

# Sustainable Urban Mobility Plan

A Case Study of Birendranagar  
Surkhet ,Nepal

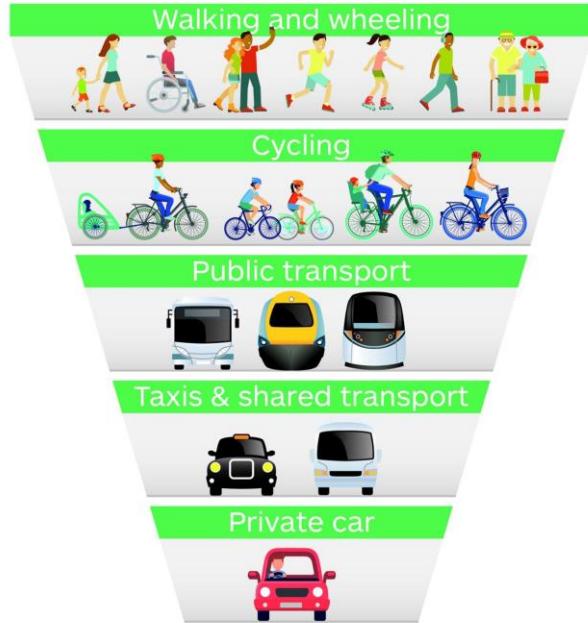
Anil Kumar Mandal  
MS. In Civil Engineering  
Florida Atlantic University



# What is Sustainable Urban Mobility?

- Sustainable urban mobility refers to a concept and approach that aims to create a transportation system in urban areas that is economically viable, socially equitable, and environmentally friendly.
- It promotes eco-friendly transportation modes like walking, cycling, and public transit while reducing dependence on cars and motorbikes, which cause congestion, air pollution, and greenhouse gas emissions.

## Prioritising Sustainable Transport



# Benefits of SUMP



## Environmental Benefits

- Reduced air and noise pollution
- Reduced fuel consumption
- Less carbon emission



## Social Benefits

- Access to mobility
- Time-saving
- Better road safety
- Reduced health risks

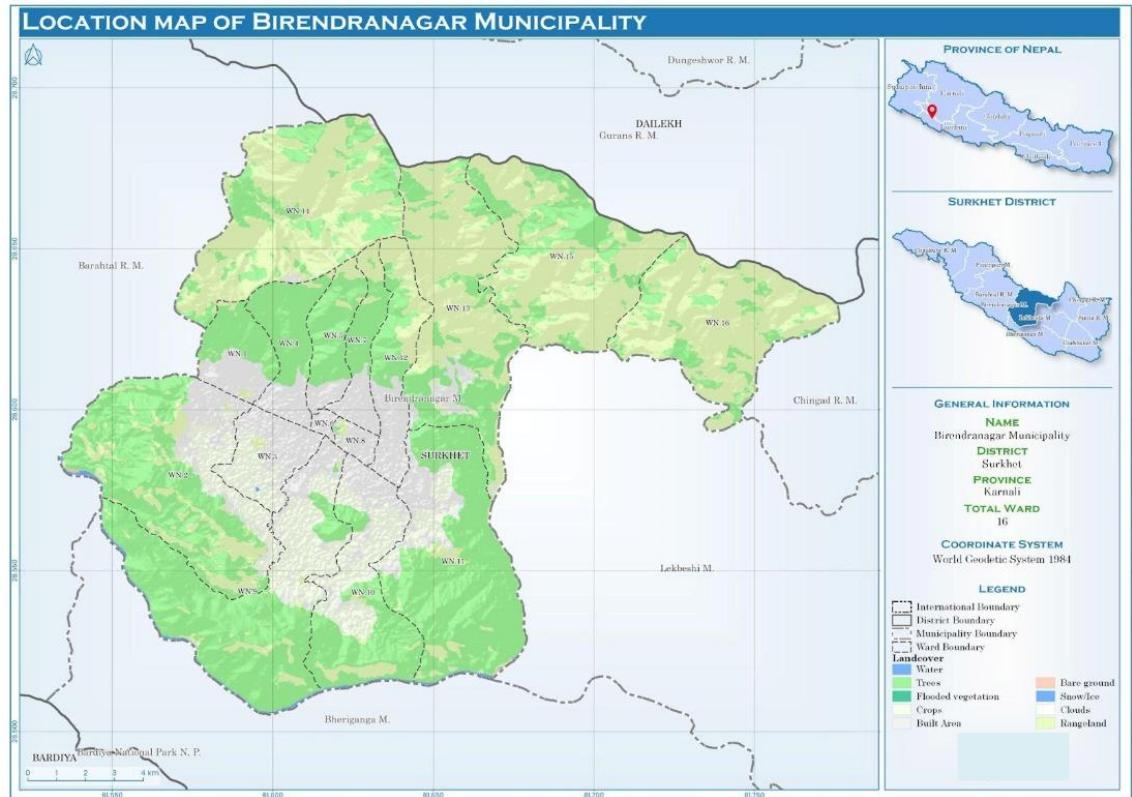


## Economical Benefits

- Reduced fuel import
- Affordable mobility
- Job opportunities

# Sustainable Urban Mobility Plan (SUMP) for Birendranagar

## Why SUMP for Birendranagar?





# Methodology:

## Data collection and analysis

- Collect data on road facilities and conditions within the municipality to assess the existing transportation infrastructure.
- Gather information on traffic patterns, travel behavior, and other relevant data to identify areas requiring interventions.
- Analyze the collected data to understand the transportation challenges and opportunities within Birendranagar.

## Community engagement and Awareness

- Raise awareness among key stakeholders and residents about the significance and benefits of implementing SUMP.
- Engage the community in the planning process to foster a sense of ownership and ensure their needs and perspectives are considered.
- Conduct meetings and surveys to gather valuable information from residents, including their transportation preferences, challenges, and suggestions.

## Prepare a SUMP for Birendranagar

- Develop a comprehensive plan based on the existing transportation plans and requirements of Birendranagar residents.
- Consider the collected data, community feedback, and analysis results to identify appropriate interventions and strategies for sustainable urban mobility.
- Incorporate elements such as promoting alternative modes of transport, enhancing public transit, improving infrastructure, and addressing specific mobility needs and challenges of the city.

