Urban Mobility Study: From Battery to Pedal- Rickshaws in Transition

A Study of Innovision Consulting

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Urban Mobility Study in Dhaka: Rickshaws in Transition

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Acronyms

BDT	Bangladeshi Taka
BRTA	Bangladesh Road Transport Authority
CNG	Compressed Natural Gas
DMP	Dhaka Metropolitan Police
DNCC	Dhaka North City Corporation
DSCC	Dhaka South City Corporation
MFI	Microfinance Institution
MSME	Micro, Small and Medium Enterprises
NGO	Non-Governmental Organization
PPP	Public-Private Partnershp

Executive Summary

Introduction and Objectives

The urban transport landscape in Dhaka is undergoing a significant structural shift as informal battery-powered rickshaws increasingly replace traditional pedal rickshaws. This study by Innovision Consulting analyzes the human and economic motivations driving this transition. The primary goal is to compare socio-economic dynamics, passenger demand, and garage owner incentives to provide a data-backed roadmap for urban transport policy.

Socio-Economic Dynamics: Battery vs Pedal Rickshaws

The transition is fueled by a migration pathway where drivers seek higher earnings and less physical labor.

- **Demographic Shift:** Battery rickshaw drivers are typically younger (median age 38) and more educated than their pedal-pushing counterparts (median age 42), with 32% having education beyond grade six.

- **The Experience Gap:** Pedal drivers represent a stable, veteran workforce with an average of 15 years of experience. In contrast, nearly 60% of battery drivers have less than two years of experience, indicating a rapid influx of unseasoned operators into the sector.

- **Ownership and Debt:** Pedal rickshaws are often self-owned (35%) and purchased through personal savings for BDT 3,000–15,000. Battery rickshaws are more capital-intensive, costing up to BDT 200,000, leading 59.7% of owners to rely on high-burden NGO or MFI loans.

- **Income Disparity:** While rented pedal rickshaws actually yield a slightly higher daily net income for drivers (BDT 484 vs. BDT 418), battery rickshaws offer far superior gross potential. A self-owned battery rickshaw generates nearly double the daily income of a pedal rickshaw (BDT 970 vs. BDT 530).

Demand Side: The Passenger Perspective

Passengers in Dhaka exhibit a functional dependence on battery rickshaws despite significant safety reservations.

- **User Profile:** The primary user base consists of adults aged 18–34 (52%) with monthly household incomes between BDT 20,001 and BDT 50,000.

- **Efficiency vs. Safety:** While preference is split 50/50, 74% of passengers actually use battery rickshaws for daily commutes. The primary motivator for battery use is time efficiency (82%), whereas pedal rickshaws are preferred almost exclusively for safety (93%).

- **The Safety Crisis:** Passenger data reveals a grim reality—30% of battery rickshaw users have been in an accident compared to 18% of pedal users. Furthermore, 44.5% of battery rickshaw accidents result in serious to very serious injuries, significantly higher than the 29.6% reported for pedal rickshaws.

- **Traffic and Regulation:** 80% of passengers believe rickshaws cause congestion, with 62% specifically naming battery rickshaws as the main cause. Consequently, 79% of the public supports stricter regulations.

Garage Owners' and Market Incentives

Garage owners act as the backbone of this informal economy, with a median of 18 years in the trade.

- **Fleet Evolution:** While owners still hold more pedal rickshaws (1,400) than battery units (975), 35% have already begun motorizing their existing pedal fleets.

- **Conversion Costs:** Transforming a pedal rickshaw to battery power costs approximately BDT 62,230, typically financed via MFIs.

- **Key Hurdles:** Owners report that police restrictions (23.8%) and the frequent cost of battery repairs and replacements (60%) are their primary operational challenges.

Policy Recommendations and Framework

The report concludes that an outright ban is impractical; instead, a sensible policy mix is required.To formalize the sector and improve urban safety, the report proposes a multi-stakeholder institutional framework:

- **Standardization (BRTA):** Incentivize a shift from informal assembly to standardized manufacturing that meets safety standards.

- **Formalization (DNCC/DSCC):** Update registration databases and implement zone-based regulations (e.g., allowing battery rickshaws only on inner roads/alleys).

- **Credit Facilities (NGOs/MFIs):** Provide affordable credit to help drivers and garage owners upgrade to standardized, registered vehicles.

- **Enforcement (DMP):** Strictly enforce road categories and speed limits to prevent battery rickshaws from entering major highways.

- **Infrastructure (PPP):** Introduce alternative short-distance electric vehicle systems through Public-Private Partnerships to reduce reliance on informal rickshaws.

Institutional Responsibilities

Stakeholder	Primary Responsibility
DNCC & DSCC	Update registration databases; designate rickshaw-free main roads; enforce zone-based operations.
BRTA	Standardize vehicle design; set national speed limits; manage driver licensing and training protocols.
DMP	Enforce road categories; prevent battery rickshaws from entering highways.
NGOs & MFIs	Provide affordable credit to incentivize the transition to standardized, registered vehicles.

By shifting the profession away from the informal economy through standardization and training, Dhaka can preserve vital first/last-mile connectivity while significantly reducing accident risks and congestion.

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Chapter 1: Introduction

1.1 Background

Urban mobility and its related dynamics play a crucial role in metropolitan areas. It directly impacts the social and economic well-being of its residents. It is even more important in a crowded city like Dhaka, as movement and traffic are one of the most pressing concerns.

According to the Dhaka South City Corporation, there are 1,82,630 registered pedal rickshaws under its jurisdiction and there are 30,000 rickshaws under the Dhaka North City Corporation's jurisdiction. However, this data is not up-to-date. The surge of these vehicles has created a significant shift in the urban mobility landscape, challenging traditional transport models and introducing new economic dynamics. Increasing concerns, therefore, center on understanding the true scale and characteristics of this evolving ecosystem.

Innovision Consulting, the leading international advisory and management consulting firm in Bangladesh, has undertaken a study on the pedal rickshaws and the battery rickshaws in Dhaka to understand the underlying socio-economic conditions that are proliferating the rise of informal and illegal battery rickshaws in Dhaka.

The study captures insights of the pedal and battery rickshaw drivers, rickshaw owners, and the passengers. It explains socio-economic determinants that, if addressed, can leverage the transition to solve the urban traffic problem while also addressing the economic issues of jobs for the largest informal sector in Dhaka.

1.2 Objective

The objective of this study is to explain the human and economic motivations behind the shift in Dhaka's urban transport. The key research objective is:

- To compare the socio-economic dynamics between battery and pedal rickshaws that explain the proliferation of battery rickshaws in Dhaka
- To understand the demand side dynamics or the passengers' perspectives on battery and pedal rickshaws
- To define the garage owner's incentives and challenges related to battery and pedal rickshaws
- To define policies and interventions that can address the structural challenges in the proliferation of the battery rickshaws in Dhaka
- To define the roles of the different stakeholders in implementing these interventions.

This report provides a comprehensive overview of these changes by focusing on the underlying Market Dynamics that are shaping its future. By analyzing these critical factors, we aim to provide a data-backed landscape of the market, offering a clear and actionable roadmap for understanding the motivations and behaviors that are driving this vital sector.

1.3 Methodology

The survey involves three types of samples (i) rickshaw pullers (ii) rickshaw passengers and (iii) garage owners. The rickshaw pullers can be further stratified into battery rickshaws and pedal rickshaws. The battery rickshaws create one homogenous group while the pedal rickshaws create another homogenous group. As the total number of rickshaw pullers is larger than 20,000 and the total number is unknown given the large number of informal rickshaw pullers, we used Cochran's formula to determine the sample size for rickshaw pullers. The same method was applied to define the sample size for the passengers.

$$n_0 = (z^2 \cdot p \cdot (1 - p))/e^2$$

The parameters used in the calculation ensured high statistical confidence:

- **Confidence Level:** 95% (corresponding to a Z-score of Z = 1.96).
- **Estimated Population Proportion (p):** 50% (or 0.5), which is standard for maximizing the required sample size when the true proportion is unknown.
- **Margin of Error (e):** 5% (or 0.05).

Based on this, we determined the sample size to be **384 rickshaw drivers** and **384 for rickshaw passengers**. Additionally, **63 garage owners** were purposively selected to support and provide further context to the findings associated with rickshaw drivers.

To maximize representativeness, the data collection followed a stratified and clustered sampling method, where the Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) were chosen as different strata.

Within each stratum, specific areas were identified as clusters and selected through convenience sampling. For DNCC, the clusters included Mohammadpur, Dhaka Uddyan, Mirpur 1, Kochukhet, Uttara 10, and Uttarkhan. In DSCC, the clusters were Khilgaon, Rampura, Hazaribagh, Lalbagh, Jatrabari, and Motijhil. This reduces the timeframe and costs related to the data collection, while ensuring accurate representativeness across important characteristics.

A fixed sample size of 32 rickshaw drivers, encompassing both battery and pedal rickshaw drivers, and 32 to 33 rickshaw passengers, was systematically taken from each cluster. From the centers of these areas, we have covered a radius of 5km in every direction. This deliberate geographic diversity was critical for providing exposure to different commuter profiles and mobility needs. Furthermore, garage owners were additionally included in this survey using convenience sampling.

Chapter 2: Socio-Economic Dynamics: Pedal vs Battery Rickshaws

2.1 Demographic Profile and Previous Profession

Findings show that the battery rickshaw drivers are younger than the pedal rickshaw drivers (Figure 1). The median age of battery rickshaw drivers (38 years) is lower than that of pedal rickshaw drivers (42 years).

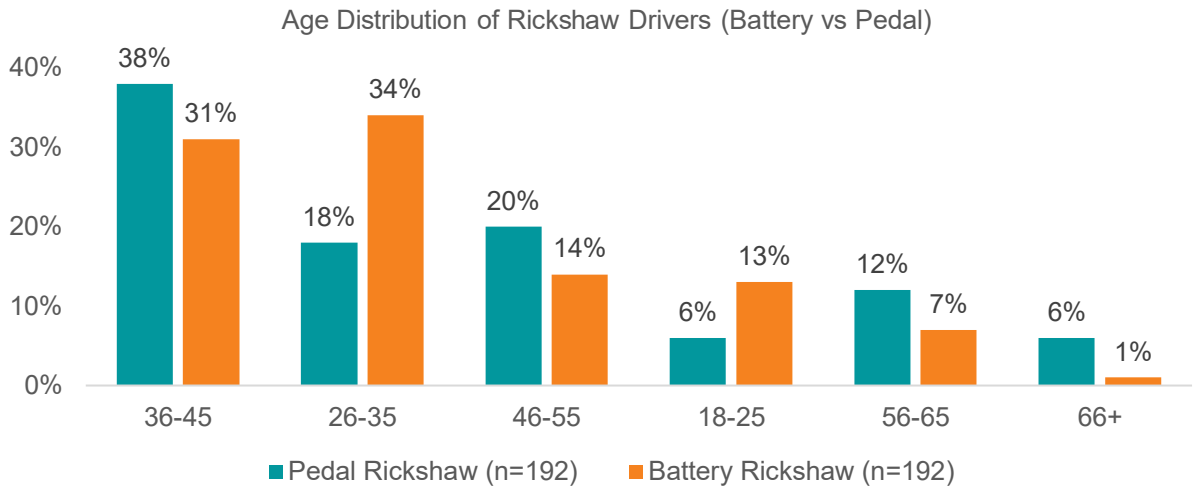


Figure 1: Age Distribution of Rickshaw Drivers

Battery rickshaw drivers are comparatively more educated than pedal rickshaw drivers. As shown in Table 1, 32% of battery rickshaw drivers have completed education beyond grade six, while 26% of pedal rickshaw drivers reported the same.

Table 1: Education Level of Rickshaw Drivers

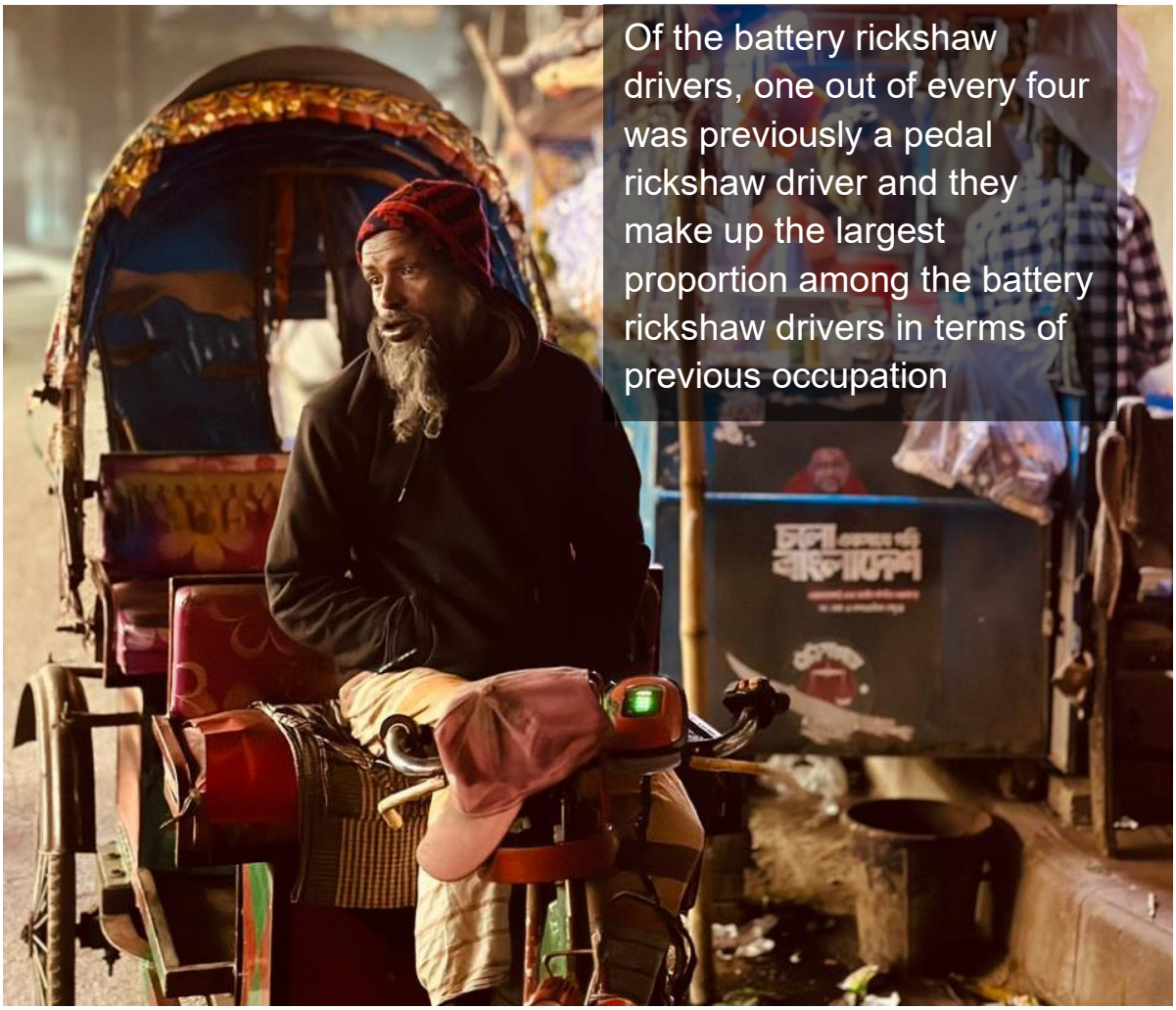
Education Level	Pedal	Battery
No Formal Education	39.58%	34.38%
Class 1-5	34.38%	33.33%
Class 6-10	23.44%	28.13%
Class 11–12	2.60%	2.60%
Bachelors	0.00%	1.04%
Diploma/Vocational	0.00%	0.52%
n=	**192**	**192**

Of the battery rickshaw drivers, one out of every four was previously a pedal rickshaw driver and they make up the largest proportion among the battery rickshaw drivers in terms of previous occupation. The remaining were involved in other vocations, mostly farmers (21.35%), as shown in Table 2. This potentially indicates that the battery rickshaw is attracting more workforce in the sector.

