Battery-Powered Micro-Mobility Among Canadian Health Care Workers

From May to October 2023, the Canadian Coalition for Green Health Care (Coalition) conducted an online national survey to better understand the knowledge level and usage characteristics of battery-powered micro-mobility(BPMM) users among health care personnel. The survey was open to all Canadian health care personnel, not just those that use BPMM devices. This fact sheet provides an overview of the survey results and shares interesting insights derived from survey responses.

Demographics

The survey received 157 responses from across Canada, with the highest response rates being from Ontario (50%) and Quebec (33%) (Figure 1). We attribute this to the high number of Coalition stakeholder contacts in the Ontario and the exceptional work done by our partner, Synergie Sante Environnement, to solicit responses in Quebec. We received responses from a very diverse age range of participants: the most common age range being 46-55 (30%) followed closely by 36-45 (27%) and 26-35 (20%) (Figure 2).

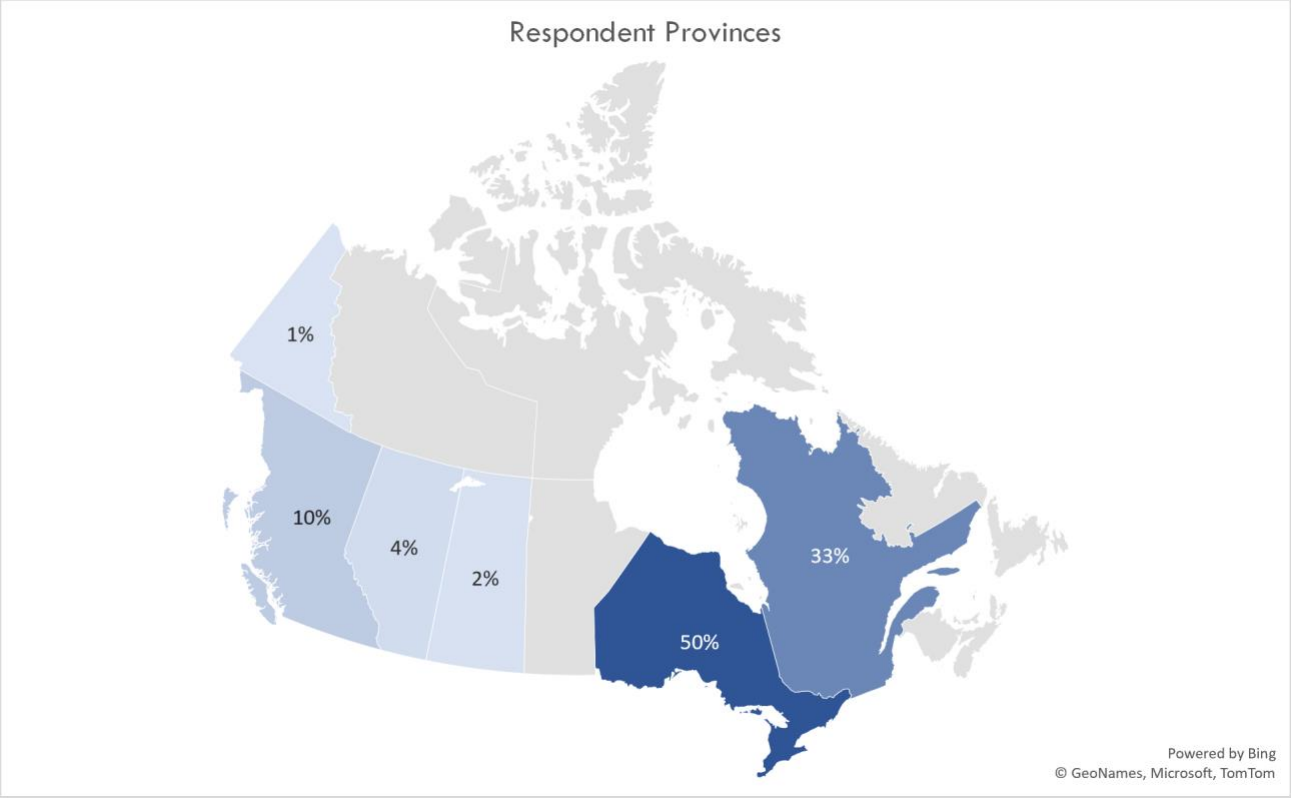

Figure 1. BPMM survey responses by province.

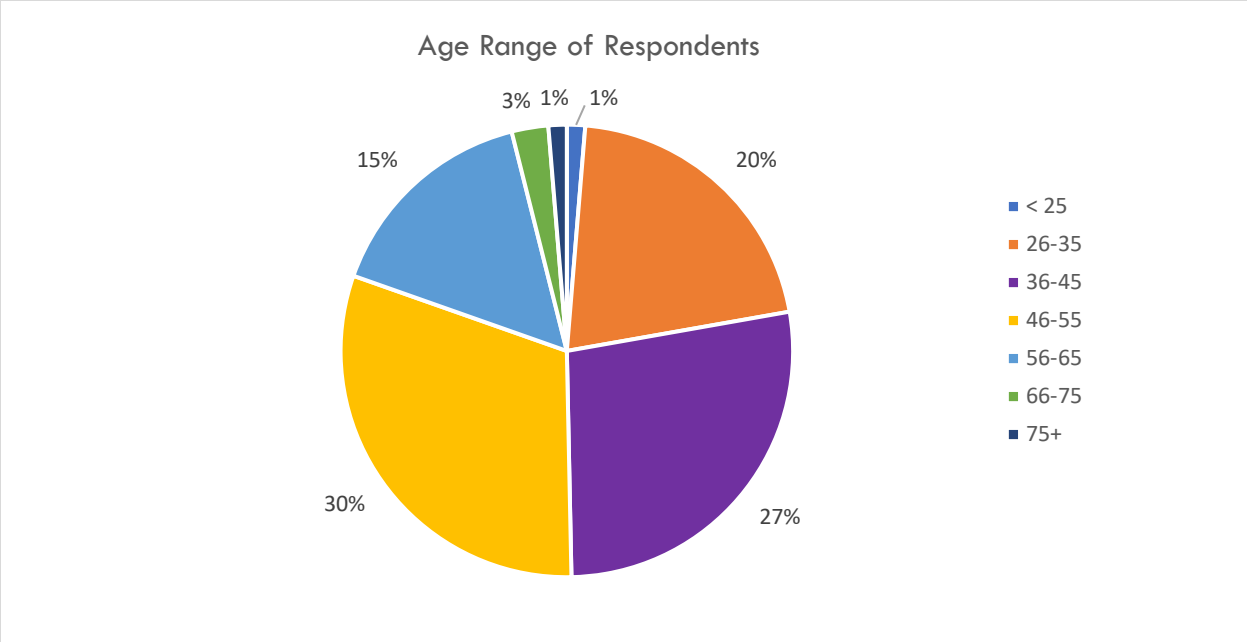

Figure 2. Age of BPMM survey respondents.

The most common workplace of respondents was hospitals (64%) (Figure 3). The professions of those working in hospitals varied significantly. Survey responses were submitted by nurses, medical students, pharmacists, physicians, physiotherapists, CEOs, Environmental Coordinators, Laboratory Technologists and more.