# Methodology:

## 1. Origin-Destination Survey

A group of 17 volunteers affiliated with the Nepalese Youth for Climate Action (NYCA) was assembled and provided with training to carry out an Origin-Destination Survey.

Based on the survey, various pieces of information were obtained, including people's commute time, mode of transportation, purpose for their commute, destination place, and time of travel.



## 2. QField

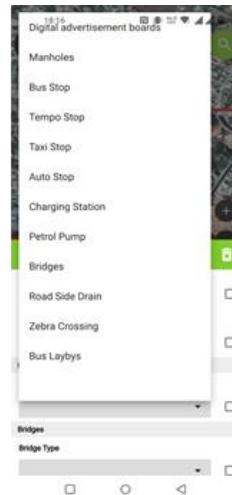
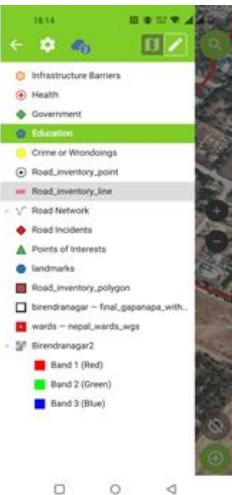
19 engineer volunteers from Mid-Western University were given training on how to use the “QField” app to collect road and location data required for transportation planning.

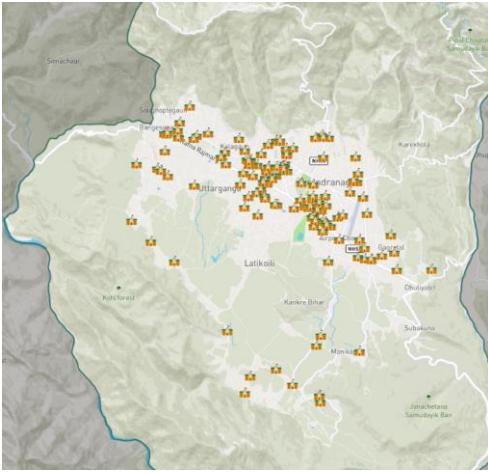


- Data collected from the app:

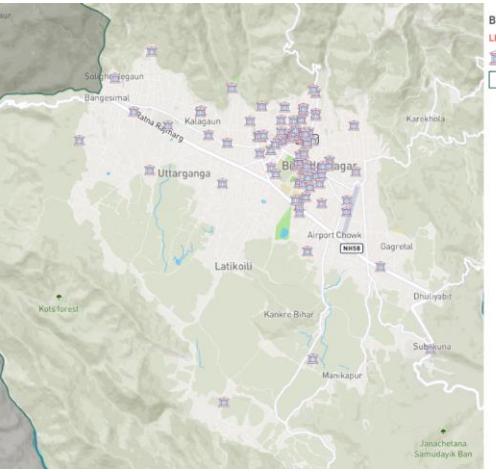
- Status of the road network
- Presence of road obstructions
- Institutions such as schools, government agencies, health centers, etc present near the roadside.
- Information about the geographical location and situation.

**QField**





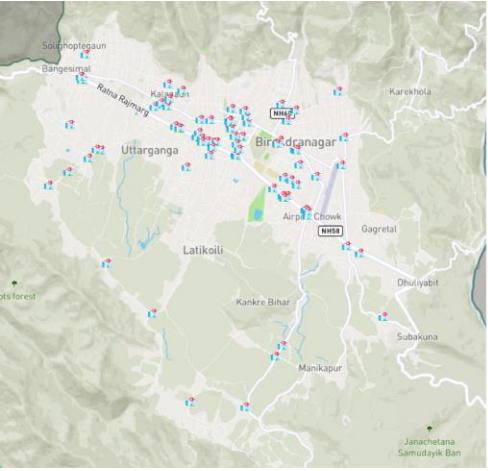
Educational Institutions



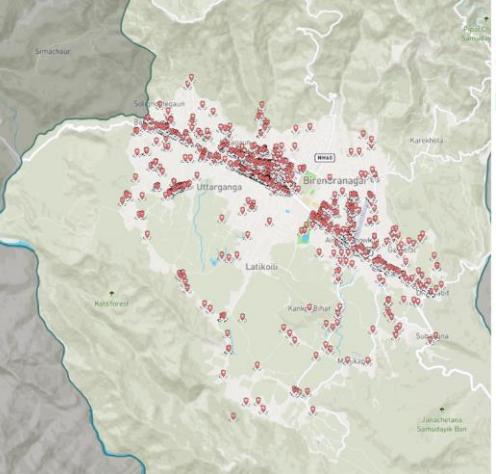
Governmental Institutions



**SUMP**  
Birendranagar



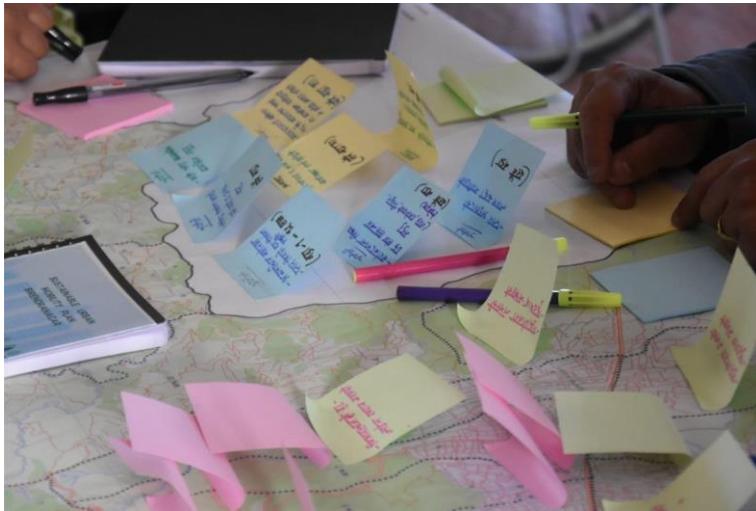
Health Institutions



Point of Interest

### 3. Community Engagement

- A total of 254 residents from each ward were gathered and given an introduction about the project and the importance of SUMP for the general people.
- Comprehensive data regarding transportation in Birendranagar was collected, including information on its opportunities, challenges, and mitigation measures.





