that have, singly or in combination, the following characteristics:
    - **(i)** it has a total continuous power output rating, measured at the shaft of each motor, of 500 W or less,
    - **(ii)** if it is engaged by the use of muscular power, power assistance immediately ceases when the muscular power ceases,
    - **(iii)** if it is engaged by the use of an accelerator controller, power assistance immediately ceases when the brakes are applied, and
    - **(iv)** it is incapable of providing further assistance when the bicycle attains a speed of 32 km/h on level ground,
- **(e)** bears a label that is permanently affixed by the manufacturer and appears in a conspicuous location stating, in both official languages, that the vehicle is a power-assisted bicycle as defined in this subsection, and
- **(f)** has one of the following safety features,
    - **(i)** an enabling mechanism to turn the electric motor on and off that is separate from the accelerator controller and fitted in such a manner that it is operable by the driver, or
    - **(ii)** a mechanism that prevents the motor from being engaged before the bicycle attains a speed of 3 km/h; (*bicyclette assistée*)

Despite these federal safety regulations, each province has regulatory authority over the use of power assisted vehicles like e-bikes through provincial acts. In Manitoba, these acts would include the Highway Traffic Act, the Off-Road Vehicles Act, and the Provincial Parks Act. As such, each province has different classifications and regulations regarding e-bikes.

MANITOBA CLASSIFICATION IN THE HIGHWAY TRAFFIC ACT

In Manitoba, the Highway Traffic Act (C.C.S.M c. H60) includes three relevant definitions, as follows:

Power assisted bicycles; defines power assisted bicycles (e-bikes) by the following:

- Can be two or three wheeled, must have handlebars, and one must be able to move the bike by the act of pedalling.
- Only electric motors (no gas), capable of supplying a maximum of 500W power to the drivetrain.
- Cannot exceed a speed of 32 km/hr using only electric power.
- Must be 14 years of age or older to operate (no children 13 and under).
- All users of e-bikes must wear a helmet, independent of other helmet laws.
- E-bikes are not allowed on sidewalks except where it is clearly marked as a bike lane.

Electric motor assisted mobility devices (which must be limited to 15 km/hr): includes electric 4-wheel scooters (distinct from 2-wheel scooters), electric assisted wheelchairs, and other related devices. These mobility assist devices are classified under the highway traffic act as "pedestrians", allowing use on sidewalks.

Mopeds: gas or electric power assisted devices with specific design features and requirements, that must be limited to 50 km/hr.

Characteristics of Survey and Respondents

The e-bike survey was launched on November 9, 2020 and the survey data was downloaded on November 19, 2020 at 6 pm with 546 responses. The link to this anonymous survey was distributed via the Trails Manitoba email list, through a link on the Trails Manitoba Facebook page, as well as on Instagram feeds. The e-bike survey consisted of 17 questions, with five of the questions related to demographics of the respondents.

Sex and Age of Respondents

The respondents were 50.5% female, 45.1% male, and 4.4% preferred not to answer.

The sample included very good representation of all age categories above 18 years of age. Table 1 shows the age distribution of the respondents. Due to the survey distribution method, this survey under-represented the voice of children and youth. Future surveys should collect information regarding a child's view of e-bikes and other electric motor assist devices.

TABLE 1 THE NUMBER AND PERCENTAGE OF RESPONDENTS IN EACH AGE CATEGORY.

Age Category	Counts	% of Total
18 and under	3	0.5 %
19-29	64	11.7 %
30-39	118	21.6 %
40-49	141	25.8 %
50-59	103	18.9 %
60 and over	117	21.4 %

Recreational Activities of Respondents in Summer and Winter

In two separate questions, the respondents reported all the trail activities that they participated in during winter and summer. The distribution of activities shown in Table 2 and 3 reveals **a large diversity of trail user types in this survey**.

TABLE 2 THE PERCENTAGE OF RESPONDENTS REPORTING PARTICIPATION IN THE SPECIFIC ACTIVITY DURING SUMMER.

Activity	Summer
Walk/Hike	93.3
Bicycle	69.7
Run	30.5
E-bike	12.1
Other Activities (<5%)	Inline>Skateboard> Equestrian> Scooter> Roller skis

TABLE 3 THE PERCENTAGE OF RESPONDENTS REPORTING PARTICIPATION IN THE SPECIFIC ACTIVITY DURING WINTER.

Activity	Winter
Walk/Hike	87.5
Snow Shoe	48.9
X-ski	45.6
Bicycle	28.0
Run	19.6
Skate	13.3
E-bike	4.4
Other Activities (<5%)	Skijoring > Equestrian> Fat Bike

E-BIKE OWNERSHIP

13.9% of the respondents reported owning an e-bike. We did not ask if the participants had experience riding an e-bike or any other electric power assist recreational device.