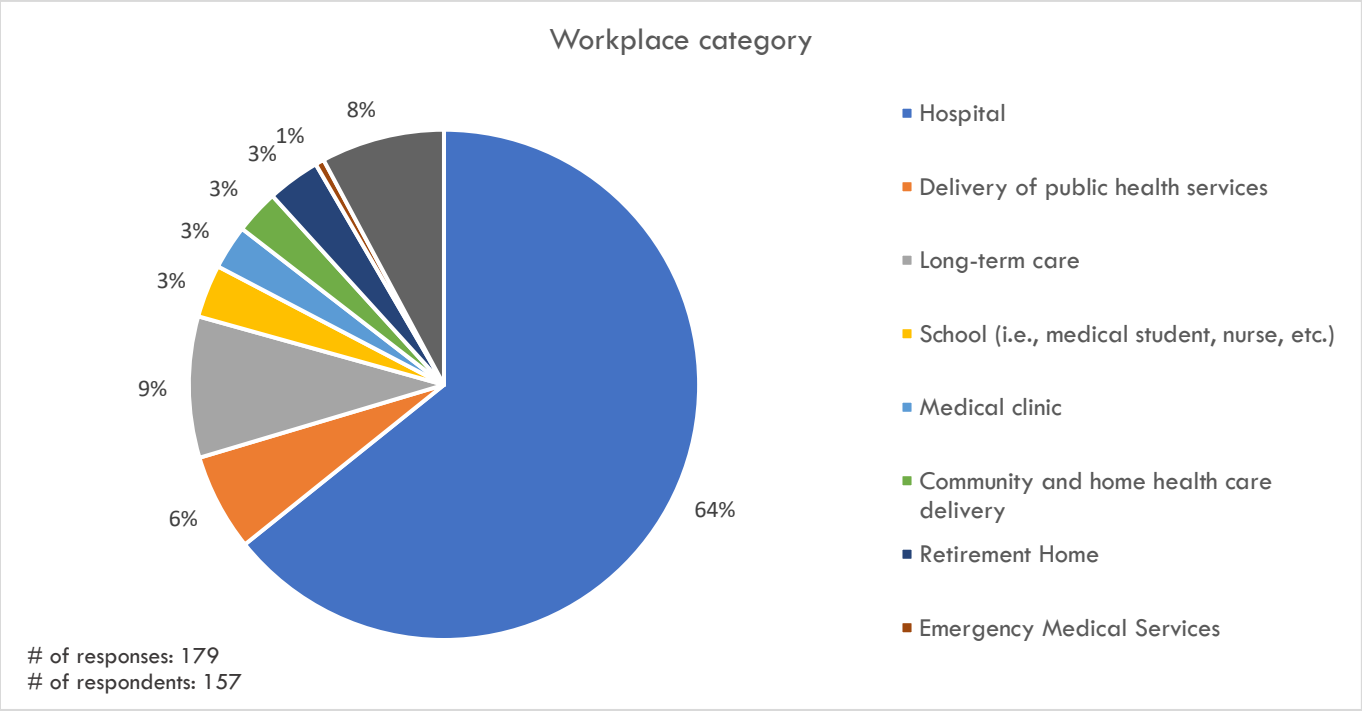

Figure 3. Work place of survey respondents.

Knowledge of BPMM

In order to assess the knowledge of survey respondents on the topic of BPMM we asked respondents to rate their level of understanding of BPMM solutions. Very few claimed to be experts (6%) but 55% of respondents claimed they were either a novice or had some knowledge of BPMM (Figure 4).

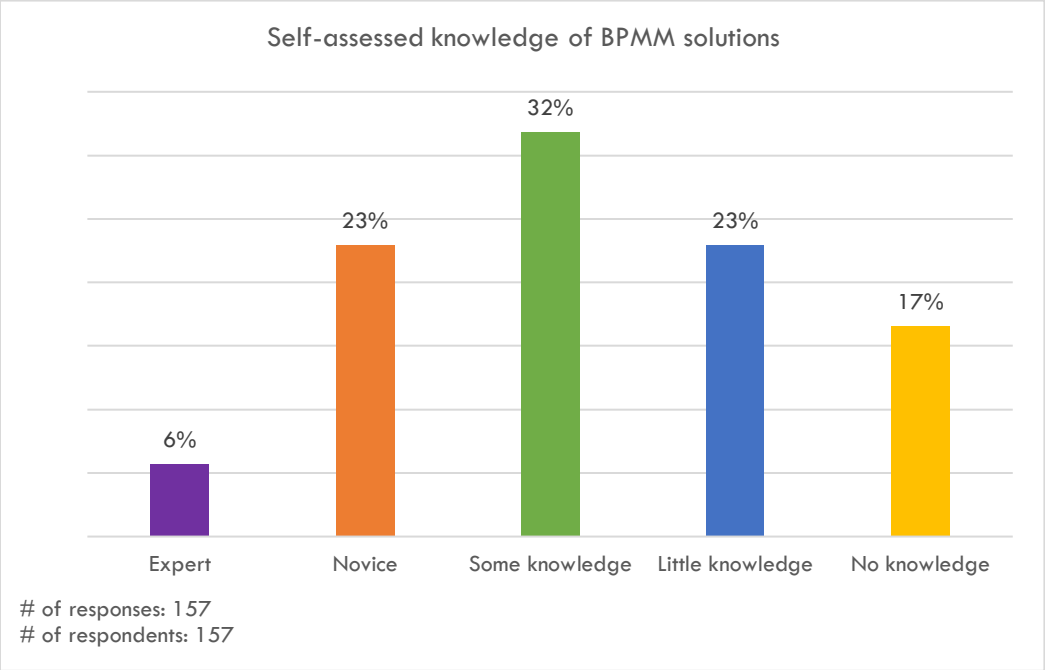

Figure 4: Respondents self-assessed knowledge of BPMM solutions.

General Understanding of BPMM Solutions

Respondents were asked to write a response to the open-ended question, “What is your understanding of BPMM solutions?” Common responses were grouped into the following categories and are organized from highest to lowest number of responses.

Environmental Benefits: Many respondents recognize the environmental advantages of BPMM, particularly in terms of reducing emissions and being eco-friendly.

Commuting and Transportation Alternatives: A significant number of responses focus on BPMM as a commuting option, emphasizing their role in reducing reliance on cars, offering 'last-mile' solutions, and being suitable for short distances.

Personal Experience and Usage: Several respondents shared their personal experiences with BPMM, such as using e-bikes for commuting or being aware of rental services.

Legal and Regulatory Awareness: Some responses reflect awareness (or lack thereof) of the legal status and regulatory aspects of BPMM in different regions, such as the mention of e-scooters being illegal in Toronto.

Health and Active Living: A few responses link BPMM to promoting active living, though there's a recognition that some devices like e-scooters require less physical effort compared to traditional bikes.

Infrastructure and Safety Concerns: There are mentions of the need for safe infrastructure (i.e., bike lanes) and concerns about the safety of BPMM devices.

Technology and Innovation: Some responses show an understanding of the technology behind BPMM, including battery life and electric motors, and view BPMM as part of emerging trends in transportation.

Cost and Accessibility: Issues of cost, both in terms of affordability and as a cost-effective transportation method, are noted. There's also a hint at social benefits, such as BPMM being accessible to those who can't drive.

Skepticism or Lack of Knowledge: A few responses indicate either skepticism about the practicality and effectiveness of BPMM or a lack of knowledge about these solutions.

Diversity of Devices: There's an acknowledgment of the variety of BPMM devices available, from e-bikes and scooters to more innovative forms like electric skateboards.

These themes reflect a range of perceptions and understandings of BPMM, from highly informed and positive views to concerns about safety, legality, and infrastructure.

Perceived Health Benefits of BPMM Solutions

Respondents were asked to write a response to the open-ended question, "What do you know about the health benefits of BPMM devices?" Common responses were grouped into the following categories and are organized from highest to lowest number of responses.

Physical Activity and Exercise: A common theme is the recognition that BPMM solutions such as e-bikes still involve physical activity, offering health benefits of exercise, albeit less intense than traditional cycling.

Accessibility and Mobility: Many responses highlight the accessibility benefits of BPMM, especially for individuals who may have difficulty with standard bikes due to physical limitations or age.