Table 2: Previous Professional Experience

Previous Profession	Pedal	Battery
Farmer	37.57%	21.35%
Daily Labor	14.36%	5.21%
Job	12.15%	11.98%
MSME	11.05%	6.77%
Others	10.50%	13.02%
RMG Worker	7.73%	6.25%
Driver (Vehicle)	2.76%	6.25%
Jobless	2.76%	3.13%
Remittance Earner	1.10%	1.56%
Pedal Rickshaw Driver	-	24.48%
n=	**181**	**192**

- **Farmer**: The single largest group, making up **37.57% of pedal and 21.35% of battery drivers**.
- **Pedal rickshaw to Battery rickshaw transition**: About **24.48%** of battery rickshaw drivers previously pulled pedal rickshaws, showing a natural migration pathway.
- **Business: Among the pedal rickshaw drivers 11.05% previously owned a business;** comparatively lesser % of battery rickshaw drivers previously owned a business.
- **Unemployed before driving**: Of the pedal rickshaw drivers **2.76%** were previously unemployed; comparatively higher proportion of battery rickshaw drivers were previously unemployed (**3.13%)**



2.2 Status of Registration

Registration levels are low for both categories. Of the rickshaw drivers interviewed (n = 384), 92% reported operating unregistered vehicles. As shown in Figure 2, **nearly all battery rickshaws are unregistered (97.40%).**

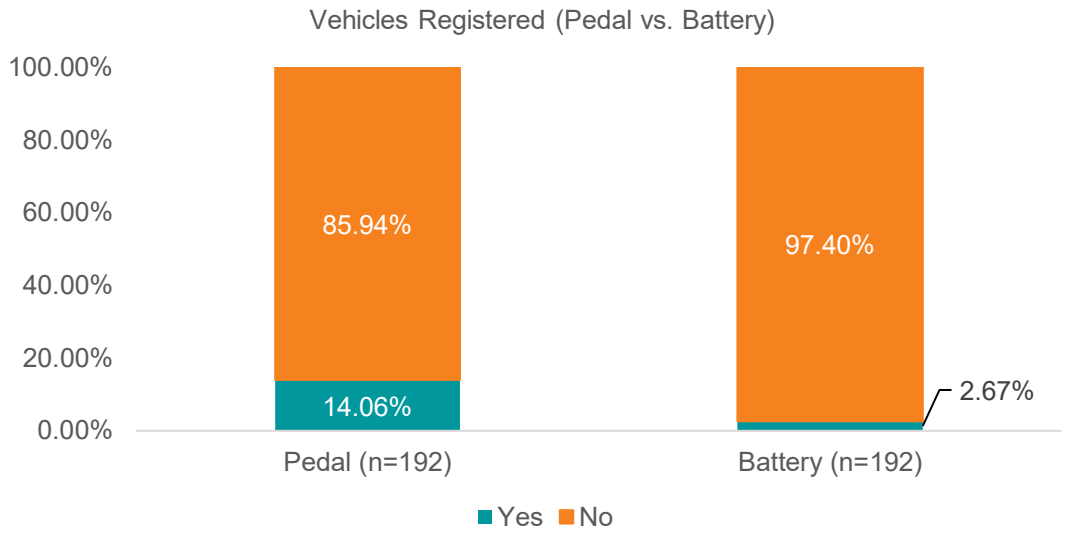


Figure 2: Vehicle Registered (Pedal vs Battery)

2.3 Ownership and Financing

Pedal rickshaw drivers are more likely to own their vehicles, with 35% reporting ownership, compared to 21% among battery rickshaw drivers (Figure 3).

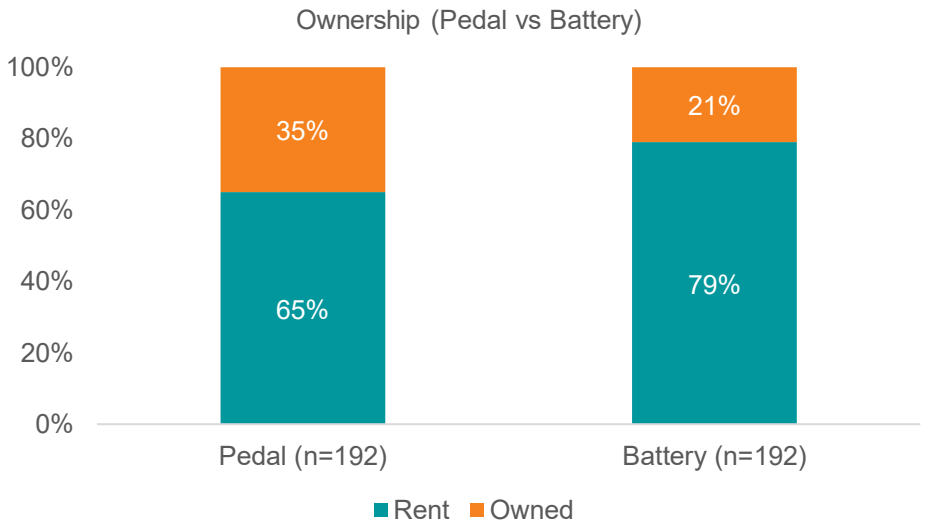


Figure 3: Ownership (Pedal vs. Battery)

Battery rickshaws require a significantly higher upfront investment, with drivers reporting that the capital cost is more than double that of pedal rickshaws- 92.50% pedal rickshaws cost

between **BDT 3,000–15,000**, while **97.01% battery rickshaws** are typically priced between **BDT 35,000–200,000** (Table 3).

Table 3: Purchase Price of Rickshaw (Pedal vs Battery)

Purchase Price	Pedal	Battery
BDT 3,000-15,000	92.50%	1.49%
BDT 15,001-35,000	7.50%	1.49%
BDT 35,001-70,000	0.00%	43.28%
BDT 70,001-100,000	0.00%	35.82%
BDT 100,000-200,000	0.00%	17.91%
N*=	**40**	**67**

- n represents only those rickshaw drivers who own their rickshaws

Pedal rickshaws are primarily purchased using personal savings (60%), whereas battery rickshaws are more commonly financed through loans from NGOs or microfinance institutions (59.7%), as shown in Figure 4.

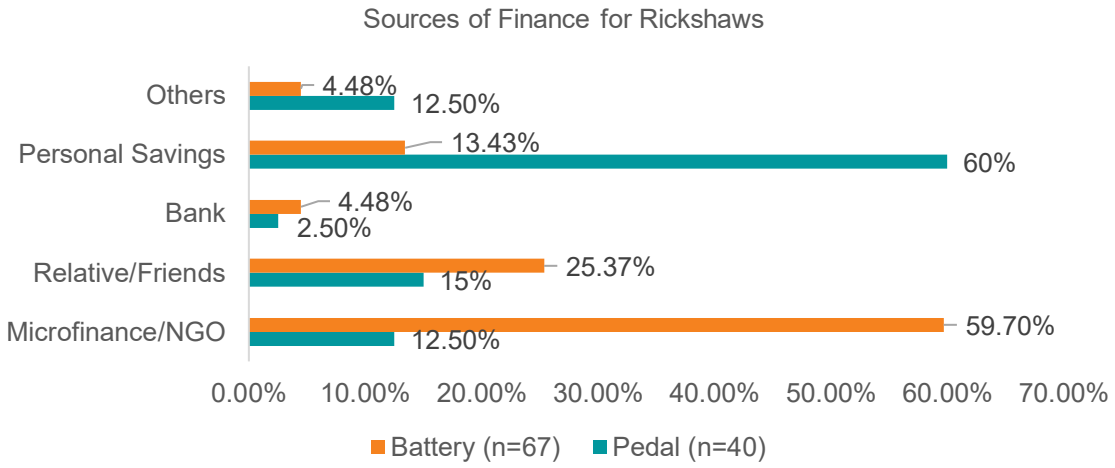


Figure 4: Sources of finance for rickshaws

Battery rickshaw drivers face substantially higher loan burdens than pedal rickshaw drivers- **80% of battery rickshaw drivers** borrow between **BDT 40,001 and 120,000**, with an average loan size of approximately BDT 80,000, whereas **more than 80% of pedal rickshaw drivers** take loans of **less than BDT 20,000 (Figure 5)**.

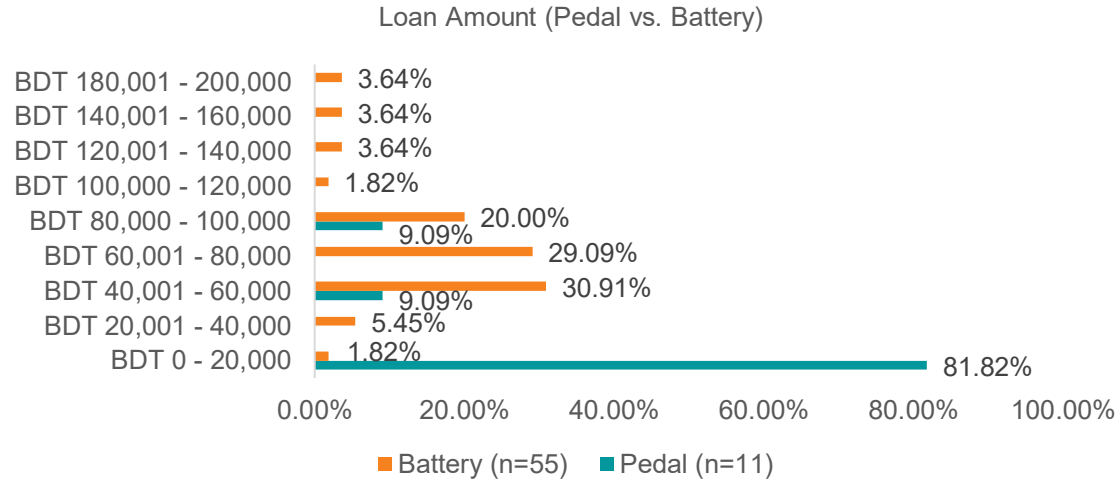


Figure 5: Loan Amount (Pedal vs. Battery)

A **remarkably lower initial investment** is required to buy a pedal rickshaw. This potentially explains why pedal rickshaw drivers rely on personal savings more than loans.

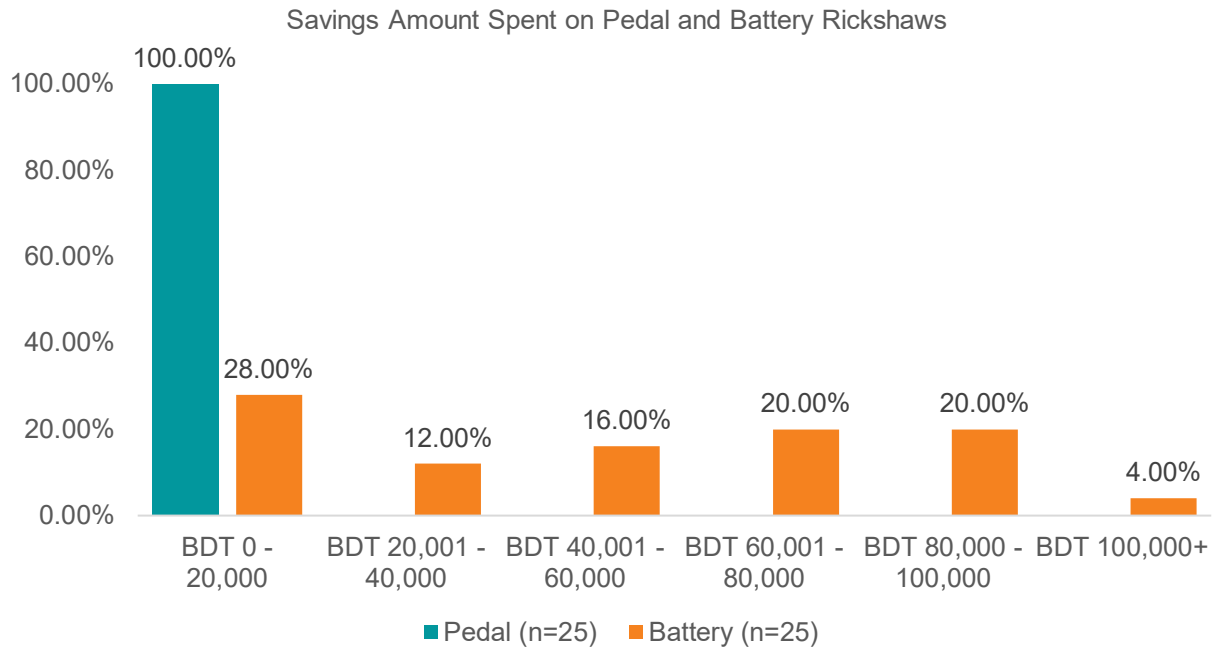


Figure 6: Savings Amount Spent on Pedal and Battery Rickshaws

According to the rickshaw drivers who own their vehicles, a typical **pedal rickshaw costs them below BDT 20,000 to buy from their personal savings**, with an **average** of around **BDT 8,000–10,000,** as shown in Figure 6.