Figure 1 exhibits a clear pattern of increased ownership with increased age (by total numbers and by proportion), and roughly equal ownership between males (18.9%, 39 of 206) and females (14.1%, 34 of 240). 25.6% of the respondents over the age of 60, reporting owning a e-bike.

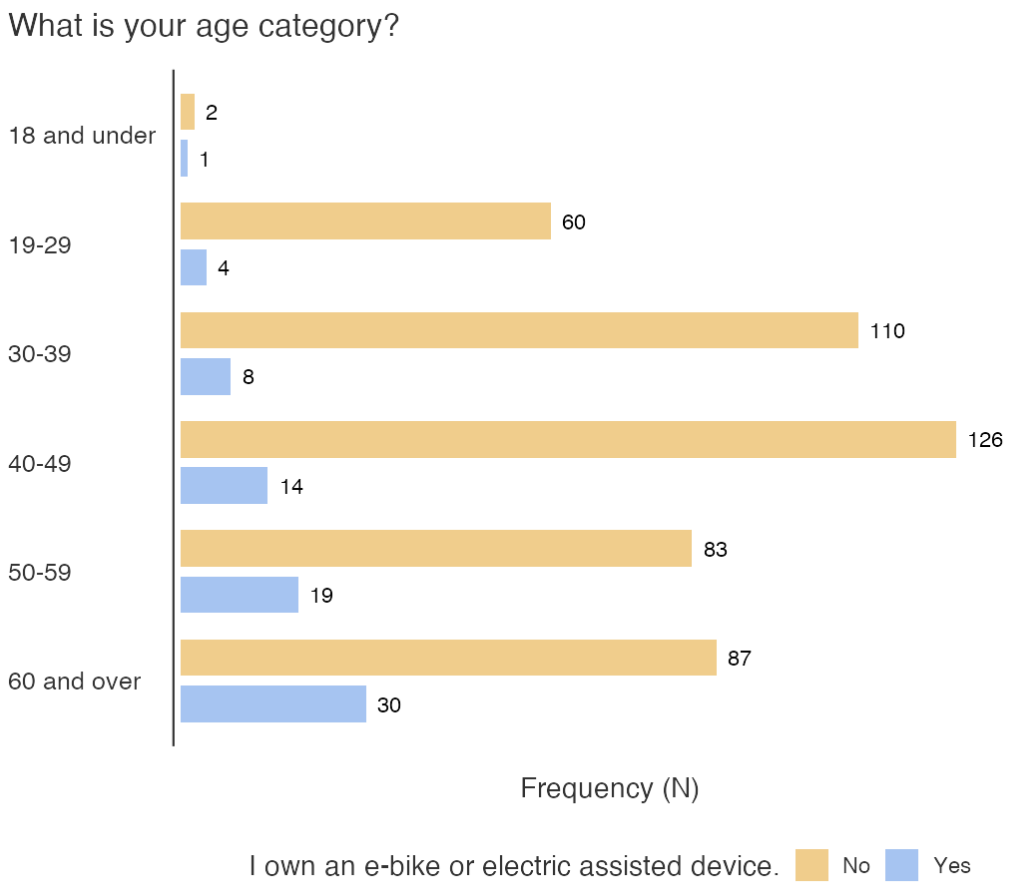


FIGURE 1. AGE DISTRIBUTION OF OWNERSHIP OF E-BIKES.

KNOWLEDGE RELATED TO E-BIKES

KNOWLEDGE OF TYPES OF E-BIKES AND OTHER ELECTRIC ASSISTED RECREATIONAL DEVICES

The respondents reported their knowledge of e-bikes and other electric assisted recreational devices on a 5-point scale (1- Very Poor to 5- Very Good). Figure 2 reports the number and percentage of respondents for each knowledge category. 48.2% reported good to very good knowledge (categories 4 and 5) with the remainder indicating a substantial gap in knowledge of electric motor assist recreational devices.

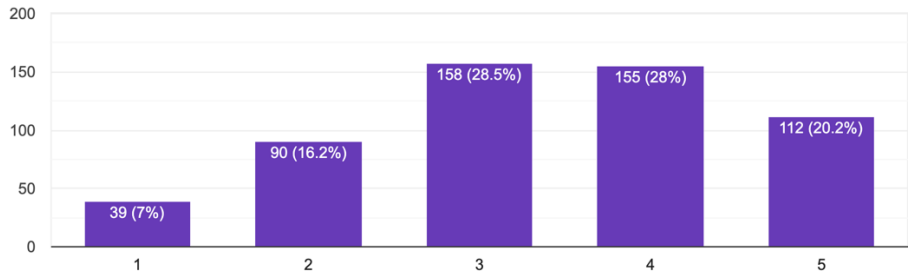


FIGURE 2. NUMBER OF RESPONDENTS (VERTICAL AXIS) REPORTING THEIR LEVEL OF KNOWLEDGE RELATED TO E-BIKES (1 – VERY POOR TO 5- VERY GOOD).