Mental Health and Well-Being: Several respondents note the mental health benefits of being outdoors and active, including stress reduction and enjoying fresh air.

Balance and Low-Impact Exercise: Some responses suggest that using scooters can improve balance, and e-bikes provide a form of low-impact exercise suitable for a broader range of people.

Concerns about Safety and Infrastructure: A few responses raise concerns about safety, especially when using BPMM in high-density areas or places lacking proper infrastructure.

Skepticism or Limited Knowledge: Some respondents express skepticism about the health benefits of BPMM or admit to having limited knowledge about them.

Comparative Health Benefits: Comparisons are made between BPMM and other modes of transportation, with some noting that while BPMM may offer less exercise than traditional bikes, they are healthier than passive modes of transport like driving or taking the bus.

Health System Benefits: A few responses touch on the broader health system benefits, such as reduced health care costs due to improved population health from less pollution and more active lifestyles.

Social and Community Health: There's an understanding that BPMM can contribute to social health by improving accessibility and encouraging community engagement.

These themes show a range of understandings and perceptions about the health benefits of BPMM, from recognizing their role in promoting physical activity to concerns about safety and infrastructure.

Perceived Environmental Benefits of BPMM Solutions

Respondents were asked to write a response to the open-ended question, "What do you know about the environmental benefits of BPMM devices?" Common responses were grouped into the following categories and are organized from highest to lowest number of responses.

Emission Reduction: A prevalent theme is the recognition of BPMM as zero or low-emission alternatives to traditional fossil fuel-based transportation, contributing to reduced air pollution and greenhouse gas emissions.

Energy Efficiency: Many responses highlight BPMM's efficiency and lower environmental impact compared to cars, even when considering the electricity used for charging.

Reducing Road Congestion: Several respondents note that BPMM can reduce traffic congestion, which indirectly benefits the environment by decreasing emissions from idling/operating vehicles.

Positive Impact on Air Quality: There's an understanding that BPMM leads to cleaner air, which is beneficial for both environmental and public health.

Resource Use and Sustainability: Some responses point to concerns about the resources used in battery production and the need for sustainable practices in the lifecycle of BPMM.

Increased Environmental Awareness: BPMM is seen as a way to increase environmental consciousness and promote more eco-friendly modes of transportation.

Limited Knowledge or Skepticism: A few respondents express limited knowledge or skepticism about the extent of environmental benefits, particularly questioning the source of electricity for charging and the negative impact of battery production.

Health and Environmental Co-Benefits: A few responses link the health benefits of BPMM (i.e., increased physical activity) with environmental benefits, seeing them as interrelated, as well as the potential for reduced carbon emissions and air pollution contributing to better public health.

These themes reflect a general understanding among respondents that BPMM solutions offer significant environmental benefits, particularly in terms of reducing emissions and providing a more sustainable alternative to traditional transportation methods.

BPMM Ownership Among Respondents

From the 157 survey respondents, 24% said they owned a BPMM device (Figure 5), with 16% claiming to own an e-bike and 8% owning an e-scooter.

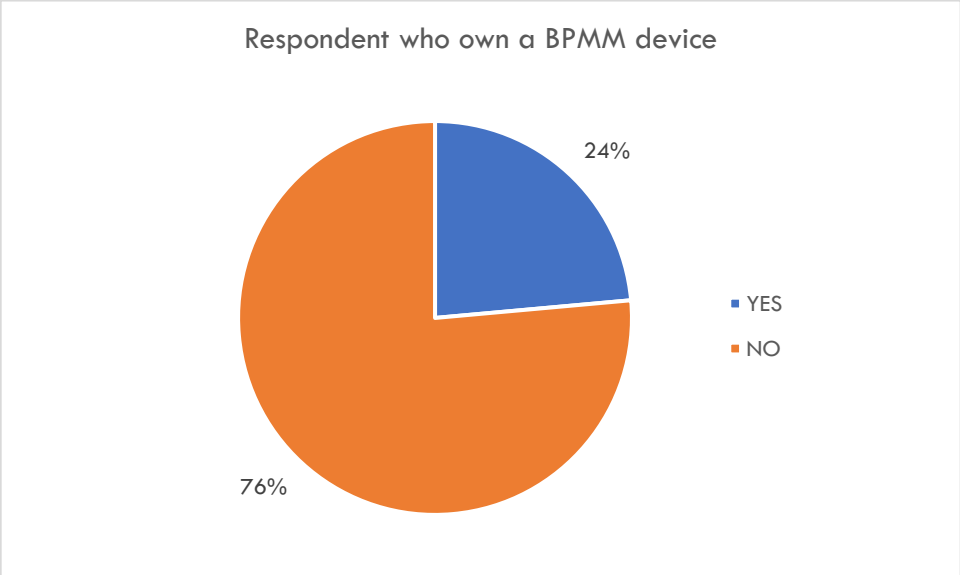

Figure 5. Respondents who own a BPMM device.

Those who own a BPMM device were asked how they use that device. Respondents to this question were able to choose multiple options and the majority of responses showed owners use their devices for both leisure (40%) and commuting purposes (46%)(Figure 6).

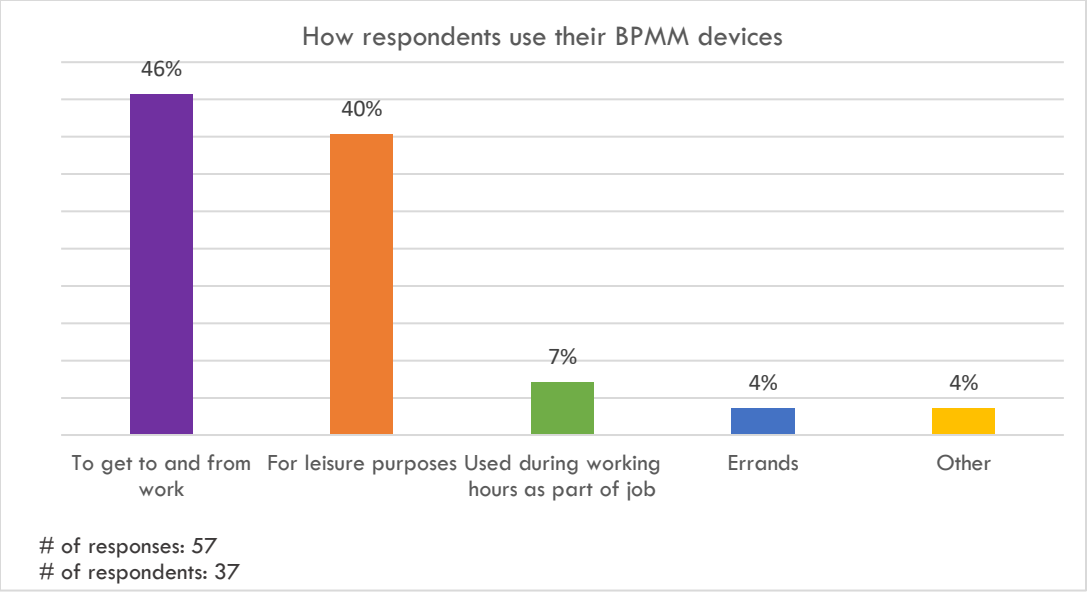

Figure 6. How respondents use their BPMM device.

Survey respondents were also asked to submit perceived benefits and drawbacks of owning a BPMM device. The most common perceived benefits included environmentally friendly (22%) and cost saving (19%) when compared to owning a car. Mentioned savings included no need to pay for parking, gas and insurance (Figure 7). Two other common benefits included health positivity (10%) and ease of travel/commute (10%), particularly for the elderly and those with health/mobility limitations. The 'other' benefits included perceived quietness, encouragement of non-car infrastructure, and easy to learn to use.