Ward-1



Ward-2



Ward-3



Ward-4



Ward-5



Ward-6



Ward-7



Ward-8



Ward-9



Ward-10



Ward-11



Ward-12



Ward- 13



Ward-14

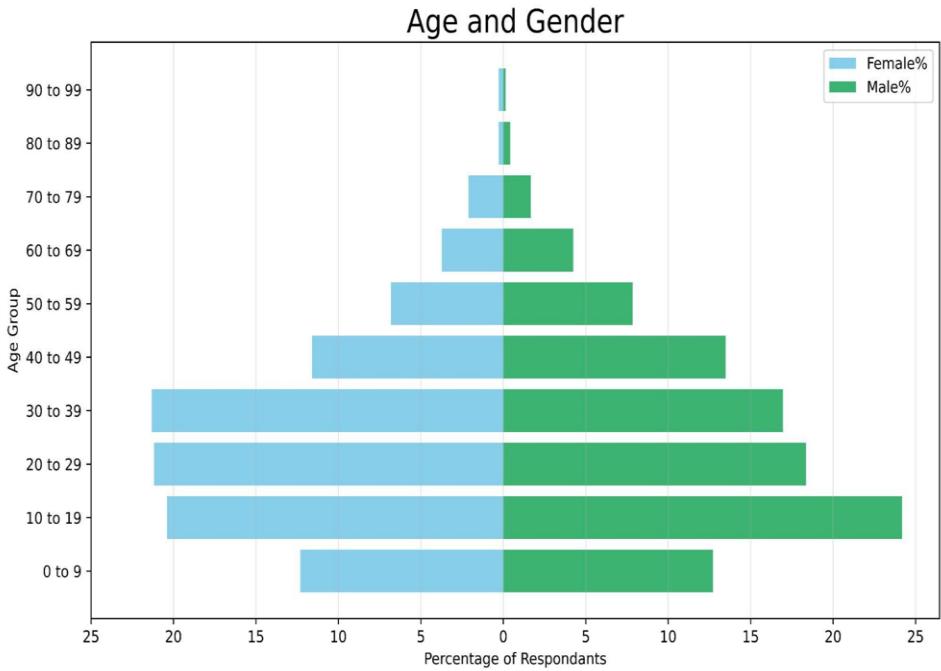
# Results:

## Data Collection:

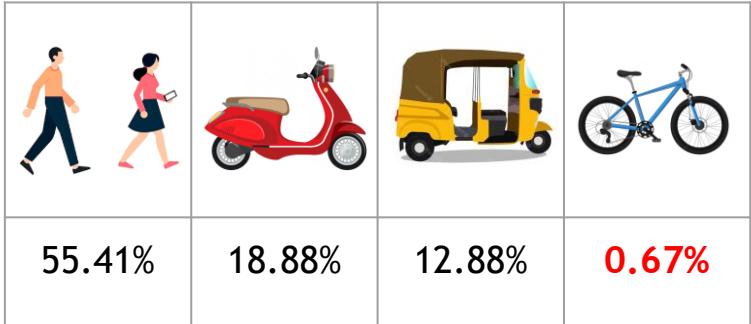
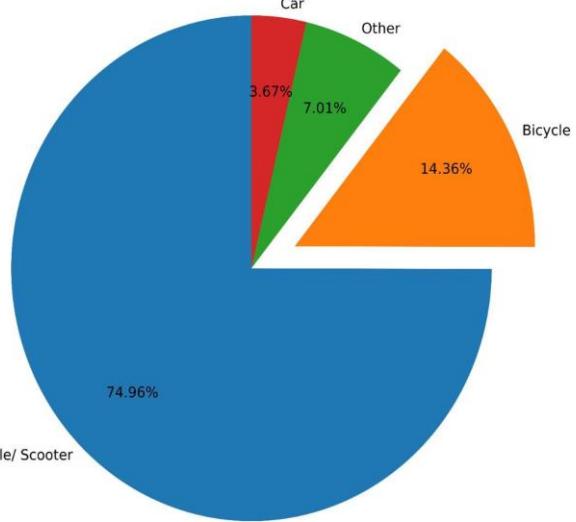
### OD-Survey

Total households surveyed	764
Total O-D data	3054

Female	1432 (49.72%)
Male	1439 ( 50.28%)