2.4 Income Generation and Daily Trips

2.4.1 Daily Rent

Findings show that daily rental costs for battery rickshaws are three times higher than pedal rickshaws. 93% pedal rickshaw drivers pay daily rents between BDT 50 and 200, while the 76% battery rickshaw drivers pay between BDT 351 and 500 (Figure 7).

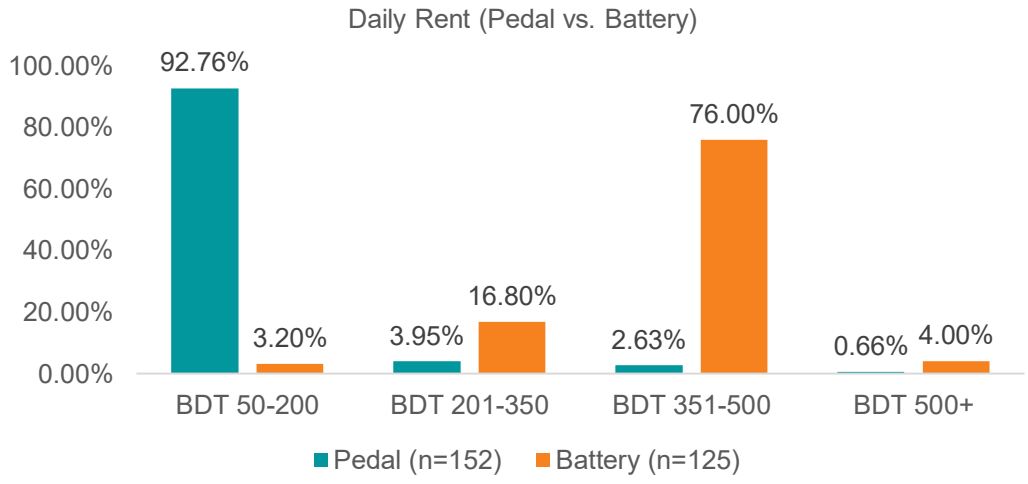


Figure 7: Daily rent (Pedal vs Battery)

The study revealed that a **majority of rickshaw drivers operate vehicles owned by third parties**, under a daily rental arrangement. Despite this considerable cost disparity, the rapid growth and adoption of battery rickshaws suggest a strong market preference driven by higher income potential, operational efficiency, and commuter demand. This trend reflects a structural transition in urban mobility toward motorized options, though occurring largely without formal oversight.

2.4.2 Number of Daily Trips (Pedal vs Battery)

Battery rickshaw drivers complete 11.11% more trips per day than pedal rickshaw drivers on average, highlighting their increasing role in Dhaka's urban transport system (Table 4).

Table 4: Number of Trips per Day (Pedal vs Battery)

Trips	Pedal	Battery
11 to 20	44.81%	24.19%
21 to 30	42.62%	36.56%
31 to 40	11.48%	26.88%
41 to 50	1.09%	12.37%
n=	**183**	**186**

**n represents the sample size after removal of outliers*

Battery rickshaw drivers complete an average of **30 trips per day**, compared to **24 trips per day** by **pedal** rickshaw drivers. Furthermore, a greater proportion of battery rickshaw drivers complete a higher number of trips, with **39.25**% of **battery** drivers making **31–50 trips/day, compared to 12.57% pedal rickshaw drivers making the same number of trips**.

Whether self-owned or rented, **the overall daily gross income from a battery rickshaw is substantially higher than that of a pedal rickshaw**. However, the **rent of battery rickshaws is higher than that for pedal rickshaws**, reflecting the greater revenue potential of battery-operated vehicles for garage owners collecting rent.

Table 5: Daily Net Income – For Rented Rickshaws

	Pedal	Battery
Weighted Average of Daily Net Income for Rented Rickshaws	BDT 484	BDT 418
n=	152	125

**The weighted average cost is the sum of each cost multiplied by its respondent frequency, divided by the total number of respondents.*

Survey findings show that each rented pedal rickshaw generates a gross income of BDT 616 per day, composed of the **driver's net income: BDT 484** and the **weighted average of the rental payment to the owner: BDT 132**.

Simultaneously, following the same methodology, findings demonstrate that each rented battery rickshaw generates a gross revenue of BDT 832 per day, composed of the **driver's net Income: BDT 418** and the **weighted average of the rental payment to the owner: BDT 414.**

Building on this, the findings show that the daily net income for rented pedal rickshaws is BDT 484, which is higher than the daily net income for rented battery rickshaws – BDT 414, as shown in Table 4**.** However, the **rent collected from battery rickshaws** is **significantly higher** than the rent

collected from their pedal counterpart. This shows a greater revenue stream for garage owners collecting rent from these vehicles. As shown in Table 14, amongst the garage owners surveyed, 35% of them motorized their pedal vehicles. Possible exploitation of the battery rickshaw drivers may also be occurring, as almost half of the gross income is taken away from battery rickshaw drivers.

The weighted average of the **daily income** of a **self-owned pedal rickshaw** is **BDT 530**, whereas a **battery rickshaw** generates a significantly **higher income of BDT 970** daily (Table 5).

Table 6: Daily Gross Income – For Self-Owned Rickshaws

	Pedal	**Battery**
Weighted Average of Daily Income for Self-Owned Rickshaws	BDT 530	BDT 970
n=	40	67

**The weighted average cost is the sum of each cost multiplied by its respondent frequency, divided by the total number of respondents.*

This widening income gap highlights a **strong economic incentive driving the shift** from pedal to battery rickshaws, reflecting an ongoing **structural transformation** within the **urban transport sector**. Moreover, **battery rickshaw drivers** who **own their vehicles** earn BDT 552 more than those who use **rented vehicles**. On average, each rickshaw operates **1.60 shifts per day**, reflecting the fleet's extended utilization.

2.4.3 Increase in Daily Income - Rental vs Self-Owned

More than half of battery rickshaw drivers reported an increase in income, compared to roughly one-third of pedal rickshaw drivers. (Figure 8).

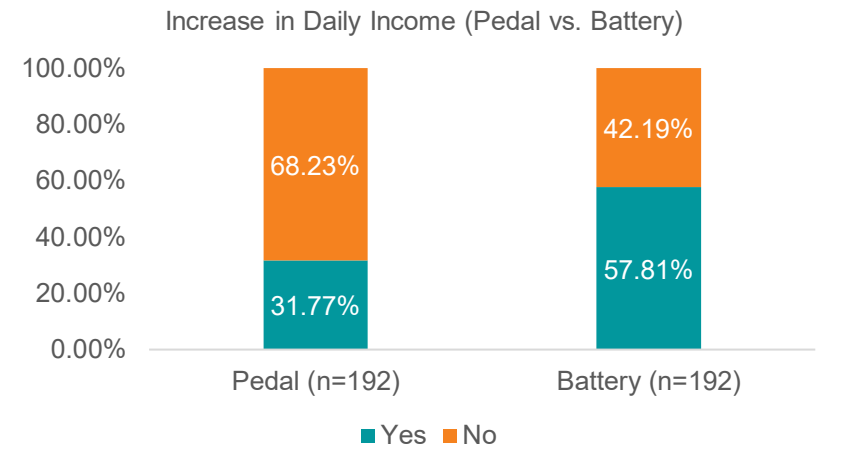


Figure 8: Increase in Daily Income

As shown in Figure 10, **31.77%** of **pedal rickshaw drivers** reported an **increase in income** after joining this profession, whereas **57.81%** of **battery rickshaw drivers** reported a **rise in income**.

Battery rickshaw drivers earn about BDT 100 more per day than pedal rickshaw drivers, roughly BDT 3,000 per month, representing an income gain for this group (Figure 11).

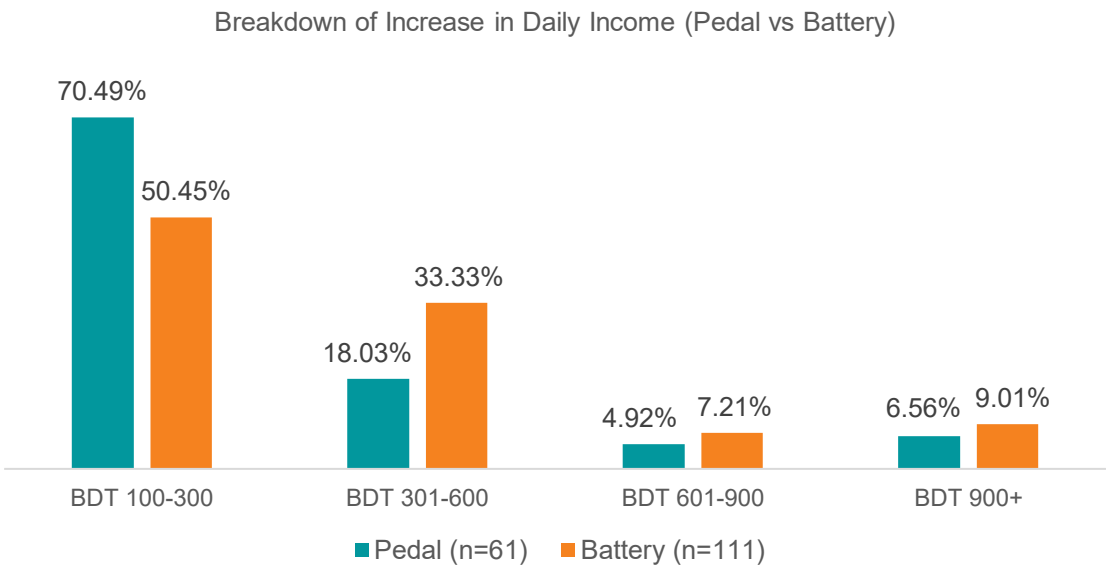


Figure 9: Breakdown of Increase in Daily Income (Pedal vs Battery)

2.5 Reasons for Transition to Battery Rickshaws

Over 70% of drivers who switch from pedal to battery rickshaws cite reduced physical strain (42.34%) and stronger passenger demand (31.53%) as their primary motivations, with physical ease leading as the top factor, as shown in Figure 10.

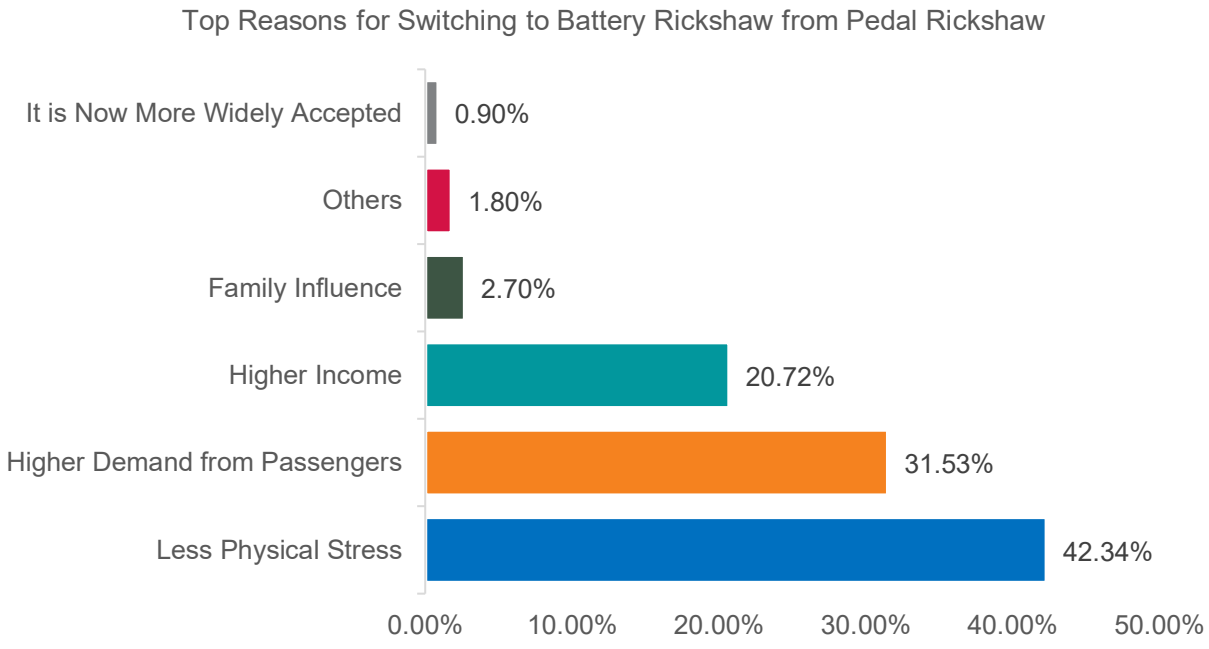


Figure 10: Top Reasons for Switching to Battery Rickshaw from Pedal Rickshaw

2.6 Experience of the Rickshaw Drivers- Pedal vs Battery

On average, pedal rickshaw drivers have six times more driving experience than battery rickshaw drivers.

The average work experience of pedal rickshaw drivers is **15 years (median 13.5 years), while the average work experience of battery rickshaw drivers is 2.5 years. 43.75%** respondents reported having more than **15 years** of experience in driving a pedal rickshaw, indicating a **long-standing and stable workforce** within this segment. In contrast, **59.90%** battery rickshaw drivers reported **less than two years** of experience, compared to only **9.90%** among pedal rickshaw drivers (Figure 11). This reflects the relative **novelty of the sector** and the **rapid pace of its expansion**.