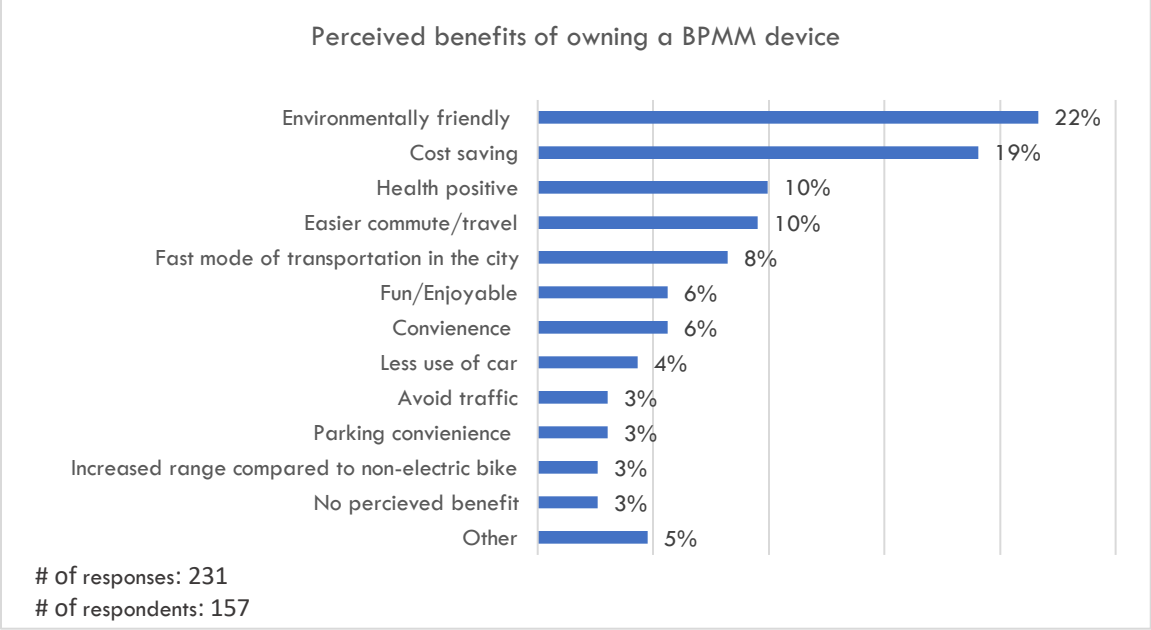

Figure 7. Respondents perceived benefits of owning a BPMM device.

The most common perceived drawback was safety and the potential for injury to riders and pedestrians (22%) (Figure 8). Safety concerns included lack of helmet use and training, people not abiding by rules and regulations (i.e., riding on sidewalks), and fear of encounters with cars due to absence of bike lanes. Lack of infrastructure such as bike lanes, storage and charging option was the second most common drawback (19%), followed by initial costs and cost of repairs.

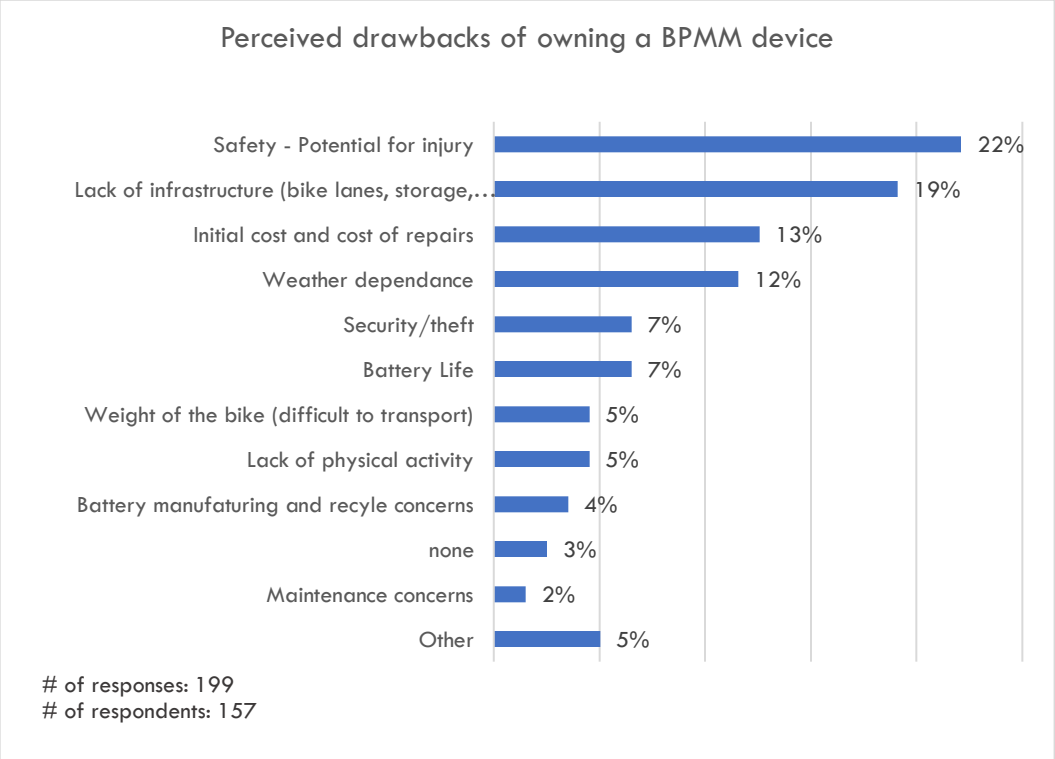

Figure 8. Respondents perceived drawbacks of owning a BPMM device.

The survey asked both BPMM owners and non-owners what factors influenced/would influence their decision to purchase a device. Respondents were able to choose multiple factors with the most common response being cost of the device (20%). High on the list were also charging and storage infrastructure at home or at work, ease of travel from home to workplace, and safety (Figure 9). Other responses included lack of bike lanes and road safety, weather conditions and regulations/legality.

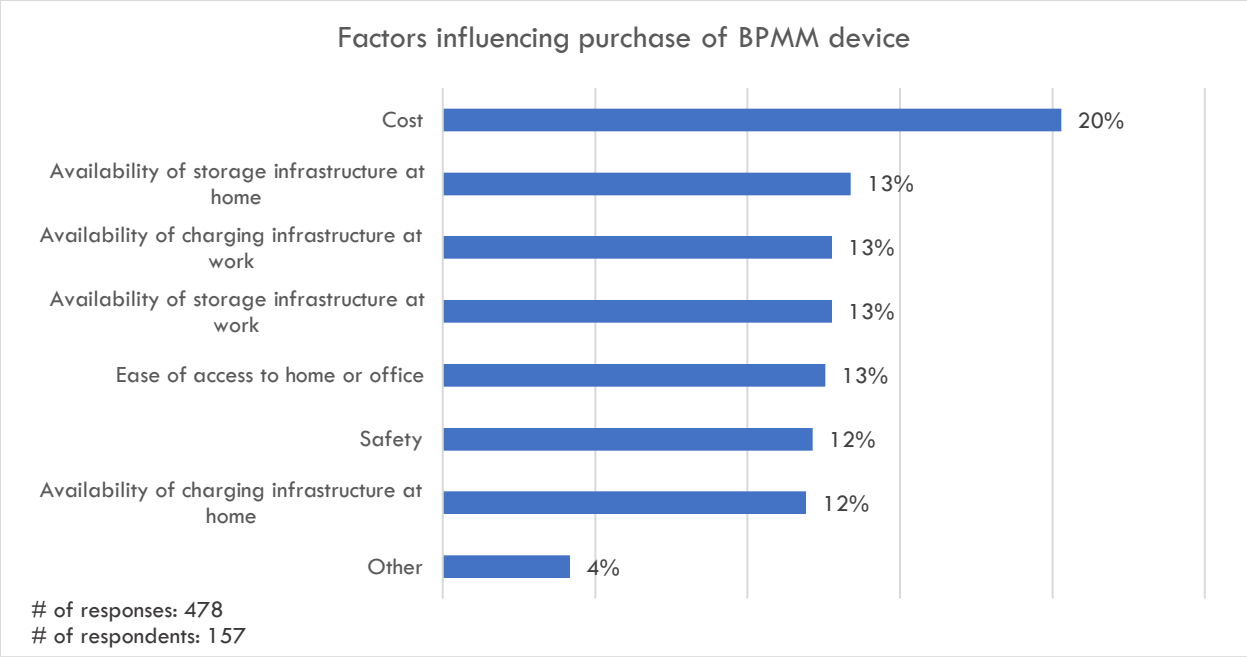

Figure 9. Factors influencing respondents' decision to purchase a BPMM device.