KNOWLEDGE OF LEGISLATION REGARDING E-BIKES

When we asked about the knowledge (1- Very Poor to 5- Very Good) of legislation, the respondents clearly indicated a lower level of understanding relative to their general knowledge related to e-bikes. In Figure 3, there is a clear shift to the left relative to the data shown in Figure 2, with the majority of respondents reporting lower levels of knowledge.

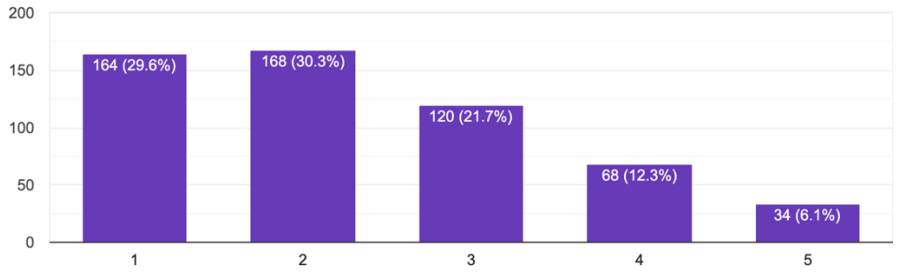


FIGURE 3. NUMBER OF RESPONDENTS (VERTICAL AXIS) REPORTING THEIR LEVEL OF KNOWLEDGE RELATED TO E-BIKE LEGISLATION (1 – VERY POOR TO 5- VERY GOOD).

E-BIKE FAQ

Consistent with the previous questions, the respondents favoured the notion of having an e-bike information document (FAQ) with the majority (54.8%) indicating that it would be useful.

BENEFITS OF E-BIKES

The respondents were asked about the perceived benefits of e-bikes with 4 "prepared" answers (listed below). The respondents were allowed to check ALL that applied.

- 74.9% indicated "Increased accessibility / allow individuals to overcome physical limitations"
- 63% indicated "Allow users of different ability levels to participate together"
- 46.4% responded "Allow users to go farther and to explore more trail"
- 15.9% indicated "no benefits"

By and large, the vast majority of respondents identified that there are benefits of e-bikes.

Adobe stock photo.

Potential Issues Related to E-bike Use Identified By Respondents

Potential Concerns

Respondents identified all foreseeable concerns related to e-bikes use on recreational trails. 22.4% of the respondents indicated “no concerns”.

The following seven categories of concerns were identified (descending order)

1. Speed (63.8%)
2. Safety to others (60.5%)
3. Conflict with other users (47.5%)
4. Trail damage (39.6%)
5. Noise (25.6%)
6. Trail crowding (25.1%)
7. Environmentally unfriendly (11.5%)

Potential Conflicts

A section was provided where respondents could identify potential conflicts with e-bike users. 39% indicated “no more conflict than any other conveyance”.

The following eight groups were identified as having potential conflicts (descending order).

1.	Walkers/hikers	54.4%
2.	Runners	42.8%
3.	Pedestrians	37.1%
4.	Other bikers	35.3%
5.	Equestrian	30.0%
6.	Wheelchair or mobility device	25.9%
7.	Motorists	5.3%
8.	ATV or snowmobiles	7.2%

E-BIKE USE ON TRAILS AND PATHWAYS

ON BICYCLE PATHWAYS

We asked a question related to use of e-bikes on bicycle pathways "Do you think e-bikes should be allowed on recreational trails designated specifically for bicycle traffic?".

40.3% of the respondents indicated YES that e-bikes should be permitted on bicycle specific pathways. A further 36.9% indicated YES with conditions or specific trails, with 19.7% NO, and a small portion reported they were undecided. The vast majority revealed a positive response (YES or YES with conditions) to e-bike use on designated bicycle trails or pathways. Figure 4 shows the responses separated based upon e-bike ownership.