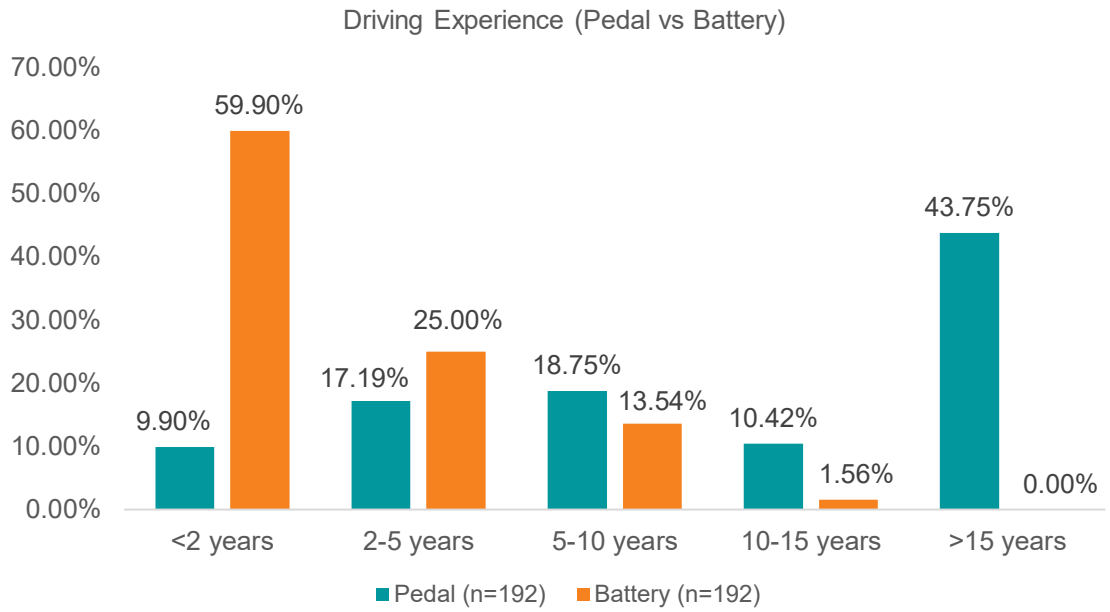


Figure 11: Driving Experience (Pedal vs Battery)

This inverse relationship between the two groups reflects a rapid and largely unregulated influx of new entrants into the battery rickshaw sector in recent years.

2.7 Accidents Reported: Pedal vs Battery Rickshaws

Rickshaw pullers reported that approximately one in every three pedal rickshaws and one in every six battery rickshaws have been involved in accidents (Figure 12). However, pedal rickshaws in general have been running for more years (average 15 years) than battery rickshaws (average 2.5 years).

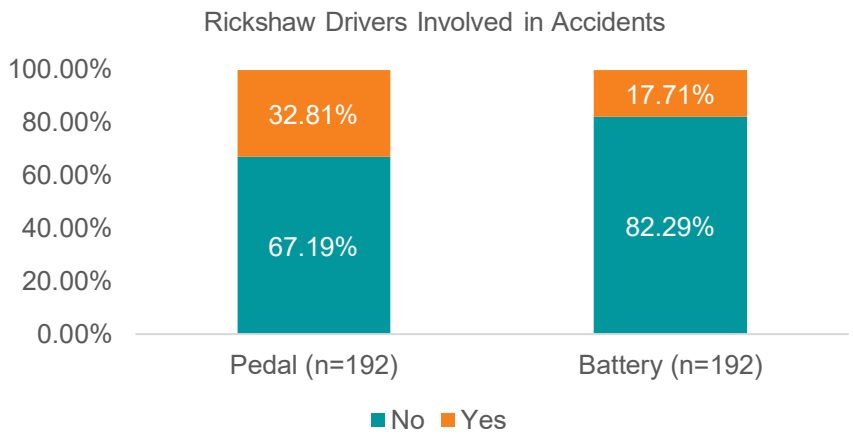


Figure 12: Rickshaw Drivers Involved in Accidents

As shown in Figure 14, a higher percentage of pedal rickshaw drivers (32.81%) stated that they were involved in some form of accident. However, the data collected from rickshaw passengers does not corroborate this finding. A significantly **higher number of battery rickshaw passengers** (**n=119)** have been involved in **some sort of accident**, compared to **pedal rickshaw passengers** (**n=71**), as shown in Figure 23. This means that battery rickshaw drivers might have **underreported** the **number of accidents**, possibly due to a **fear of disciplinary/regulatory consequences**.

Once an accident occurs, over half of battery rickshaws incur more costs, resulting in expenses exceeding BDT 2,000.

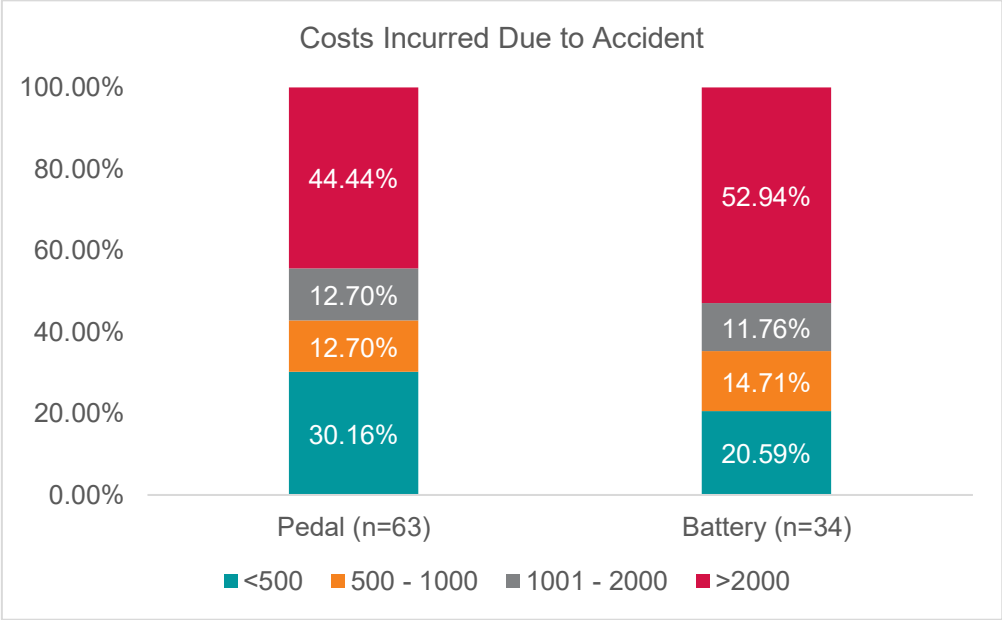


Figure 13: Costs Incurred due to Accidents

52.94% of **battery rickshaws** incur costs above **BDT 2,000**, compared to **44.44% of pedal rickshaws**. This is possibly due to the **greater severity of accidents** and the **overall higher costs of repair or replacement** for the electrical components of battery rickshaws. **Nearly one-third (30.16%)** of **pedal rickshaws** incur costs **below BDT 500** due to the **lower accident severity** and **costs of repair for pedal rickshaws**.

2.8 Aspirations of the Rickshaw Drivers

The data indicate a strong desire amongst almost half of the rickshaw drivers surveyed from each category to transition to different types of vehicles in the future (Figure 14).

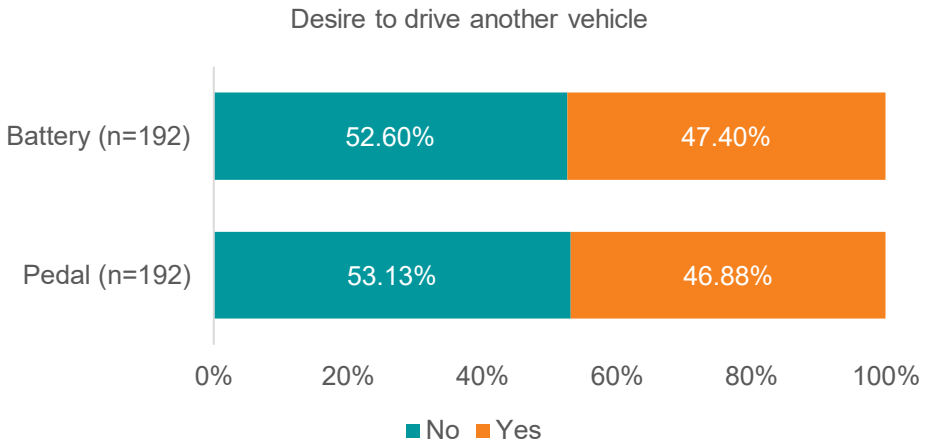


Figure 14: Desire to drive another vehicle

The aspiration for change is high in both groups. A notable 47.79% (n=65) of battery rickshaw drivers and 52.21% (n=71) of pedal rickshaw drivers are interested in driving another vehicle.

As illustrated in Figure 15, **nearly two-thirds of battery rickshaw drivers expressed aspirations to transition to driving motor vehicles, compared to one-third of pedal rickshaw drivers, indicating a desire to shift to battery rickshaws.**

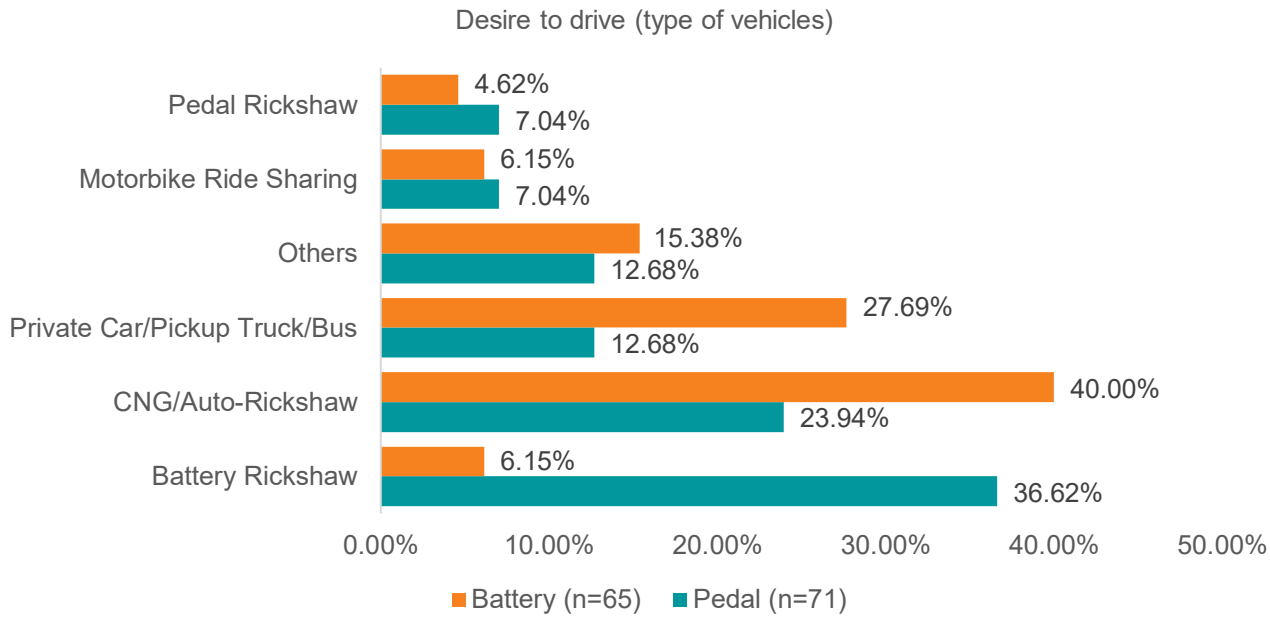


Figure 15: Desire to drive (type of vehicles)

However, a significant portion of pedal rickshaw drivers (23.94%) surveyed also see CNG/Autorickshaws as a smooth transition from their current vehicles, similar to battery rickshaw drivers.

- Age as a Factor: **The desire to change professions is strongest among younger individuals** and gradually decreases with age.

    - For **battery rickshaw drivers**, the highest interest in change comes from the **26-35 age** group, with **67.69%** expressing a desire to transition into **driving private cars, CNG/auto-rickshaws, pickup trucks, and buses**.
    - For **pedal rickshaw drivers**, the highest interest is in the **36-45 age group**, with **60.56%** wanting to transition into **battery rickshaws** and the rest wanting to drive **CNG/auto-rickshaws**.

2.9 Summary of Key Insights

Based on the study's findings regarding rickshaw drivers, the following key insights are generated:

- Compared to pedal rickshaw drivers, battery rickshaw drivers have significantly **less driving experience (less than 2 years)**, demonstrating an unseasoned workforce.
- Battery rickshaws are attracting a **younger cohort of workers** compared to pedal rickshaw drivers.
- Incentives to transition from pedal rickshaws to battery rickshaws include less physically demanding work, higher earnings, a greater number of trips per day, and a higher demand for the vehicle.
- The typical cost of a pedal rickshaw ranges between BDT 3,000 and 15,000, whereas a typical battery rickshaw costs from BDT 35,000 to BDT 200,000, showing a **higher capital investment** needed for the latter.
- Typically, rickshaw drivers often buy a new pedal rickshaw using **personal savings**, whereas battery rickshaw drivers cite **microcredit support** as their primary financing source.
- A majority of rickshaw drivers **operate rented vehicles** owned by third parties, with a significantly higher amount of rent being paid by battery rickshaw drivers.
- Battery rickshaw drivers may have **underreported the frequency of accidents** they faced, as passengers reported a higher frequency while travelling using battery rickshaws compared to pedal rickshaws.
- CNG/Autorickshaws are seen as a smooth transition for both pedal rickshaw and battery rickshaw drivers in the future.

Chapter 3: Demand for Rickshaws- Perspectives of the Passengers

3.1 Demographic Profile of the Passengers

The rickshaw passenger segment in Dhaka is diverse, reflecting a wide spectrum of gender, occupational groups, and household income levels. Out of the 392 respondents surveyed, **62% were male and 38% female**, indicating a slightly male-dominated user base but with a strong representation of women, particularly homemakers and students.

Over half (52%) of rickshaw passengers in the study are adults aged 18-34, highlighting this demographic as the primary user base (Figure 18).