Use of BPMM Sharing/Rental Services

To gather information on the presence and use of BPMM rental services by health care workers, we asked respondents whether there were BPMM rental services in their cities and if they had ever rented a BPMM devices. The majority of respondents (41%) were 'unsure' whether BPMM rental services were available in their city and 39.5% confirmed 'yes' there are rental services available (Figure 10).

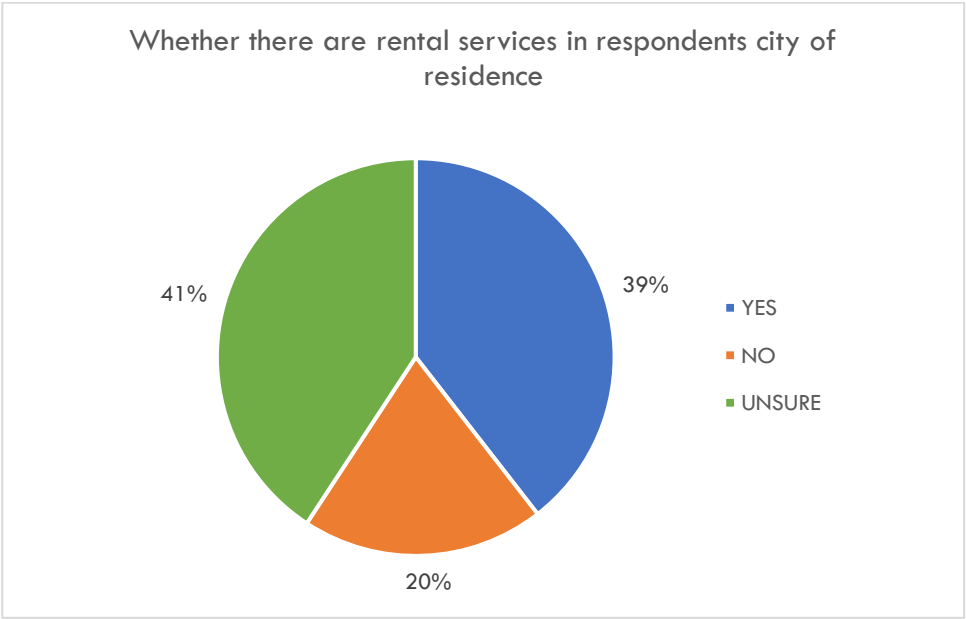

Figure 10. Rental services in respondents' city of residence.

We also asked respondents whether there were BPMM rentals near their place of work (Figure 11). Only 18% responded ‘yes’ and 45% of respondents were ‘unsure’.

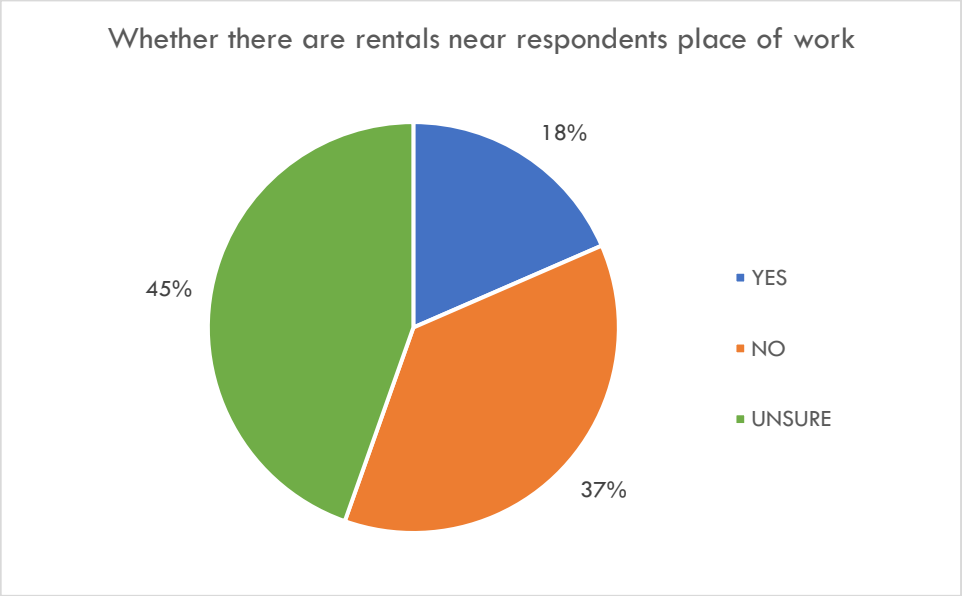

Figure 11. Rental services near respondents’ place of work.

Of those that said they were unsure or that there is no BPMM rentals near their place of work, the survey asked how likely they would be to rent if there were rentals available to them. The majority said they were very unlikely (40%) but 25% said they were either somewhat likely or very likely to use rentals if they were near their place of work (Figure 12).

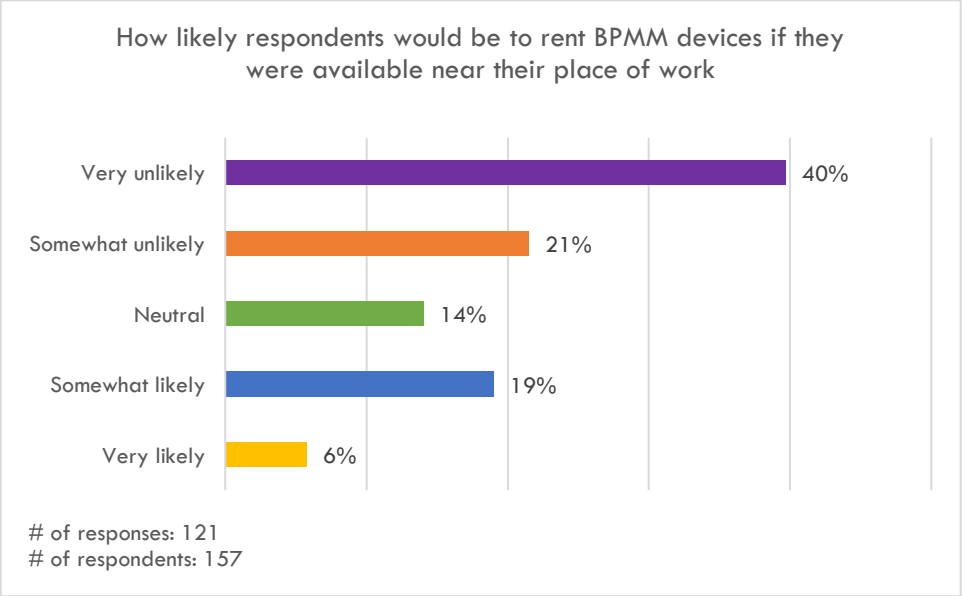

Figure 12. How likely respondents would be to rent BPMM devices if they were available near their place of work.