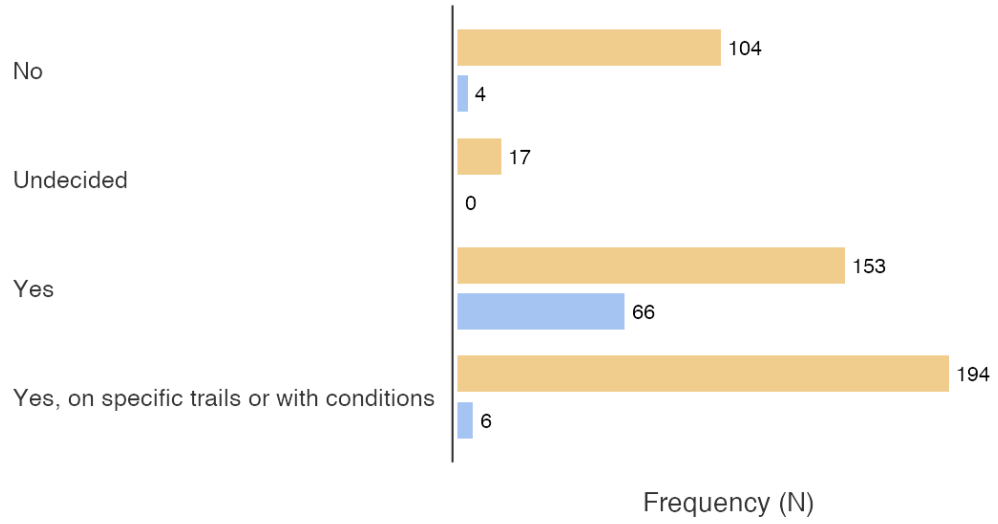


FIGURE 4. THE DISTRIBUTION OF RESPONSES TO "DO YOU THINK E-BIKES SHOULD BE ALLOWED ON RECREATIONAL TRAILS DESIGNATED SPECIFICALLY FOR BICYCLE TRAFFIC?" SEPARATED BY E-BIKE OWNERSHIP. BLUE BARS = E-BKE OWNERS.

On Multi-use Trails

We asked if e-bikes should be allowed on trails designated for multi-use. 34.2% of the respondents reported YES, with 28.4% for YES with conditions or on specific trails, 32.4% NO, and a small percentage of "undecided". We also allowed for open ended responses, we received 6.

Clearly, the two YES categories predominate with 62.6% of the respondents. However, there is a substantial number in the NO category (32.4%).

On Mountain Bike Courses

We asked if e-bikes should be allowed on trails specifically designated for mountain bike use; YES (28.4%), YES with conditions (20.8%), NO (32.8%) but with a substantial number in the undecided category (15.8%).

Open Ended Commentary

We provided two sections to allow for general commentary. The first section asked for general thoughts related to sharing trails with e-bikes. The second section asked for personal experiences (both positive and negative) with e-bikes.

We were pleasantly surprised at the very high response rate (253 for the first section (46%), and 145 in the second section (26.5%).

The over-whelming majority of these provide thoughtfully crafted concerns, perceptions and experiences regarding e-bikes.

CONCLUSION

This survey has provided useful information regarding trail user perspectives on e-bikes.

We observed that nearly 14% of the respondents were e-bike owners, and that the majority of owners were over 50 years of age. The vast majority of respondents identified that e-bikes are beneficial to allow people of different levels of ability to participate on trails, and for people of different levels of ability to participate together.

The results of the survey reveal a need for the creation of information on electric assist devices in general, as well as classification and regulation. Some of the concerns and potential areas of conflict identified by the trail users could be aided with the availability of additional educational materials. Further, the commentary provided by the respondents clearly points to the need for a province wide trail etiquette campaign that would help to combat all forms of conflict between different types of trail users.

The majority of trail users supported access to trails for e-bikes with and without conditions. However, there was a significant number of respondents that stated that e-bikes do not have benefits (15.9%), and do not have a place on various trails (19.7 to 32.8%).

This survey and our investigations into e-bikes allows us to keep abreast of this ever-changing sector, and to provide informed advice related to the creation of rationale classification systems, educational materials and campaigns, and finally regulations related to the use of electric assist devices on recreational trails. E-bikes and related products are on a rapid growth phase, and the regulation and use of these in urban, park and other settings needs to be carefully considered.

THE WAY FORWARD

We are in the process of summarizing the open-ended commentary from the e-bike survey, and we will generate a complementary report upon completion.

We have started to create an e-bike and related device informational resource.

We have started communication with trail groups from other provinces in relation to e-bikes.

A global review of current classifications and regulations regarding e-bikes and other electric motor assisted devices is underway.

A systematic review of scientific literature related to e-bike use is underway in cooperation with faculty from the University of Manitoba.

A study of e-bikes in relation to accessibility and physical literacy enriched environmental design has commenced in cooperation with faculty and students from the University of Manitoba and the University of Northern British Columbia.

APPENDIX 1 – EXAMPLES OF E-BIKE AND RELATED DEVICES

Specialized

https://www.specialized.com/ca/en/shop/bikes/turbo-e-bikes-its-you-only-faster/c/ebikes

Giant

https://www.giant-bicycles.com/ca/bikes/electric-bikes

ENVO

https://envodrive.com/product/envo-d35-2020/

Shimano e-bike systems

https://www.shimano-steps.com/e-bikes/europe/en

Adult Electric Scooters

https://www.kickbikeus.com/product/ecruise-ultimate-electric-scooter/

Retro e-bikes

https://super73.com/

https://radpowerbikes.ca/