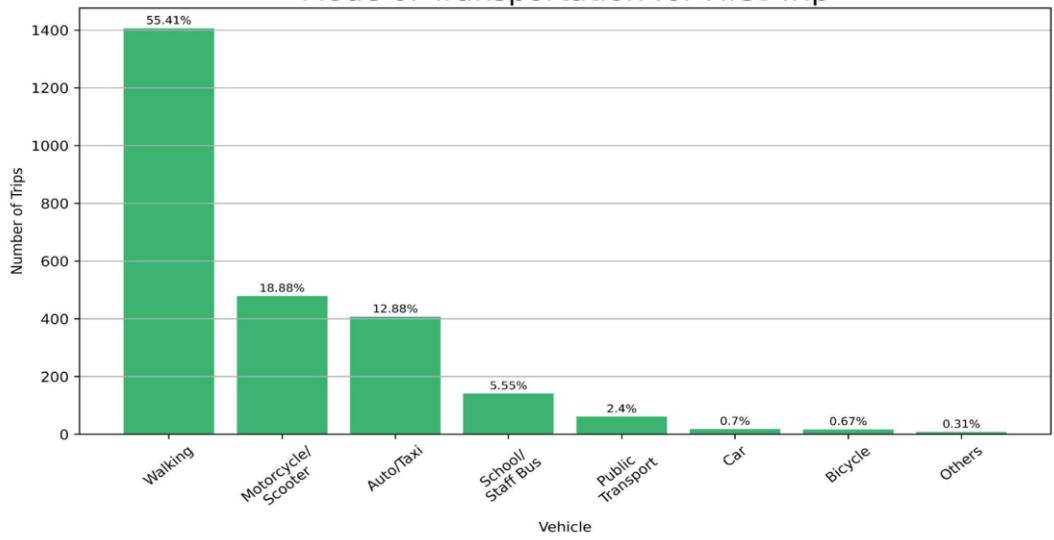


### Vehicle Ownership



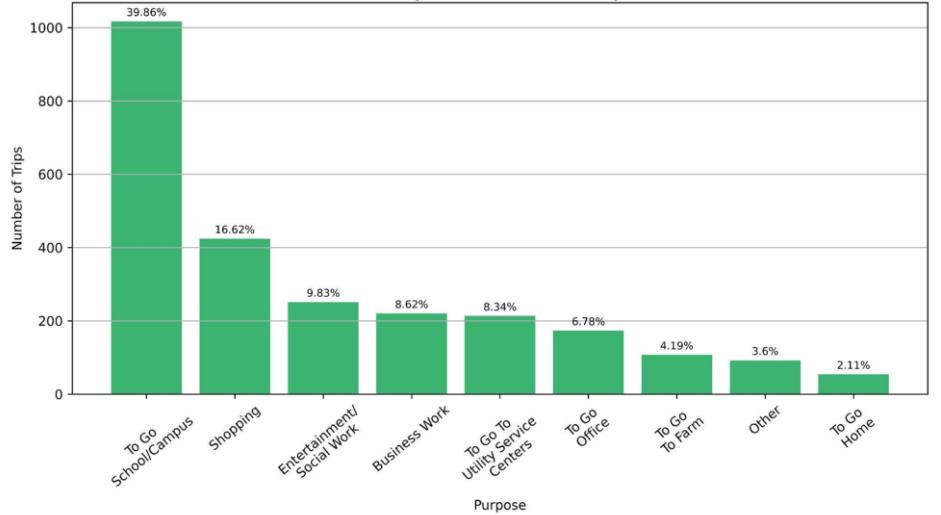
Motorcycles/scooters	74.96%
Bicycles	14.36%