Of the 157 respondents only 22% of respondents claimed to have ever rented a BPMM device (Figure 13). The most common purpose for renting was stated as being for leisure (71%) (Figure 14). Of those who have rented a BPMM device, the majority do so less than five times a year (72%) and only one person claimed to rent them weekly (Figure 15). In addition, the majority of those who have rented BPMM devices have not done so in over five months (51%) (Figure 16).

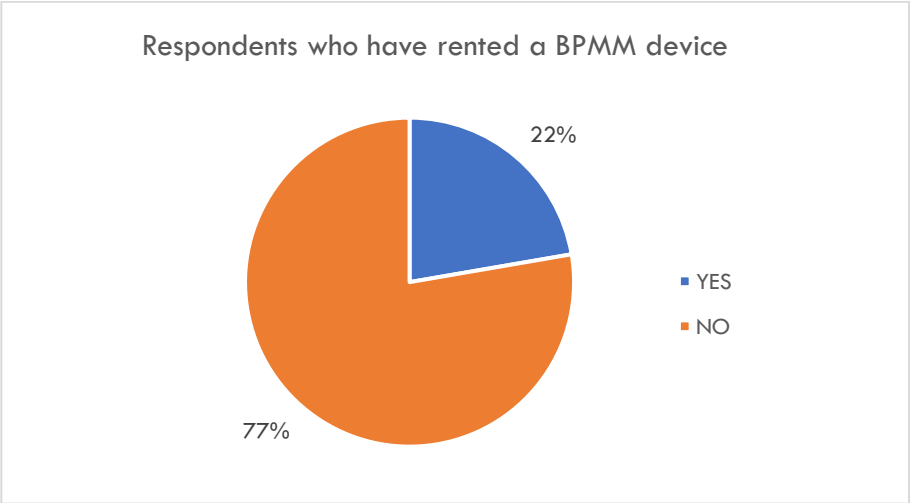

Figure 13. Respondents who have rented a BPMM device.

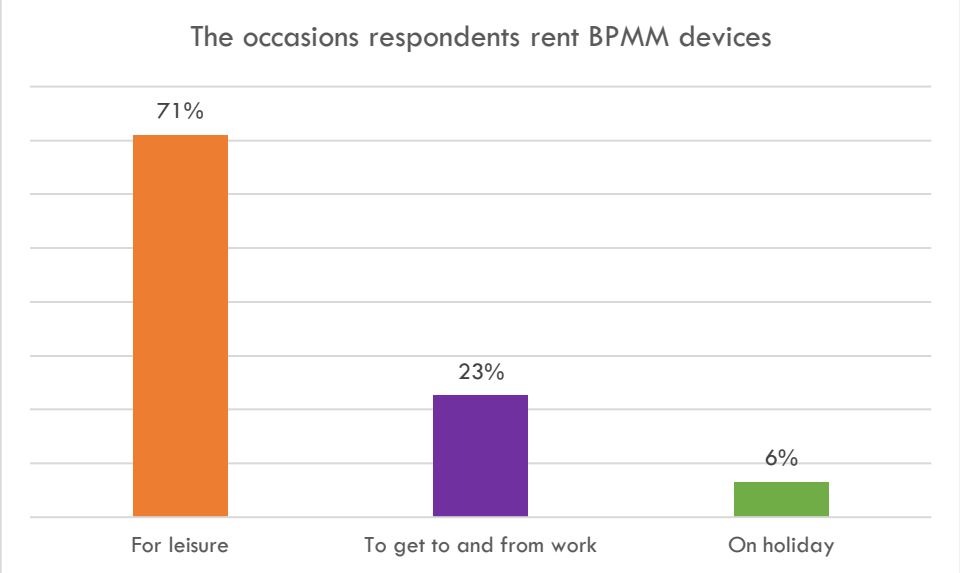

Figure 14. The occasions for which respondents have rented BPMM devices.

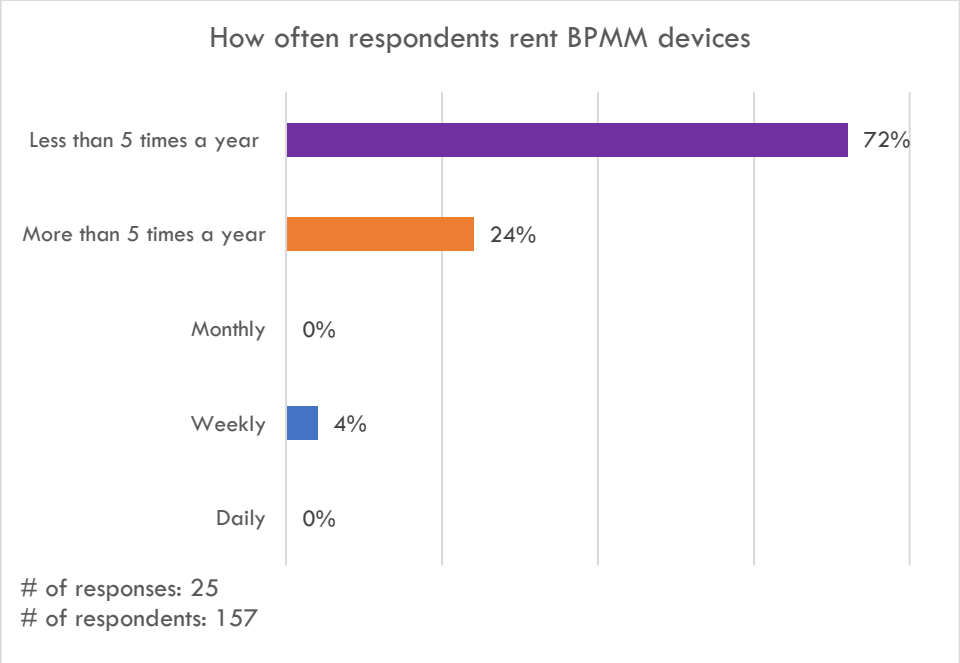

Figure 15. How often respondents rent BPMM devices.

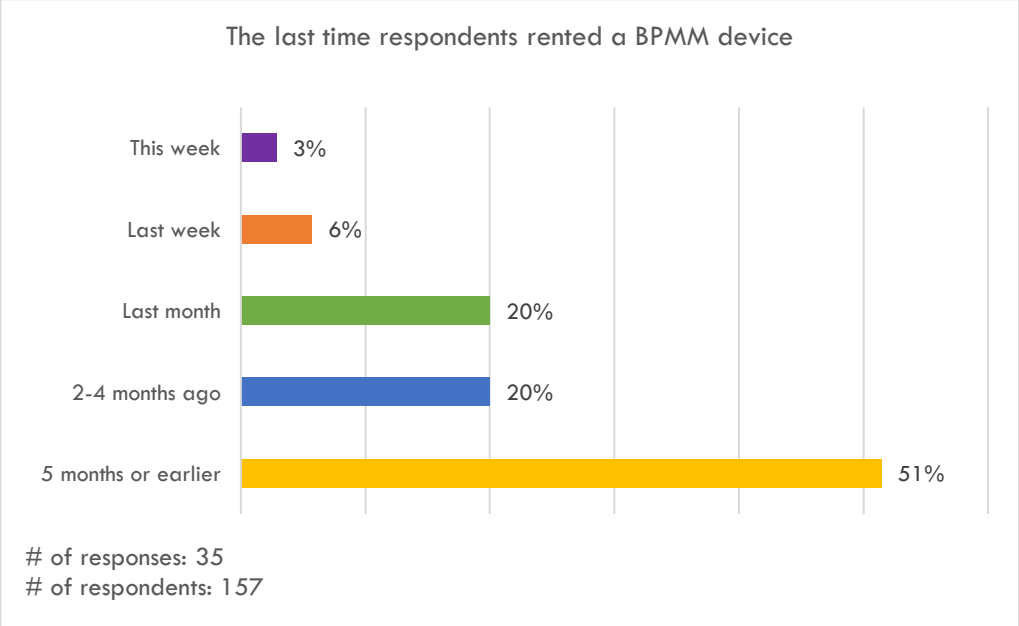

Figure 16. The last time respondents rented a BPMM device.