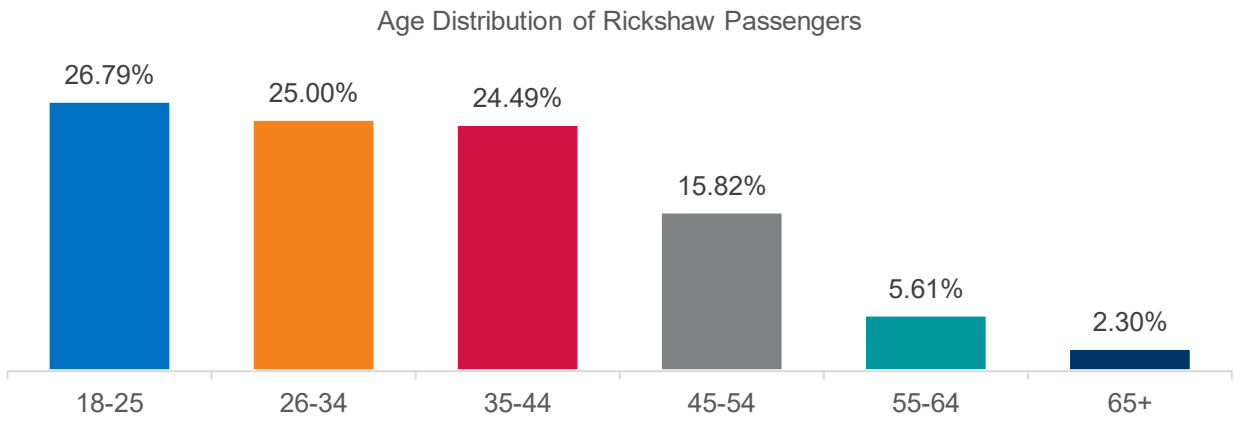


Figure 16: Age Distribution of Rickshaw Passengers

Occupationally, rickshaw passengers come from a broad cross-section of society. As shown in Figure 20 above, the largest groups include **homemakers (18%), private sector employees (17%), businesspeople (15%), students (11%),** and small retail workers (6%).

The majority (63%) of rickshaw passengers earn between BDT 20,001 and 50,000 per month, indicating a predominantly lower-middle to middle-income user base (Figure 17).

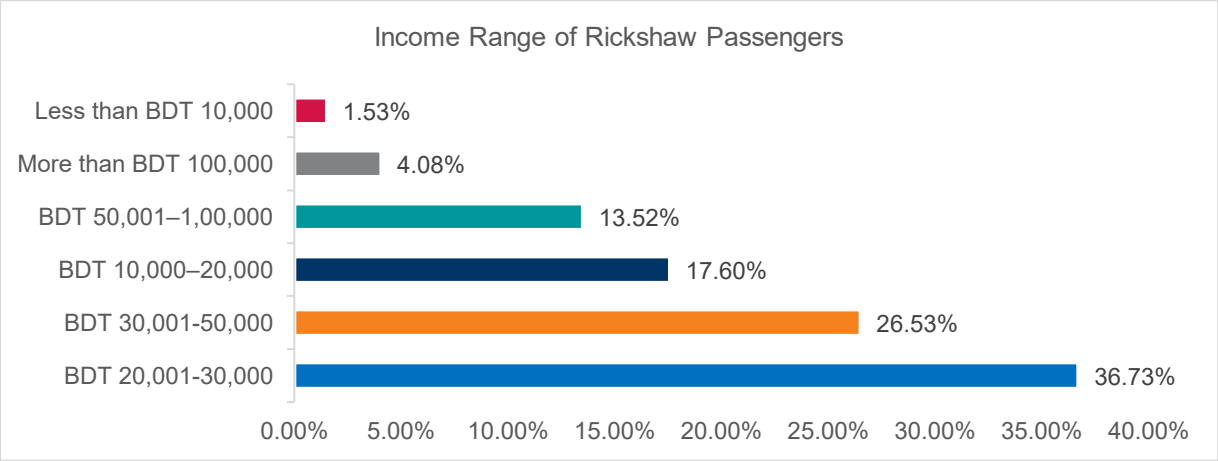


Figure 17: Income Range of Rickshaw Passengers

Table 7 shows that rickshaw usage is highest among passengers earning BDT 20,001–30,000.

Table 7: Demographic profile vs income distribution (%)

	Income Range				
Age Range	**<20000**	**20001-30000**	**30001-50000**	**50000-100000**	**>100000**
18-25	34.67%	27.08%	22.12%	22.64%	31.25%
26-34	21.33%	29.86%	25.96%	16.98%	18.75%
35-44	22.67%	22.22%	25.00%	33.96%	18.75%
45-54	18.67%	12.50%	18.27%	16.98%	12.50%
55-64	2.67%	4.86%	5.77%	7.55%	18.75%
65+	0.00%	3.47%	2.88%	1.89%	0.00%
n=	**75**	**144**	**104**	**53**	**16**

Approximately 79% of the passengers within this income bracket are aged between 18 and 44 years.

3.2 Income and Daily Expense on Rickshaws

3.2.1 Income vs Daily Expense on Rickshaw Ride

According to the rickshaw passengers surveyed, **there is a positive and an inverse relationship between monthly household income and the number of potential passengers willing to spend on rickshaw rides**. As shown in Figure 18, as income increases, the number of passengers willing to spend on rickshaws rises simultaneously until the income range reaches between BDT 20,001 and 30,000. Beyond this point, as income increases, individuals become more reluctant to spend on rickshaw rides.

Passenger spending on rickshaw rides rises with income up to the BDT 20,001–30,000 bracket, after which higher-income groups show a declining reliance on rickshaws.

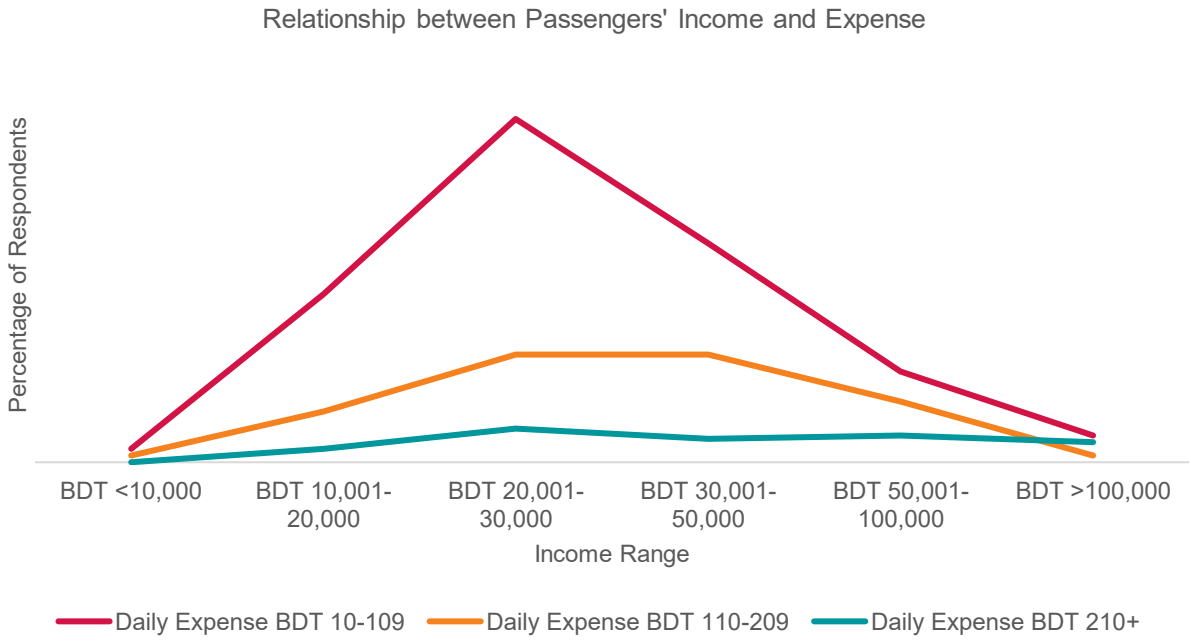


Figure 18: Relationship between Passengers' Monthly Household Income and Expense

Approximately **55.36% of respondents** with a monthly household income between **BDT 10,001 and 50,000** reported spending **BDT 10–110 per day** on rickshaw rides for personal travel needs. This suggests that individuals within this income bracket represent the primary and most significant commuter segment for this mode of transportation.

Moreover, **as income increases**, the number of passengers spending **BDT 10-109** and **BDT 110-209 increases as well** until the monthly income of the passengers reaches the range of **BDT 20,001 – 30,000**. **Beyond BDT 30,000,** passengers become **less dependent** on using rickshaws to travel, as **income and expense** begin to have an **inverse relationship. This shows that as income increases,** the number of passengers willing to spend on rickshaws decreases.

3.2.2 Daily Expense on Rickshaw Ride (Pedal vs Battery)

Passengers have to pay approximately BDT 27 more on average on pedal rickshaw rides daily, compared to battery rickshaw rides.

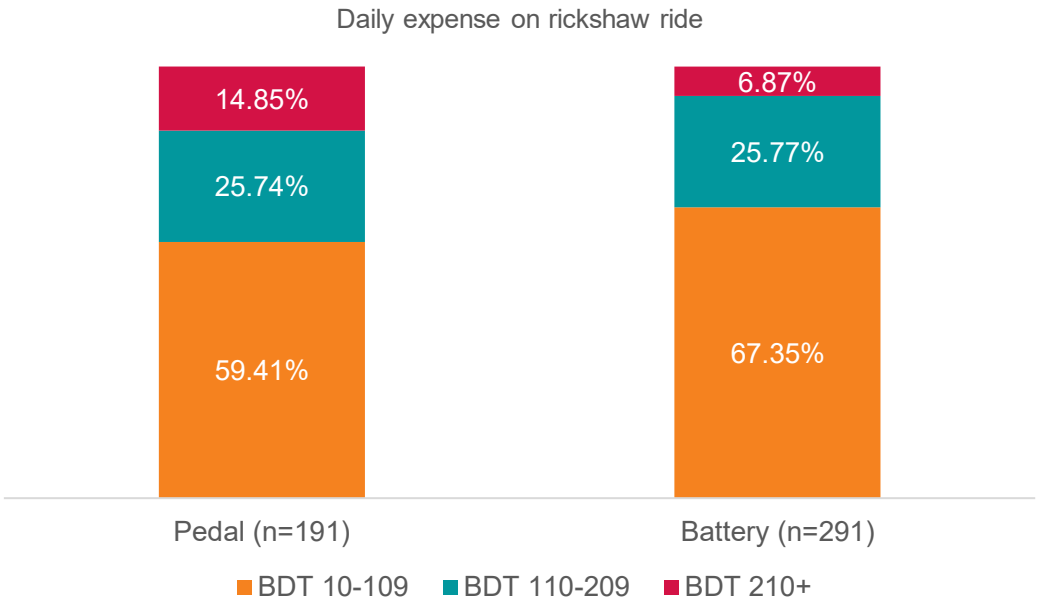


Figure 19: Daily expense on rickshaw ride

On average, pedal rickshaw passengers' daily expenditure on rides is BDT 134.87, whereas battery rickshaw passengers pay BDT 107.73 daily. Furthermore, as shown in Figure 21, **67.35% of battery rickshaw users** reported spending approximately **BDT 10-109/day** on battery rickshaw rides, while a lower number of **59.41% of battery rickshaw users** indicated similar daily expenses. On the other hand, a larger **14.85% of pedal rickshaw users** reported spending **BDT 210+,** compared to **6.87% of battery rickshaw users**.

3.3 Rickshaw Usage Patterns

3.3.1 Top Reasons for Travelling

Rickshaw use is primarily tied to connectivity within the transport ecosystem**.** The top use of rickshaws is for going to work (17.34%) and then to commute to a public transport (13.77%) (Table 8)**.**

Table 8: Top Reasons for Travelling by Rickshaw

Purpose	Ranked as one
Going to office (workers/self-employed)	17.34%
Short ride to public transport	13.77%
Children's school (those with children)	9.94%
Students going to school/university	6.63%
Carrying goods	9.18%
Leisure/outing	5.35%
Shopping	8.16%
Other (hospital, relatives, tuition, etc.)	2.29%
n=	**392**

Nearly two-thirds of passengers use rickshaws for short trips of 1–3 km, while over one-third rely on them for longer-distance travel (Table 9).

Table 9: Trip Size and Usage Patterns of Rickshaw Passengers

Metric	Category	Percentage
Trip Type	Short distance	75.50%
	Long distance	24.50%
	n=	392
Daily Distance Traveled	1–2 km	34.70%
	2–3 km	20.90%
	5 km or more	15.30%
	Less than 1 km	15.10%
	3–5 km	14.00%
	n=	**392**

3.3.2 Usage and Preference of Rickshaws as a Ride

One in every two passengers who prefer pedal rickshaws ultimately end up using the battery-driven rickshaws, signaling a growing shift towards the usage of battery rickshaws.

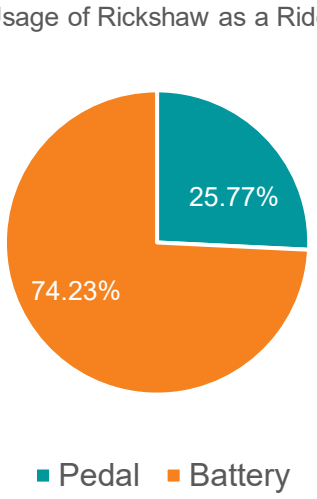


Figure 20: Usage of Rickshaws as a Ride

When respondents were questioned about usage patterns, **74.23%** reported using battery rickshaws for their daily commute, compared to only **25.77%** who primarily use pedal rickshaws.

Passenger preference is evenly split between pedal and battery rickshaws, as shown in Figure 21.

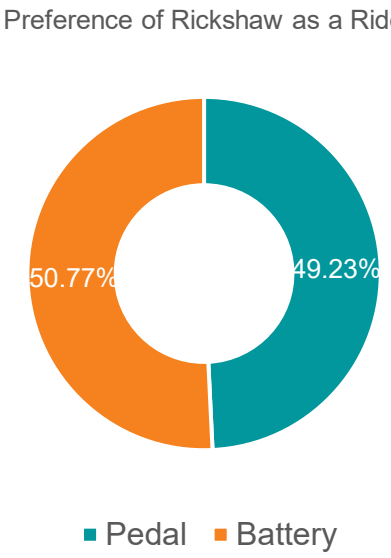


Figure 21: Preference of Rickshaw as a Ride

When respondents were asked to choose between pedal and battery rickshaws, preferences were nearly evenly split, **49.23%** favoring pedal and **50.77%** battery rickshaws. This discrepancy between preference and practice highlights the growing functional dependence on battery rickshaws, suggesting a market-driven transition toward motorized mobility, which may have implications for urban transport planning, energy demand, and regulatory frameworks.

Preferences for pedal and battery rickshaws are driven mainly by safety and shorter travel time, respectively. As Figure 22 shows, of the 193 respondents who chose a **pedal rickshaw, 93% cited safety**. In contrast, of the 199 respondents who **chose battery, 82% stated that it was more time efficient**.