### Mode of Transportation for First Trip





### Purpose of First Trip



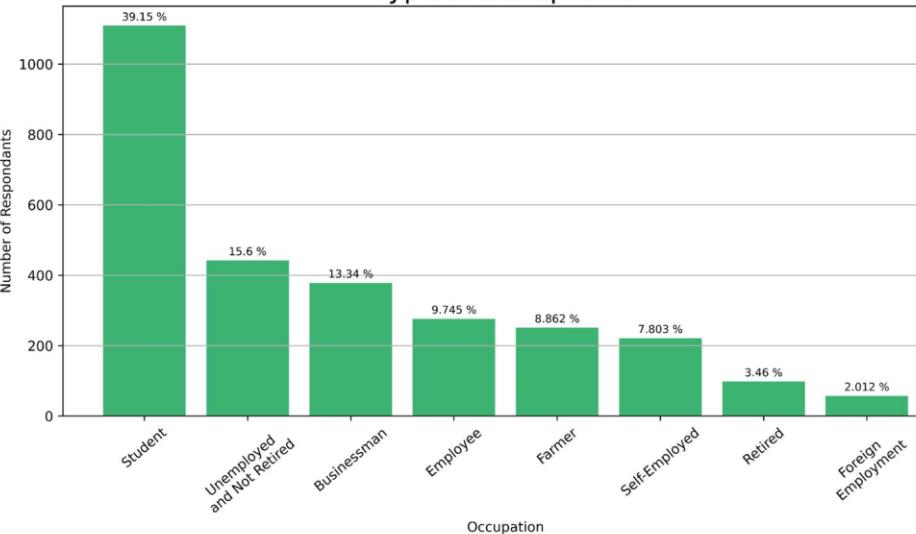
**Students**

**39.15%**

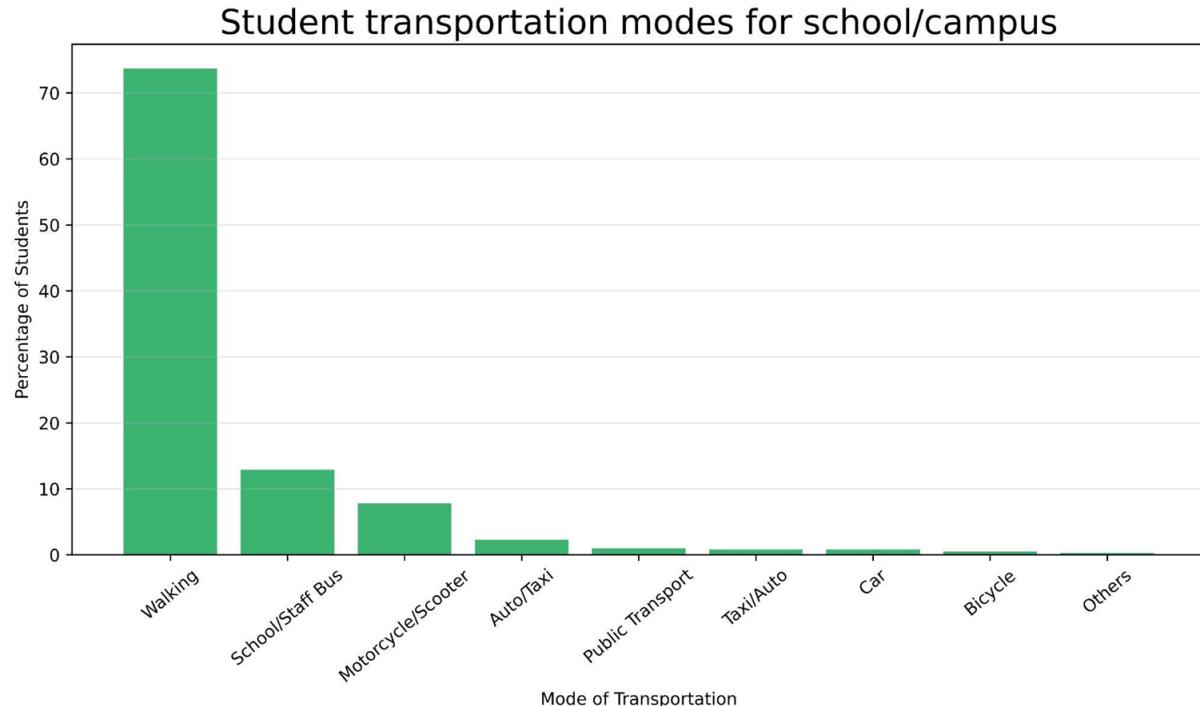
**School and college**

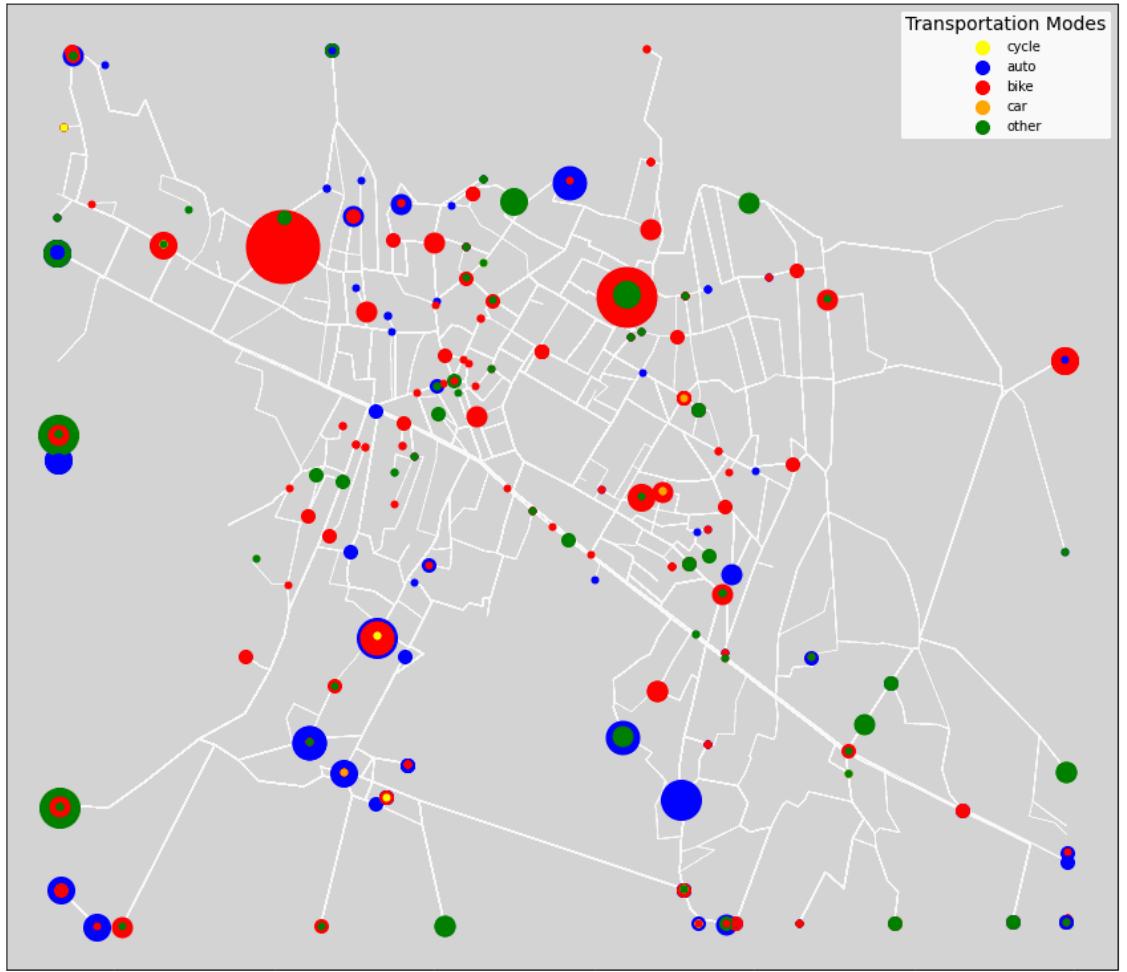
**39.86%**

### Type of Occupation



Most of the students (more than 70%) of the students **walk** to their schools and colleges.





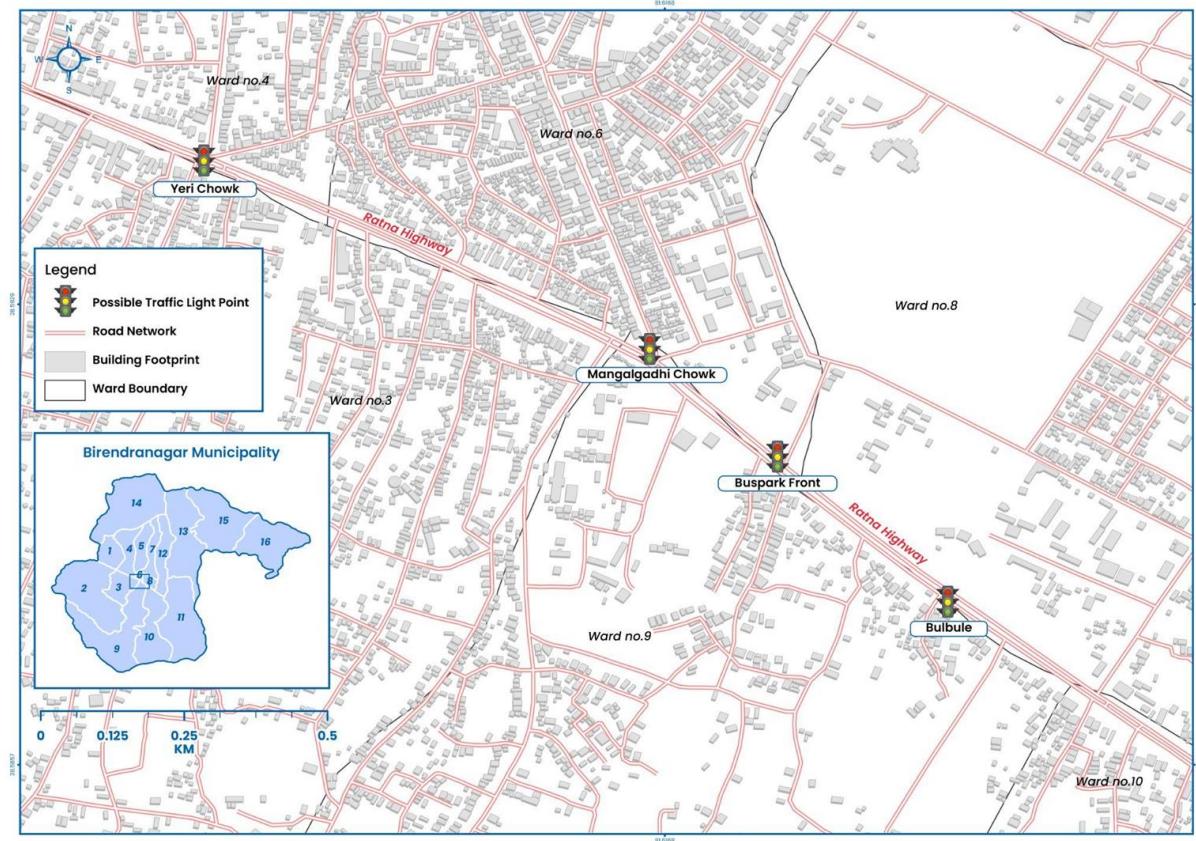
Transportation Modes	
Cycle	
Auto	
Bike	
Car	
Others	