Those who claimed to never have rented a BPMM device were asked why they have never done so. This was an open-ended question and respondent answers were grouped into common categories. The most frequently mentioned reason for not renting was not having a need to (29%)(Figure 17). Respondents pointed to their utilization of non-electric bikes, walking or driving electric vehicles as their main method of clean transportation. Another common reason was rentals not being available or convenient (19%). 'Other' responses include not knowing where rental devices are located and not having the opportunity to utilize them.

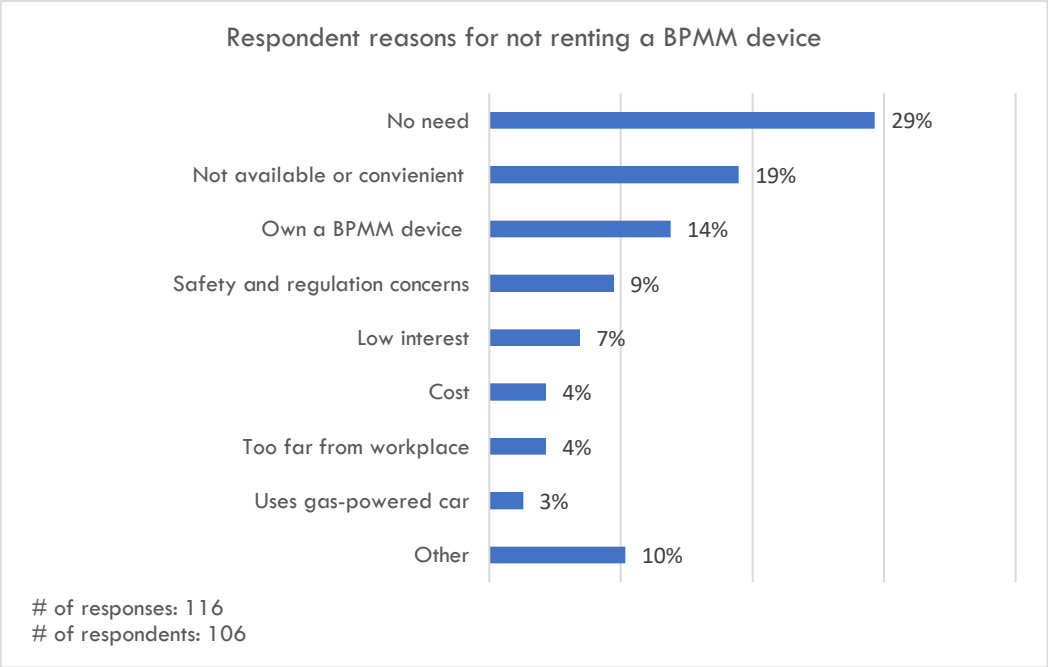

Figure 17. Respondent reasons for not renting a BPMM device.

The survey also asked respondents open-ended questions on their perceived benefits and drawbacks of BPMM rental services, answers were grouped into common responses.

The most frequently perceived benefits included convenience (19%), cost effectiveness (17%) and accessibility (13%) (Figure 18), as well as not needing to worry about concerns such as storage, security and maintenance as with personal devices (21%).

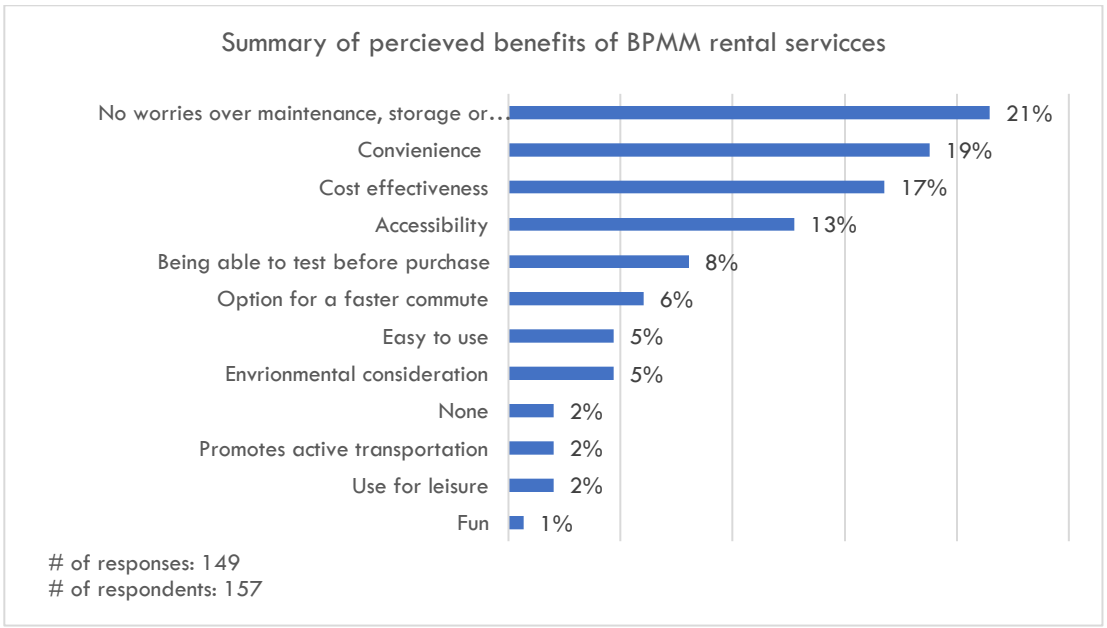

Figure 18. Perceived benefits of BPMM rentals.

As for perceived disadvantages, the majority of respondents were concerned about cost (29%) and perceived lack of availability when needed (18%) (Figure 19). Safety was also on the disadvantage list (9%) with some respondents concerned about the lack of supporting infrastructure such as bike lanes, low knowledge of rules and regulations and fears over users not wearing safety gear such as helmets. Other mentioned disadvantages were needing a phone to rent, concerns over manufacturing and recycling of batteries, weather concerns and lack of infrastructure support.

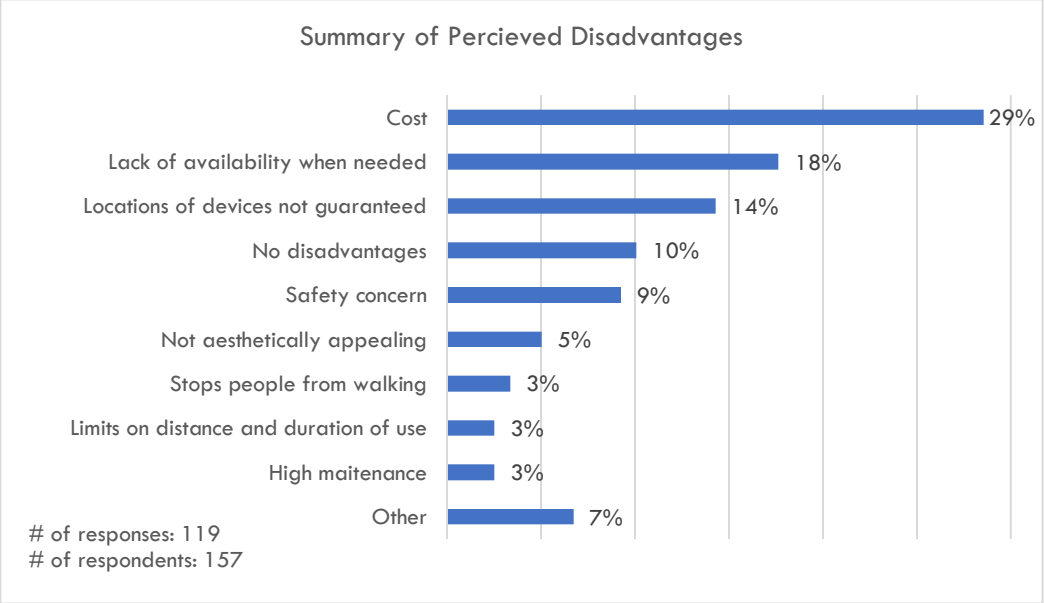

Figure 19. Perceived drawbacks of BPMM rentals.