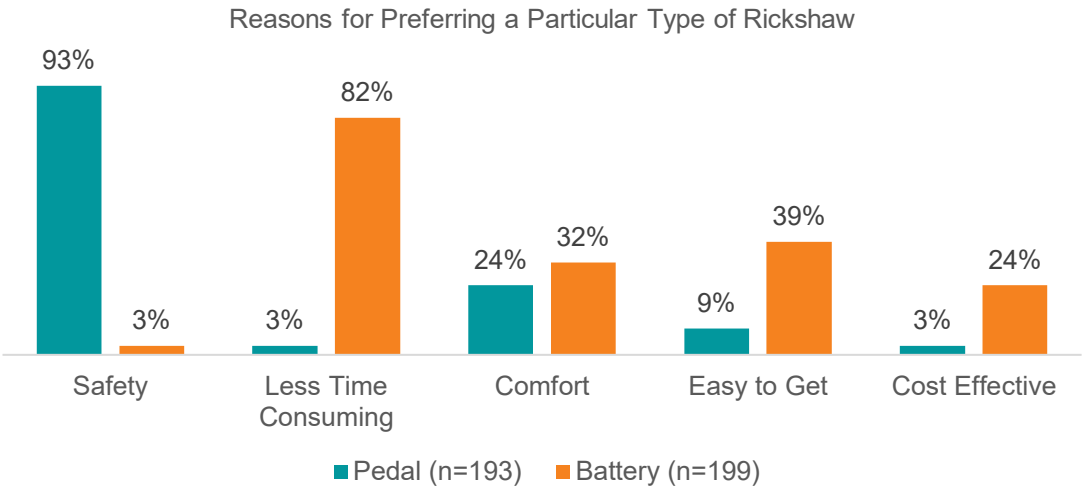


Figure 22: Reasons for Preferring a Particular Type of Rickshaw

Although passengers have their safety concerns when it comes to battery rickshaws, **one out of two passengers would still use and prefer battery rickshaws** over pedal. This indicates that demand for battery rickshaws is significantly higher than for pedal rickshaws, as passengers prioritize time efficiency over safety concerns.

3.3.4 Accidents

3.3.4.1 Frequency of Accident and Severity of Injury

Nearly one in three battery rickshaw passengers experienced injuries, compared to over one in six for pedal rickshaws.

According to the rickshaw passengers surveyed, as shown in Figure 23, a substantially **greater number of battery rickshaw passengers** (**30%)** have been involved in **some form of accident**, compared to **pedal rickshaw passengers** (**18%**).

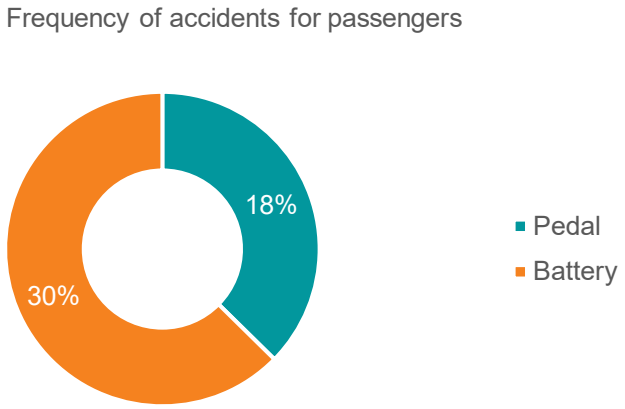


Figure 23: Frequency of accidents for passengers

Nearly half of passengers in battery rickshaw accidents sustained serious to very serious injuries, compared to less than one-third in pedal rickshaw accidents, emphasizing a genuine safety concern.

As shown in Figure 24 below**, 44.54% battery rickshaw passengers** sustained **serious to very serious injuries,** whereas 29.58% of pedal rickshaw passengers sustained similar injuries. The higher incidence and severity of accidents associated with battery-operated rickshaws underscore emerging safety concerns in urban mobility.

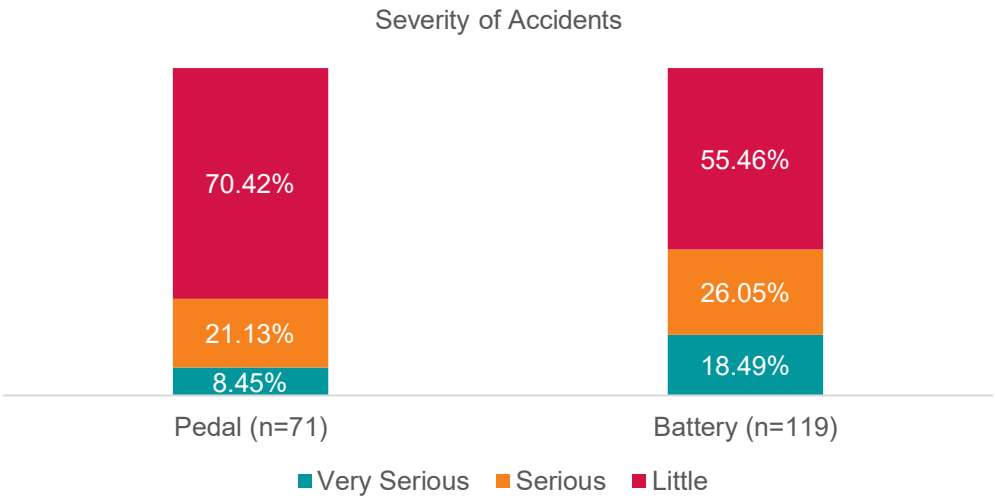


Figure 24: Severity of Accidents

These findings underscore the necessity for regulatory interventions, including the implementation of safety standards, driver training programs, and vehicle registration protocols, to mitigate accident risks and enhance commuter safety in densely populated urban areas.

3.4 Perception on Traffic and Regulation

While rickshaws in general are widely perceived as a traffic problem, battery rickshaws are singled out as the larger source of congestion by rickshaw passengers, as shown in Figure 25 below**.**

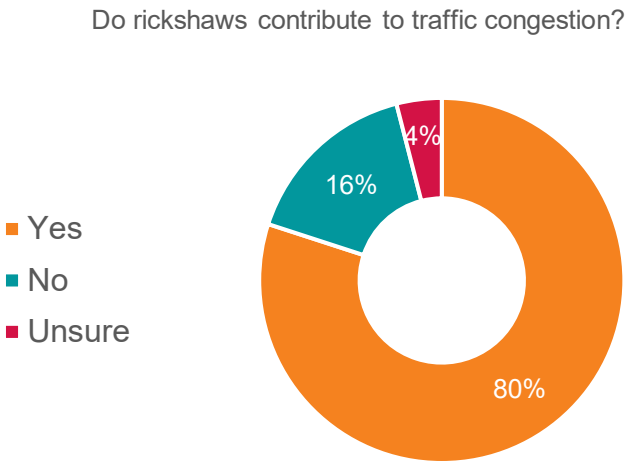


Figure 25: Do rickshaws contribute to traffic congestion?

As shown in Figure 27, when asked whether rickshaws contribute to traffic congestion, an overwhelming majority of respondents (315 out of 392; 80%) answered “Yes,” while 16% (62) said “No,” and 4% (15) were unsure.

Findings reveal that 2 in every 3 passengers view battery-driven rickshaws as a major cause of city traffic congestion, whereas only 1 in 25 blame pedal rickshaws (Figure 26).

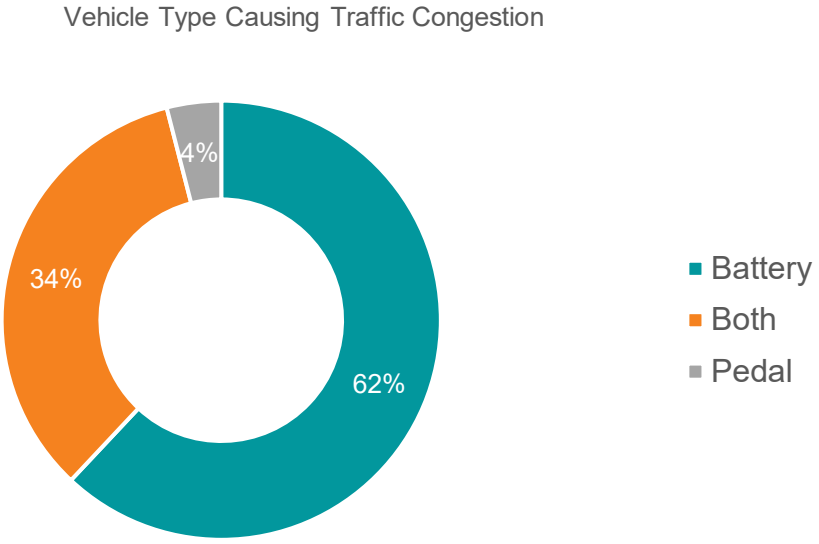


Figure 26: Vehicle Type Causing Traffic Congestion

Among those who believe rickshaws cause congestion (n=315), most pointed to battery rickshaws (196; 62%) as the main contributor, followed by both types equally (107; 34%), while only a small minority blamed pedal rickshaws alone (12; 4%).

3.5 Mobility Preference and Dynamics

Passengers demand alternative public transport, with 2 out of 5 passengers prioritizing affordability and comfort the most (Table 10).

Table 10: Rickshaw Passenger Aspirations in Urban Setting

I want affordable and comfortable public transport	39.80%
I want more affordable public transport	18.37%
If CNG fares were cheaper, I would use them more	10.46%
I want more comfortable public transport options	9.18%
I want to stop using rickshaws and buy a motorbike	7.65%
I want to stop using rickshaws and buy a car	4.08%
I want to stop using rickshaws and buy a bicycle	3.57%
If CNGs were more available, I would use them more	3.06%
I want to use motorbike ride-sharing services more often	2.30%
I want to use car ride-sharing services more often	1.53%
n=	**392**

As shown in Table 10, nearly **40%of passengers prioritize affordability and comfort** in public transport. On the other hand, **18.37% prioritize affordability only**, whereas **9.18% are prioritizing comfort** over other factors. With reduced pricing, CNG usage would increase and would be a viable alternative, as stated by 10.46% of passengers.

Passengers show a near-even split in preference between battery and pedal rickshaws as the best fit for their needs, indicating no clear dominance of one type over the other (Table 11).

Table 11: Is Battery or Pedal Rickshaw the Right Fit for Passengers

Battery rickshaw is most suitable for my current travel needs	46.68%
Pedal rickshaw is most suitable for my current travel needs	46.43%
Neither of these is suitable for my travel needs	6.89%
n=	**392**

An overwhelming 79% of passengers endorse stricter regulations on battery rickshaws, compared to just 12% who are against it, reflecting broad public backing for enhanced oversight (Figure 27).

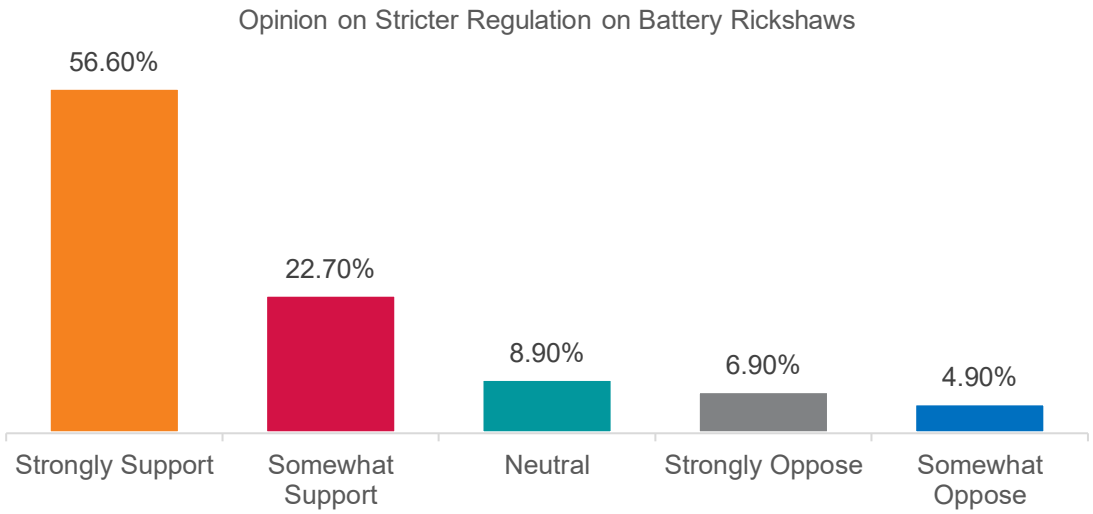


Figure 27: Opinion on Stricter Regulation on Battery Rickshaws

Only **12% respondents** opposed the introduction of stricter regulations on battery rickshaws, suggesting that the vast majority of riders support the development of timely and people-centered policies for better governance of the sector.

Findings reveal a strong public inclination toward regulating battery rickshaws. A majority, **79% of respondents** (n=392), **expressed support**, with 56.6% strongly supporting and 22.7% somewhat supporting stricter controls.

Public opinion on handling battery-powered rickshaws (commonly referred to as "Teslas") is divided, with a substantial majority (78.06%) favoring zone-based regulations over an outright ban (Table 12).

Table 12: Public Opinion on What the Government Should Do About the So-called Teslas

Allow them only on inner roads, not on main roads	33.93%
Allow them if drivers have a valid license	22.19%
Allow them under speed restrictions	21.94%
Completely ban them	21.94%
n=	**392**

3.6 Key Insights

Based on the study's findings regarding rickshaw passengers, the following key insights are generated:

- Passengers with a monthly household income that ranges between BDT **20,001 and 30,000** are the **most frequent users of rickshaws,** with dependency decreasing as income levels increase beyond BDT 30,000, approximately.
- Primarily, rickshaws are used for **short trips** to reach buses or other public transport.
- Both pedal and battery rickshaw passengers reported **similar daily expenses** for equivalent distances travelled, with greater availability seen for battery rickshaws in particular.
- While pedal rickshaws are seen as the **safer option**, the majority (**82%**) of the passengers surveyed considered battery rickshaws more **time-efficient** and stated that they use the latter for their daily commute.
- Passengers faced a **higher incidence** and **severity of accidents** while using battery rickshaws, with almost 45% of the passengers surveyed, reported sustaining serious to very serious injuries.
- Battery rickshaws are seen as a **major contributor to traffic congestion**, and passengers stated that they want **better governance** of the overall sector with **stricter regulations (78.06%)** placed on battery rickshaws specifically.