Transportation mode: walk

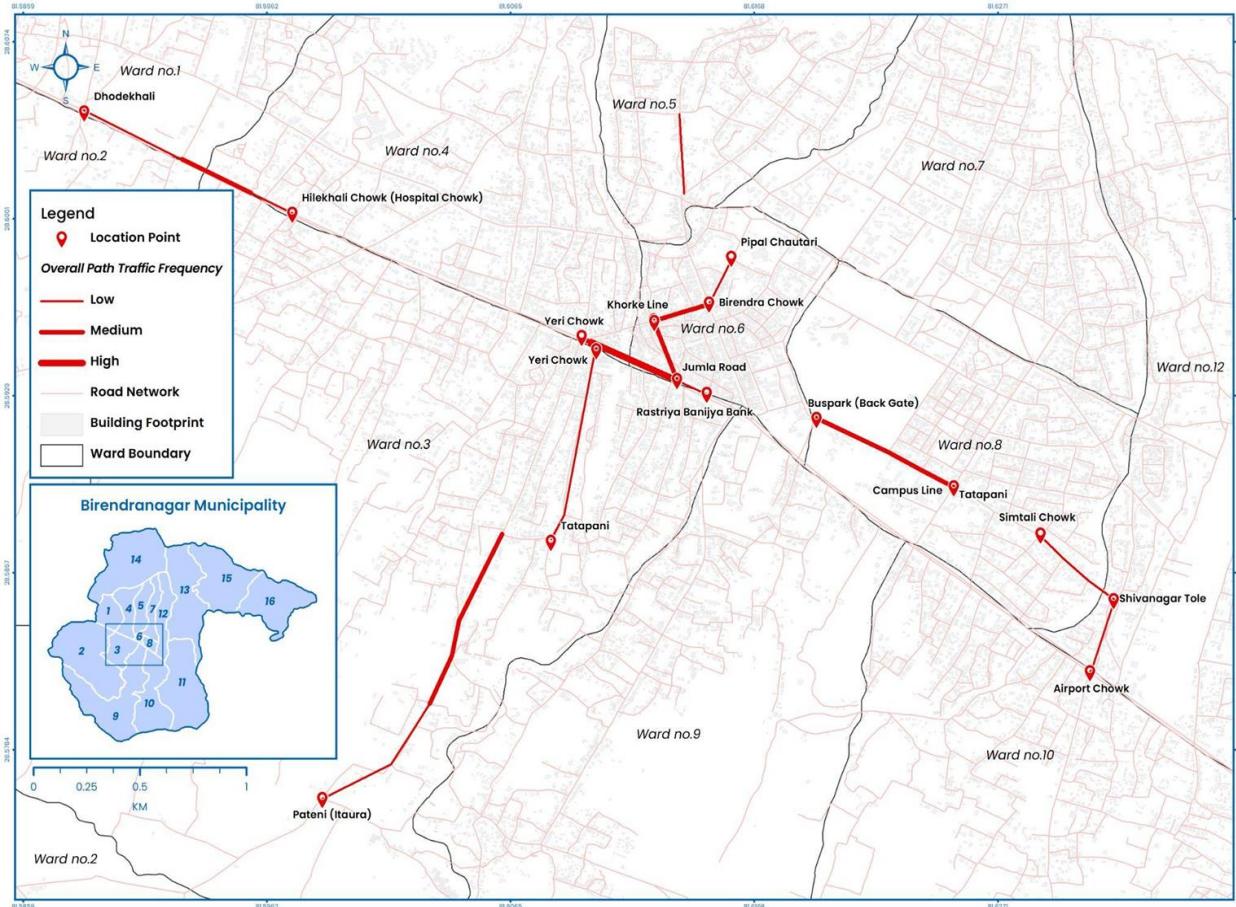


# Discussion

## Intervention Points

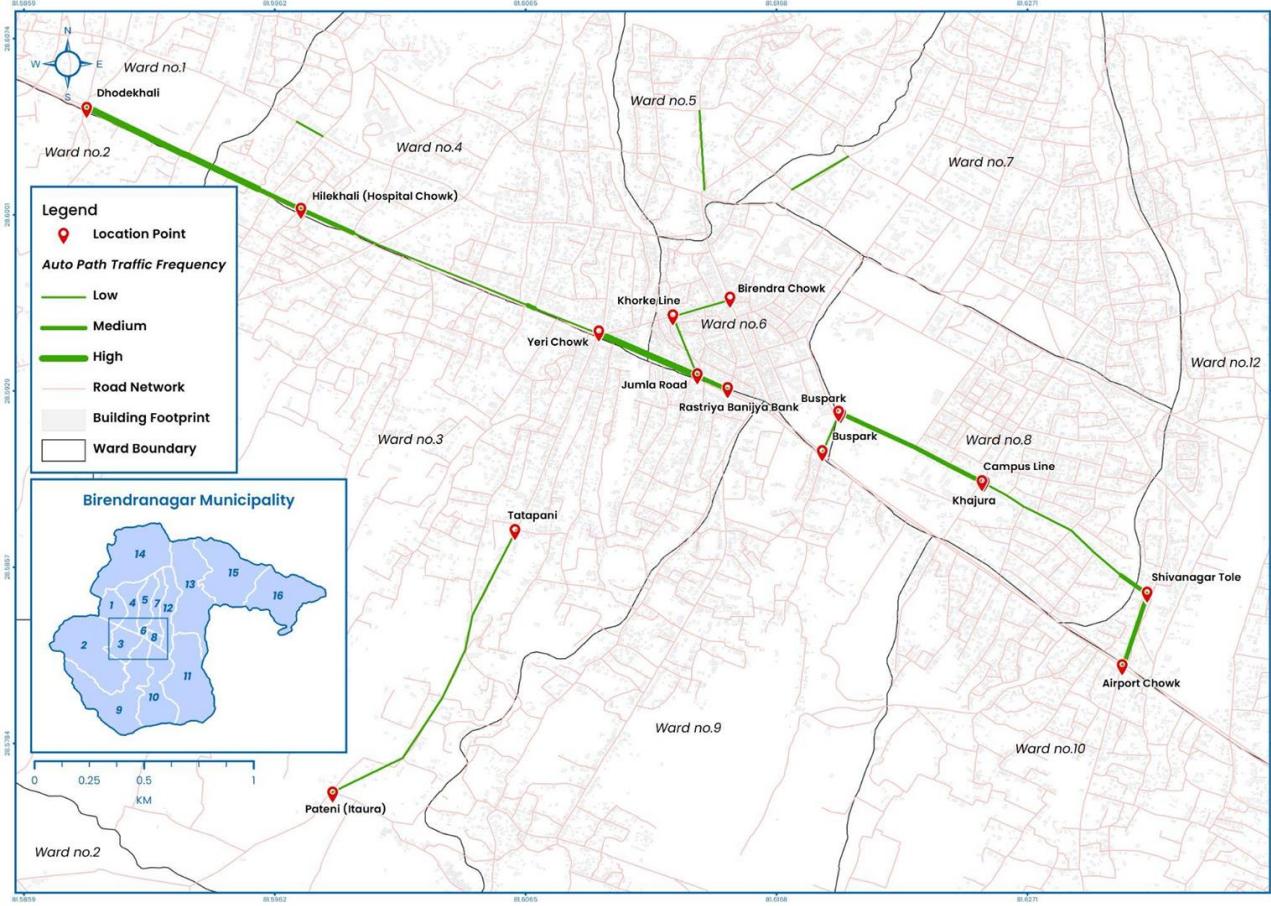


# Major Road Segments (Overall)



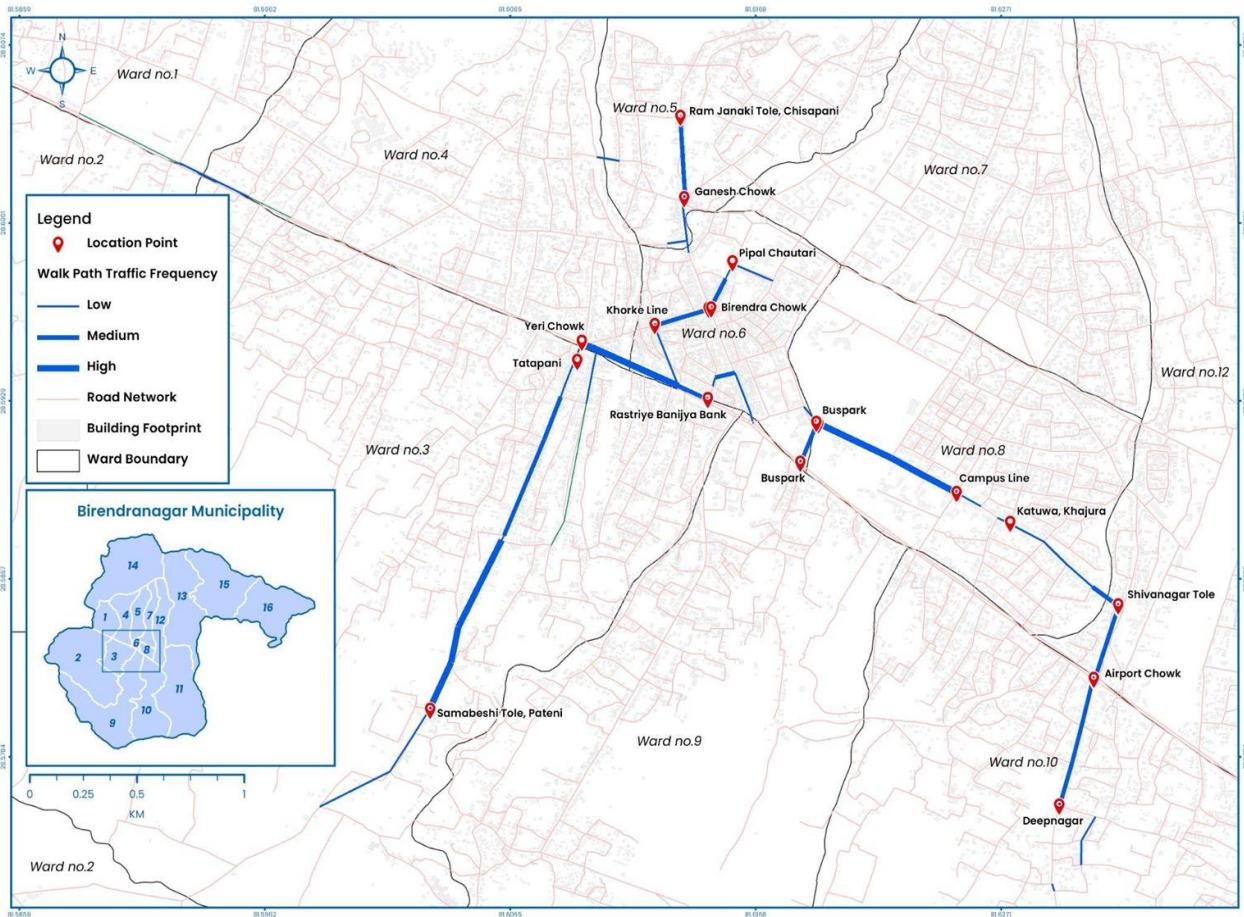
	From	To
1	Buspark (back gate)	Campus Line
2	Yeri chowk	Rastriya Banijya bank
3	Dhodekhali	Hilekhali chowk (Hospital chowk)
4	Tatapani	Itaura/ Pateni
5	Simtali Chowk	Shivanagar tole
6	Khorke line	Birendrachowk
7	Yeri Chowk	Tatapani
8	Khorke line	Jumla Road
9	Shivanagar tole	Airport Chowk
10	Birendra chowk	Pipal Chautari