Opinions on cost of BPMM devices

In order to see how market prices fit with the perceptions of consumers, respondents were asked what they considered to be a fair and reasonable cost for e-bikes and e-scooters. As expected, preferred costs were on the low-end, with 28% of respondents thinking pricing should be between $1,000-$1,499 for an e-bike and 38% of respondents thinking between $500-$999 to for an e-scooter.

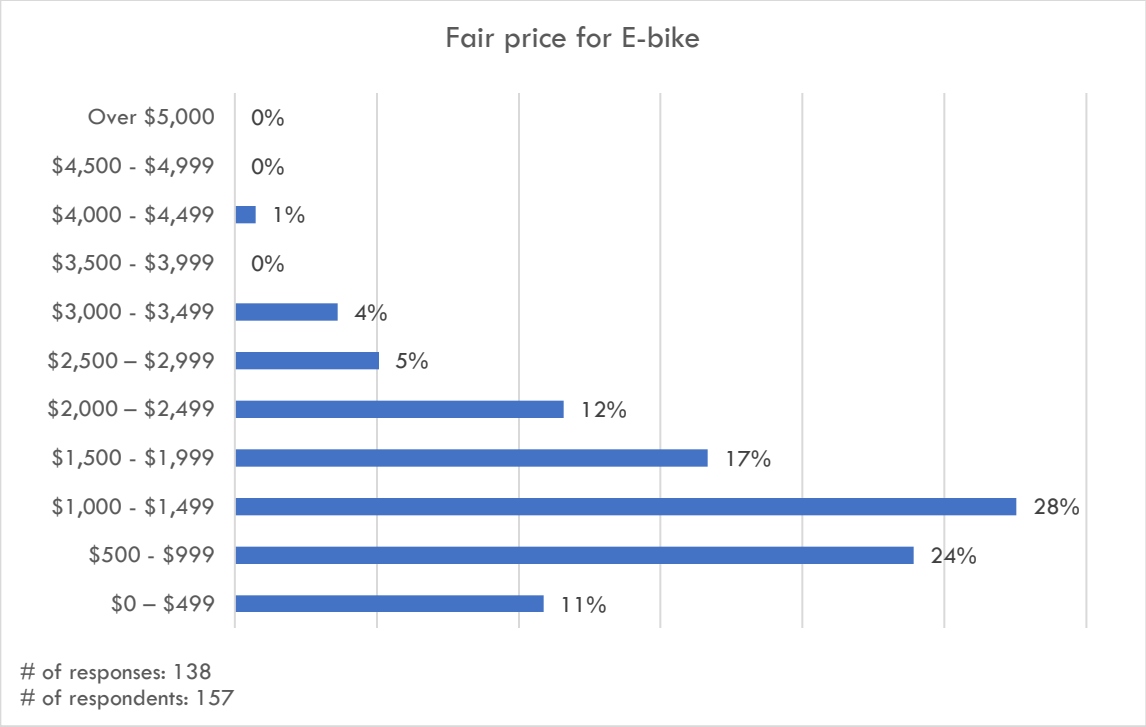

Figure 20. Fair and reasonable cost for an e-bike.

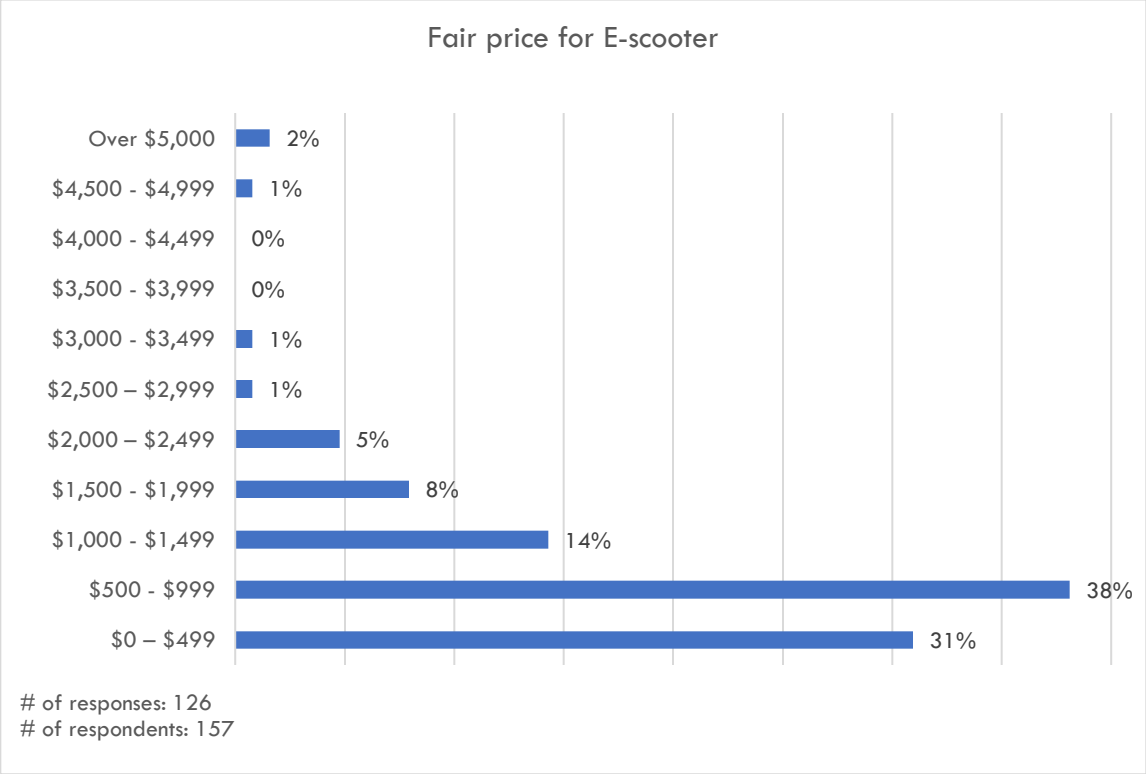

Figure 21. Fair and reasonable cost of an e-scooter.

Final Thoughts

The survey responses revealed that while low numbers of Canadian health care workers actually own or rent BPMM devices, many acknowledge the environmental, health, and practical benefits in the adoption of BPMM. Responses also indicated a high need for education, improved safety and additional infrastructure to support BPMM usage.

We hope the results of this survey and the work done by the Coalition's zero-emission vehicle awareness initiative will be fodder for enhanced discussions on the topic among users, future users, and those involved in developing, financing and deploying BPMM infrastructure in Canadian health care organisations.

Our research team encourages you to support the investment of resources at the institutional, municipal, provincial and federal levels and invites you to promote the adoption of BPMM devices and the implementation of sufficient Infrastructure for active transportation wherever and whenever practical.

About us: *The Canadian Coalition for Green Health Care is Canada's premier green health care resource network and is leading the evolution of green in Canada's health sector as a national voice and catalyst for environmental change. Collaboratively, we strive to reduce health care's ecological impact from compassionate care delivery while providing a platform upon which to discuss and promote best practices, innovation, environmental responsibility and climate change resiliency. www.greenhealthcare.ca*

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