Chapter 4: Transition from Pedal to Battery- Garage Owner's Incentives and Challenges

4.1 Profile

The garage owners surveyed represent a relatively experienced and mature group within Dhaka's informal transport economy. The **median age is 42**, placing **most owners in their middle working years**, with a long history of involvement in the sector.

On median, they reported **18 years of experience** in the rickshaw business, underscoring the sector's stability and the deep-rooted role these entrepreneurs play in sustaining urban mobility.

When asked about involvement in other businesses beyond rickshaws, the **vast majority (86%) said they do not operate any additional ventures,** as shown in Figure 28 below.

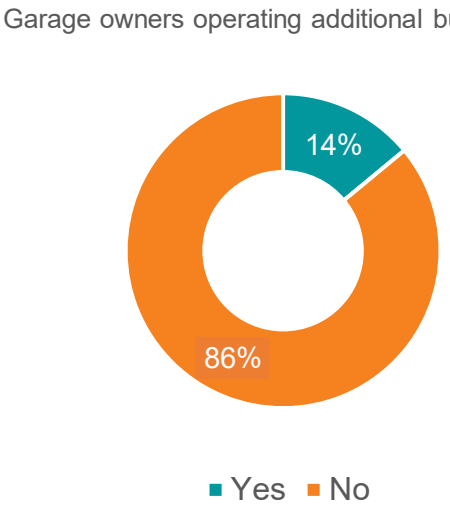


Figure 28: Garage owners operating additional businesses

Only 9 respondents **(14%) reported other activities**, typically small-scale enterprises such as grocery stores, tea stalls, mess housing, home rentals, or van services.

These findings suggest that rickshaw ownership is usually a **primary livelihood**, rather than a side investment, with only a handful of owners branching into other microbusinesses.

4.2 Ownership structure

The sample of 63 owners reflects a balanced ownership mix between battery and pedal rickshaws, with a notable portion holding both types.

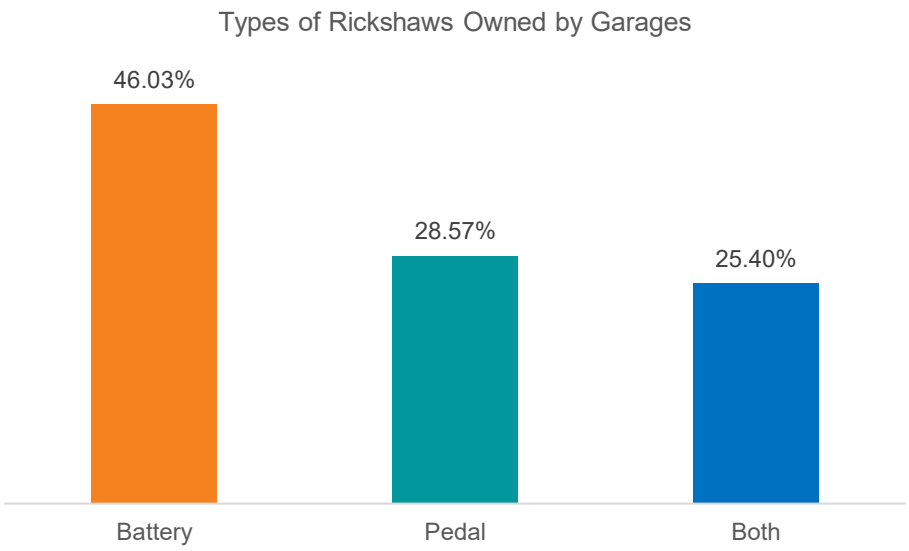


Figure 29: Types of Rickshaws Owned by Garages

Specifically, as Figure 29 shows, **46% (n=63)** reported owning only **battery rickshaws**, reflecting a **sector in transition**, where owners are pragmatically diversifying as the market gradually shifts toward battery-powered vehicles.

Garage owners surveyed report owning substantially more pedal rickshaws (1,400) than battery rickshaws (975), as shown in Figure 30. **This indicates a continued dominance of traditional pedal rickshaws in their fleets.**

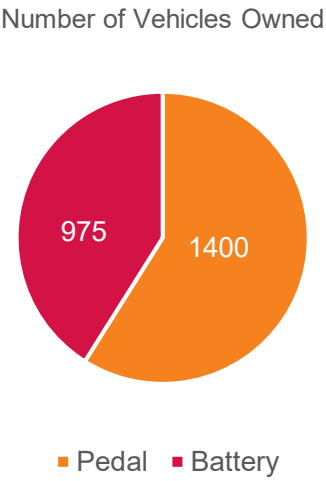


Figure 30: Number of Vehicles Owned

Amongst the 63 garage owners surveyed, a total of **1400 pedal rickshaws** and **975 battery rickshaws** are **owned and used** in their garages. The higher number of pedal rickshaws may be a result of the overall **lower purchase price** for pedal rickshaws and the significantly **longer period of time** that the vehicles have been **operating in Dhaka**.

This finding is further reinforced by Figure 31, which reveals that 81% of garage owners initiated their operations exclusively with pedal rickshaws.

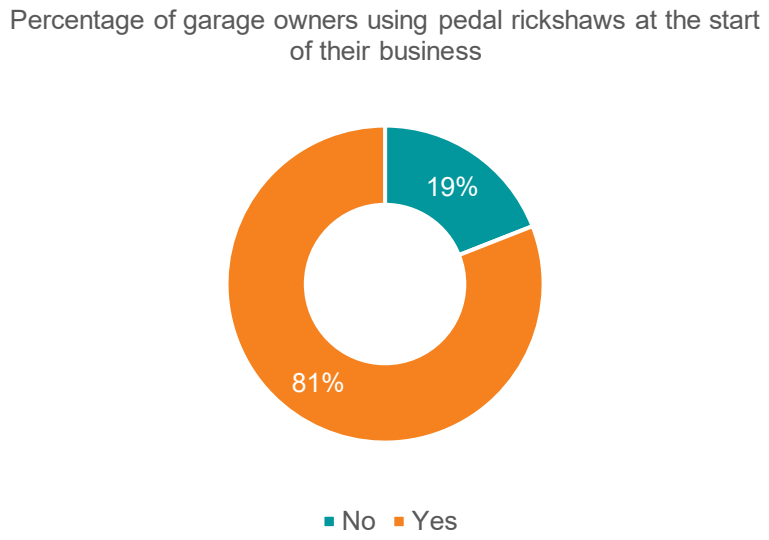


Figure 31: Percentage of garage owners using pedal rickshaws at the start of their business

Furthermore, Figure 32 shows that **35% of the garage owners (n=63)** surveyed **transformed** their previously owned **pedal rickshaws to battery rickshaws**.

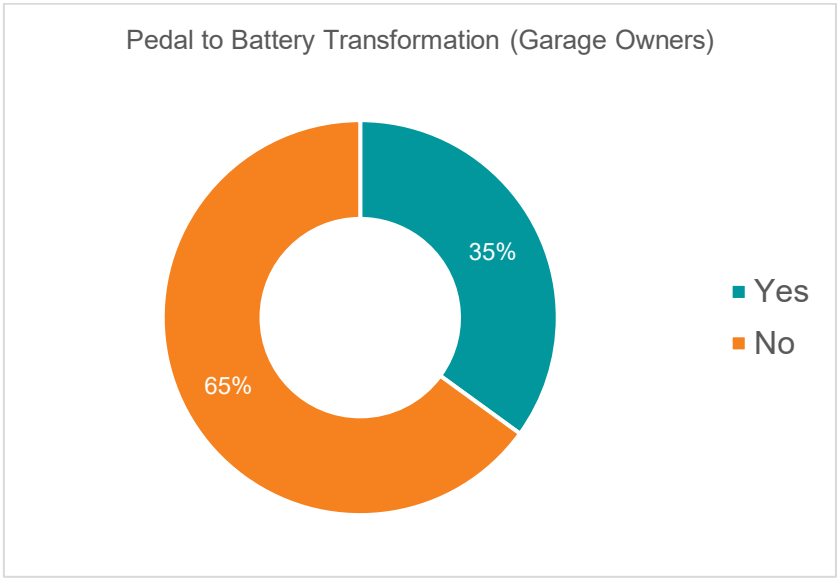


Figure 32: Pedal to Battery Transformation (Garage Owners)

This generated a weighted average cost of **BDT 62,230**, financed through **Microfinance/NGOs** for **77%** of the **owners**.

4.3 Motivation

Among the **63 garage owners** surveyed, as shown in Figure 33, a majority of respondents, **i.e., 62%,** prefer **battery rickshaws over pedal rickshaws**.

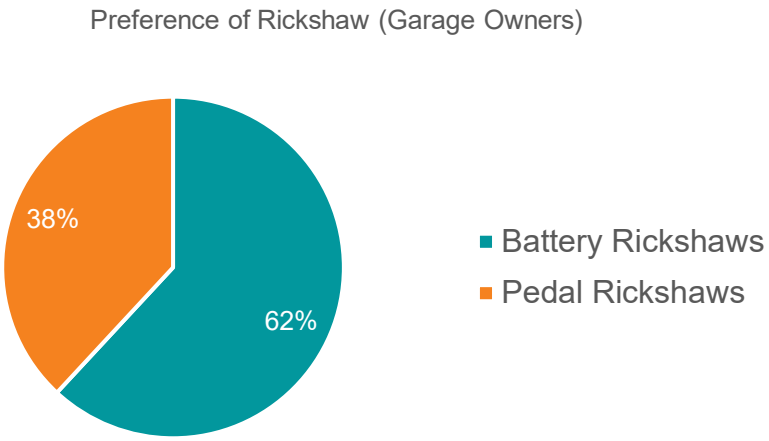


Figure 33: Preference of Rickshaw (Garage Owners)

Garage owners are primarily motivated by **high demand, greater income potential, and the ability to travel easily** across different areas. Many also consider **operational cost efficiency**, but the **focus is largely on earnings and market demand**. In contrast, pedal rickshaw owners prioritize low operating costs and steady income, with fewer emphasizing demand or travel convenience.

4.4 Challenges

Garage owners face specific challenges, including **higher initial purchase costs**, **battery maintenance and replacement expenses**, **dependence on charging infrastructure**, and **operational limitations on longer trips**, as well as **occasional regulatory or traffic constraints**. Overall, while battery rickshaws offer higher income opportunities and flexibility, they come with additional costs and operational risks compared to pedal rickshaws.

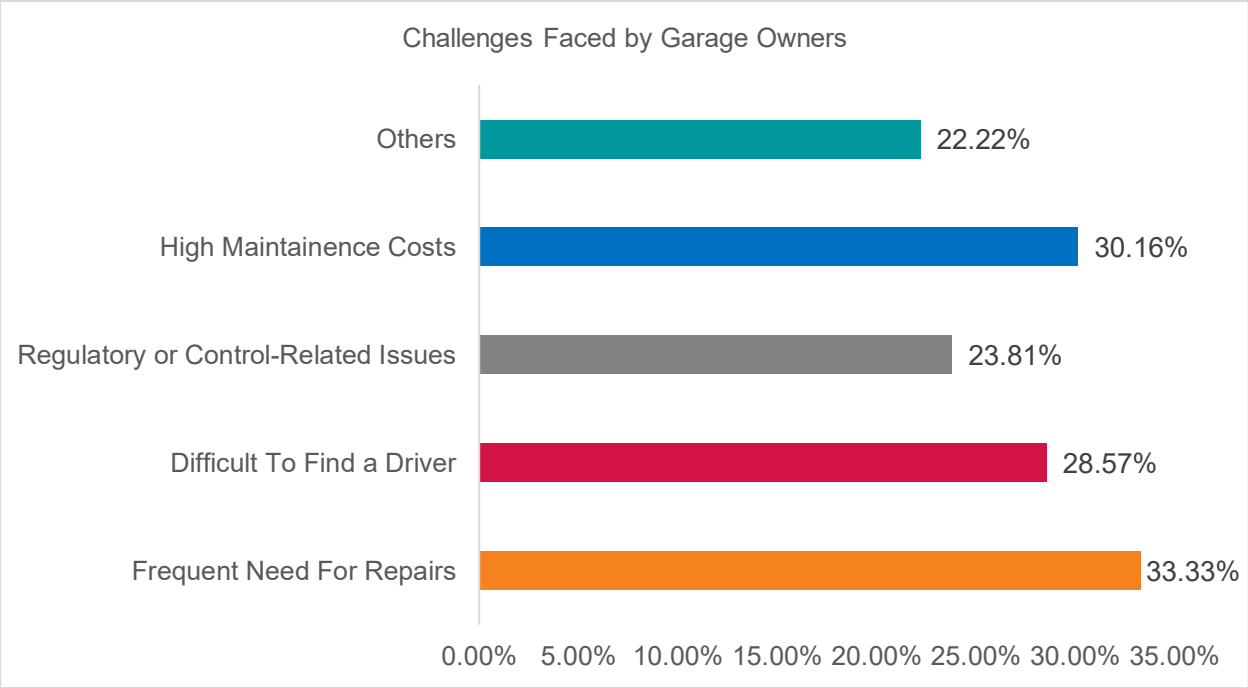


Figure 34: Challenges Faced by Garage Owners

As shown in Figure 34, Garage owners also face a mix of **operational, regulatory, and safety challenges**. 23.81% of the respondents reported issue is **police restrictions and regulations**, which affect daily operations and mobility. Alongside this, more than 60% of owners commonly struggle with frequent need for repairs, **battery costs, and replacements**, which add to their financial burden.

Charging infrastructure gaps, such as the **lack of accessible charging stations,** also limit operational efficiency. Safety concerns, including **accidents and general security risks,** further complicate daily work. Many owners experience multiple overlapping challenges, such as dealing with police restrictions while managing battery costs and charging issues, or balancing safety concerns with operational limitations. Overall, while battery rickshaws offer higher income potential, these constraints create **significant hurdles that affect profitability, reliability, and ease of use**.