# Major Road Segments (For Auto)



	From	To
1	Yeri chowk	Rastriya Banijya Bank
2	Dhodekhali	Hospital Chowk
3	Buspark (Back Gate)	Sampus line
4	Khajura/ Simtali	Shivanagar tole
5	Hospital Chowk	Yeri chowk
6	Khorke line	Jumla road
7	Shivanagar tole	Airport Chowk
8	Birendra chowk	Khorke line
9	Buspark (Front)	Buspark (Back)
10	Tatapani	Itaura/ Pateni

# Major Road Segments (For Walking)

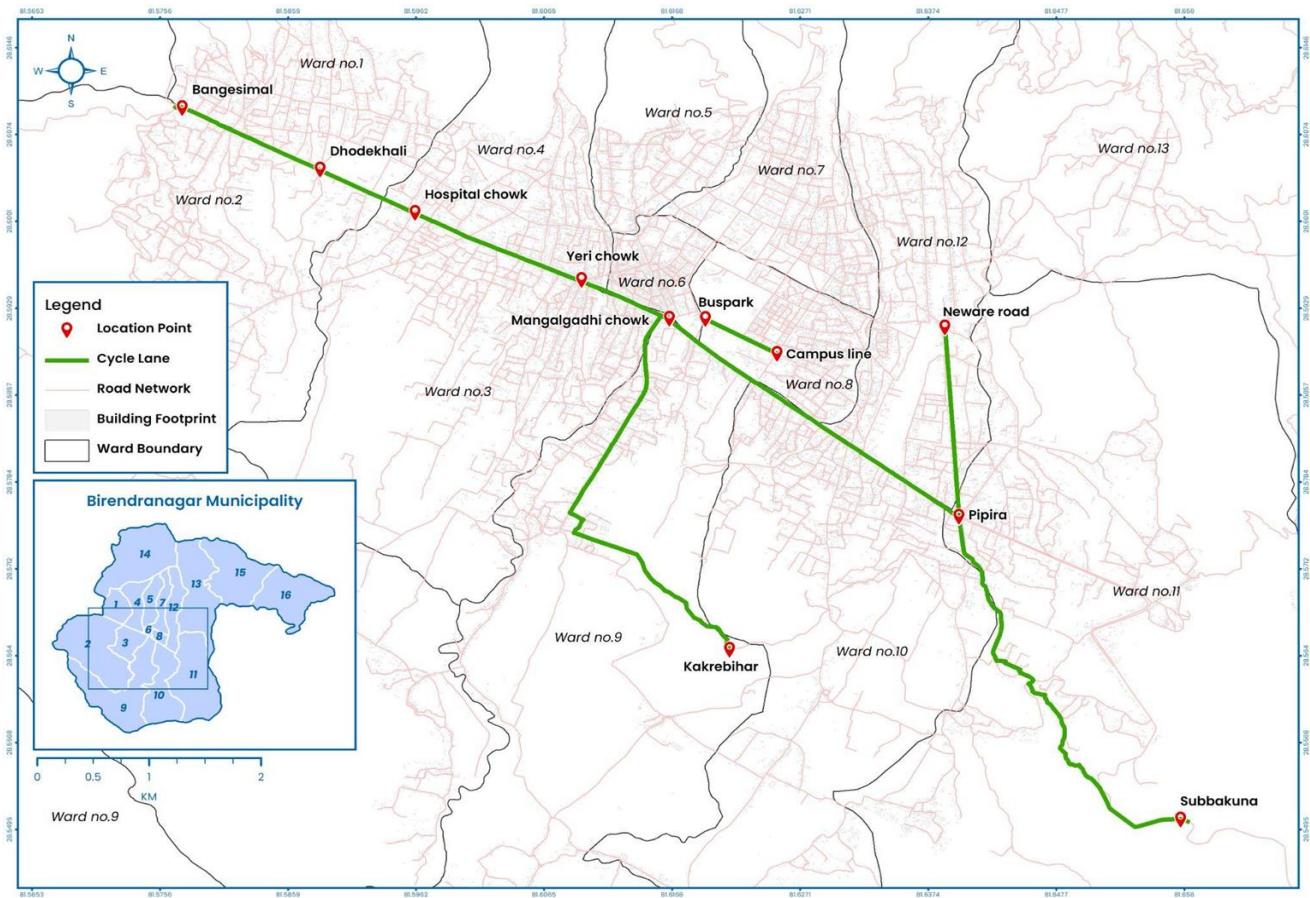


	From	To SUMP Birendranagar
1	Buspark (back gate)	Campus line
2	Yeri chowk	Rastriye Banijya Bank
3	Buspark (Front gate)	Buspark (Back gate)
4	Tatapani	Itaura/ Pateni
5	Shiva nagar tole	Airport chowk
6	Deepnagar	Deepnagar
7	Khajura / Shimalti	Shivanagar tole
8	Ganesh Chowk	Ram Janaki Tole, Chisapani
9	Birendra chowk	Khorke line
10	Birendra chowk	Pipal chautari



Public  
footpath

# Cycle Lane Routes



SN	Road-Segment
1	Buspark -Campus Line
2	Hospital chowk-Yeri Chowk
3	Dhodekhali -Yeri Chowk
4	Kakrebihar- Mangalgadhi Chowk
5	Neware road-Pipira
6	Subbakuna-Bangesimal





# Questions??