4.5 Future Outlook

Among the 63 garage owners surveyed, **29 (46%)** expressed interest in **switching to or investing** in **another type of transport business**, while **34 (54%)** preferred to **continue with their current business (Figure 35).**

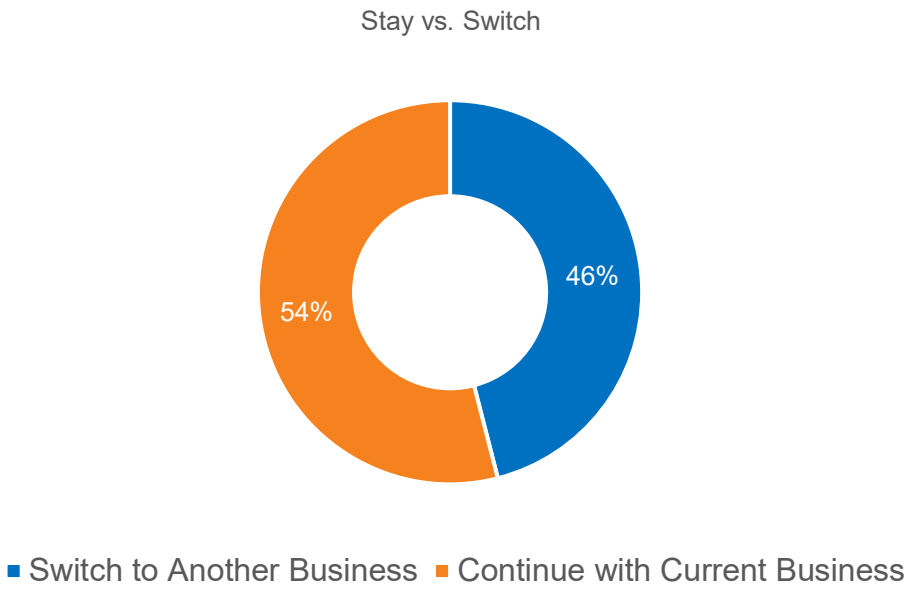


Figure 35: Stay vs. Switch

Among those interested in alternative ventures, the **most popular options** were **modified versions of battery rickshaws (9 respondents, 31%),** followed by **private cars for ride-hailing services** like Pathao or Uber (**5 respondents, 17%**), and other types of transport or small businesses, including pickups (8 respondents, 28%). Lesser preferred options included CNG vehicles (3 respondents), leguna (2 respondents), and mixed combinations of CNG, leguna, and modified battery rickshaws (2 respondents).

This indicates that while nearly half of battery rickshaw owners are **open to diversification**, most remain inclined toward **familiar transport solutions**, with a preference for innovations within the battery rickshaw model.

4.6 Key Insights

Based on the study's findings regarding garage owners, the following key insights are generated:

- The majority of the owners surveyed have, on average, **18 years of experience** in the rickshaw business, with **no involvement in other ventures**.
- The rickshaw sector shows a **gradual shift towards battery-powered vehicles**, with garage owners stating that they own a balanced mix of battery and pedal rickshaw vehicles.
- The majority of garage owners surveyed prefer battery rickshaws over pedal rickshaws, and incentives include a **higher demand and potential income for the vehicle**.
- Challenges related to owning battery rickshaws include higher **purchase price, repair and maintenance expenses, and operational limitations** such as a lack of accessible charging stations.
- Battery rickshaws face **occasional operational and safety challenges**, as greater accident severity leads to higher costs of repair, reducing profitability.
- Half of the garage owners operating battery rickshaws in their garages are **open to innovations** to the current battery rickshaw model.

Chapter 5. Recommendations and Conclusion

5.1 Policy Recommendations

The urban mobility landscape in Dhaka presents significant opportunities for platform-based solutions, but success hinges on addressing the distinct challenges and motivations of its stakeholders. This comprehensive set of recommendations is structured to provide a clear, actionable roadmap for engaging with and transforming this dynamic market. Dhaka's rickshaw market is large, active, and clearly in transition from pedal to battery.

Transitions are active and purposeful. A majority of **current battery drivers (58%) moved up from pedal**, citing **lower physical strain (42%), higher passenger demand (32%),** and **higher income (21%).** Income perceptions match this, as **58% of battery drivers report income gains** vs **32% of pedal drivers. Battery drivers earn from BDT 200-400 more per day on average,** showing a meaningful lift at this income level. The garage owners surveyed are well-experienced (**median age 42; median 18 years in the trade**), and are gradually transitioning towards battery rickshaws, with **46% renting out only these types of vehicles.**

On safety, the nuance matters. Pedal rickshaws report more total accidents, partly because they have been on the road much longer, while **battery accidents are costlier when they do occur**, consistent with higher severity and repair expenses. However, **passengers report more total accidents using battery rickshaws (119 vs 71),** showing a contradiction between battery rickshaw drivers and battery rickshaw passengers. Moreover, when asked about accident severity, **44.54%** of battery rickshaw passengers suffered **serious to very serious injuries** while riding battery rickshaws**.** This is a **significantly higher number** when compared with **29.58% of the pedal rickshaw passengers** who suffered similar injuries while riding **pedal rickshaws.** This shows **greater frequency and severity of accidents** when it comes to battery rickshaws. Fear of disciplinary/regulatory consequences might have forced battery rickshaw drivers to underreport the frequency of accidents.

A. Standardize the Design of Battery Rickshaws:

The high rate of accidents reported by battery rickshaws suggests the need to improve and standardize their design. **30% of rickshaw passengers** who frequently travel using battery rickshaws have been involved in some form of accident vs. 18% pedal passengers.

Furthermore, passengers reported sustaining a greater severity of injuries while travelling in battery rickshaws.**44.54% battery rickshaw passengers** sustained **serious to very serious injuries**.

Moreover, when an accident occurs, battery rickshaws incur greater costs, with **52.94% generating expenses exceeding BDT 2000**.

Garage owners must be **incentivized** to shift from **formal assembly to standardized manufacturing** that aligns with **safety standards** set by the **BRTA (Bangladesh Road Transport Authority)**.

B. Regulate Entry of New Battery Rickshaws; Facilitate Transition from Pedal to Battery:

Nearly 75% of battery rickshaw drivers are new entrants, without previous experience in driving a pedal rickshaw. Battery rickshaws have attracted a new urban informal workforce, adding to the already overcrowded market.

Potential entrants must be given **alternative jobs** to reduce the existing influx of new workers. On the other hand, **affordable credit** could be used to incentivize formalization, as **battery rickshaws are significantly more expensive to purchase compared to pedal rickshaws**.

A typical loan size ranges from **BDT 30,000 to 150,000**, sourced from **Microfinance/NGO** loans by **51% of battery drivers** surveyed.

NGOs & MFIs (Microfinance Institutions) could provide the "**affordable credit**" required to incentivize the transition from pedal to battery rickshaws. Furthermore, garage owners can be offered this credit only if they purchase battery rickshaws produced through the **standardized manufacturing procedure**.

C. Incentivize the Formalization of Rickshaws

Formalization needs to be incentivized, as nearly all **battery rickshaws** surveyed were found **unregistered (97.40%)**.

The DNCC and DSCC must maintain **updated registration databases**, enforcing **stricter regulations for vehicle registration**. They must implement zone-based operation regulations by **designating "rickshaw-free" main roads** and **allowing battery rickshaws only in alleys/inner roads**.

Simultaneously, **national speed limits** for battery rickshaws must be set, while **monitoring and managing driver licensing**. The **DMP (Dhaka Metropolitan Police)** will be in charge of **enforcing road categories and speed limits**.

Ultimately, the profession must be shifted away from the informal economy while increasing monitoring and documentation.

D. Inspire Through Training and Traffic Awareness

Findings showed that **59.90% of battery rickshaw drivers** have **less than two years of driving experience**, indicating a high proportion of inexperienced operators.

With **formalization, traffic training and awareness support** must be provided to decrease the existing accident risks associated with battery rickshaws. **The BRTA** could be held responsible for conducting training protocols.

Rickshaws must be brought under the **mass transit system** to make the job **functional and aspirational**.

E. Provide Alternatives to Rickshaws for Passengers

Moreover, **80% of passengers** believe rickshaws contribute to **traffic congestion**. Among these passengers, **62% of passengers blame battery rickshaws** specifically**.**

By reducing the demand for rickshaws, traffic congestion can be decreased.

The DSCC and DNCC can collaborate on **improving walkways** and removing congestion on them. Furthermore, **alternative short-distance commute systems** such as electric vehicles can be introduced through **PPP (Public-Private Partnership)**.

5.2 Institutional Framework for Implementation

In order to successfully execute the aforementioned recommendations, the public and private sectors must put forth a coordinated effort. The following specifies the responsibilities of selected stakeholders in transitioning and regulating Dhaka's rickshaw sector:

DNCC & DSCC

- Databases must be updated regularly, and DNCC as well as DSCC must enforce registration. They must designate "rickshaw-free" main roads, and implement zone-based operation regulations (allowing battery rickshaws only in alleys/inner roads).

Bangladesh Road Transport Authority (BRTA)

- The BRTA must oversee the formalization of battery rickshaws, set national speed limits along with vehicle safety standards, and manage driver licensing and training protocols.

Dhaka Metropolitan Police (DMP)

- Enforcement of road categories and speed limits; preventing battery rickshaws from entering highways and roads prohibited for battery rickshaws.

NGOs & MFIs

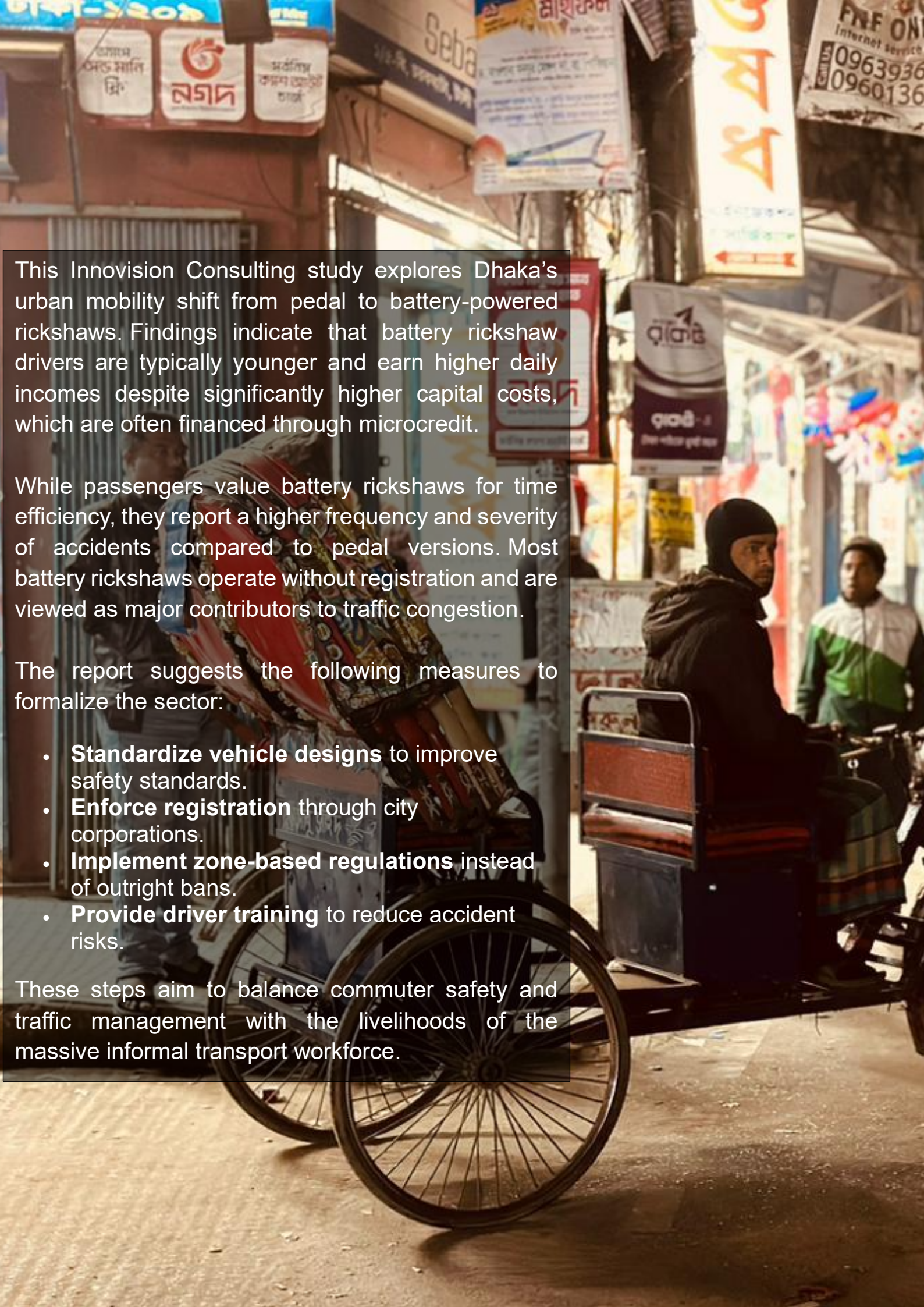
- Provide the "affordable credit" required for drivers and garage owners to upgrade to standardized, registered vehicles, replacing high-interest informal loans.

Private Sector

- Through establishing a PPP (Public-Private Partnership), electric vehicles can be introduced to usher in electric vehicles as an alternative to battery rickshaws.
- Garage owners must shift from informal assembly to standardized manufacturing that complies with safety standards.

Policy and public perception align with these recommendations, as **support for stricter regulation of battery rickshaws is high (79%)**, rather than an outright ban. Moreover, **49.49%** of the total passengers surveyed are **more inclined to use battery rickshaws** despite a considerable amount being concerned about their safety, showing a significant demand and appreciation for their time efficiency benefits.

Despite all, rickshaws remain Dhaka's essential short-haul connector, and the market is steadily electrifying. Battery rickshaws deliver higher earnings but bring higher capital needs, greater incident costs, and stronger regulatory pressures. A sensible policy mix that ensures vehicle standardization, formalization, provision of training and awareness, along with market regulation, would protect safety and traffic flow while preserving livelihoods and the crucial first/last-mile service that rickshaws provide.



This Innovision Consulting study explores Dhaka's urban mobility shift from pedal to battery-powered rickshaws. Findings indicate that battery rickshaw drivers are typically younger and earn higher daily incomes despite significantly higher capital costs, which are often financed through microcredit.

While passengers value battery rickshaws for time efficiency, they report a higher frequency and severity of accidents compared to pedal versions. Most battery rickshaws operate without registration and are viewed as major contributors to traffic congestion.

The report suggests the following measures to formalize the sector:

- **Standardize vehicle designs** to improve safety standards.
- **Enforce registration** through city corporations.
- **Implement zone-based regulations** instead of outright bans.
- **Provide driver training** to reduce accident risks.

These steps aim to balance commuter safety and traffic management with the livelihoods of the massive informal transport workforce.