MOBILITY AWARDS'

2022 Citizen Bike Count:

Sugbu Bike Lanes Board (SBLB) Bicycle and Pedestrian Count Results

Everyone Counts, everyone matters!

CEBU LEADS FOUNDATION, INC.

INSTITUTE FOR CLIMATE AND SUSTAINABLE CITIES

The Climate Reality Project PHILIPPINES

350.org

Pinay Bike Commuter Community

MNL MOVES

Organized by:

Cebu Leads Foundation Inc. (CFLI)

In partnership with:

Sugbu Bike Lane Boards (SBLB)
Local Government of Cebu City
The Institute for Climate and Sustainable Cities
The Climate Reality Project Philippines
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Introduction

This report summarizes the results of the Sugbu Bike Lanes Board (SBLB) – Bicycle and Pedestrian Count that was held from June 23, 24, and 25 wherein 97 volunteers, government personnels, and active mobility advocates in partnership with the Local Government of Cebu City counted people-on-bicycles, pedestrians, and personal mobility device users in 5 *(Annex 1)* locations.

The Sugbu Bike Lanes Board (SBLB) – Bicycle and Pedestrian Count is an initiative organized by the Sugbu Bike Lane Boards (SBLB) and Cebu Leads Foundation Inc. (CFLI) in partnership with the convenors of the Mobility Awards and the Local Government of Cebu City. The SBLB Bicycle and Pedestrian counts aims to achieve the following:

1. Serve as the quantitative baseline data for SBLB and at the same time
2. Serve as means of monitoring the effectiveness of the bike lanes and lastly;
3. Serve as a main reference for future route network planning both on the location and type of bike lanes to be installed and the improvement/add safe and effective sidewalks.

What did we count?

The 2022 Sugbu Bike Lanes Board (SBLB) Bicycle and Pedestrian Counts in Cebu City ran from June 23 to 25. The count was conducted during the peak hours of 6AM - 8AM and 4PM to 6PM.

A. People on bicycles!

This refers to pedal powered 2-wheeled bicycles, 3-wheeler bicycle (three users would count as three cyclists), recumbent bike users, street vendors using bicycles, pedicabs, hand cyclists, tandem bikes.

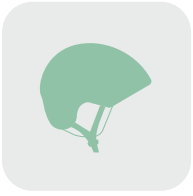
B. Pedestrians

C. Personal Mobility Devices (PMDs) users

(ie: as kick-scooters, electric scooters, hoverboards, unicycles, etc.)

D. Gender Distribution and Helmet Use

The volunteers were stationed on screenline, T-junctions, roundabout, and in 4-corner intersections.



- **Screenline counts** - Screenline counts are done by establishing a visible or invisible line across a roadway or sidewalk and counting the number of cyclists who pass over that line. Often, screenline counts indicate direction of travel for cyclists. They are used to identify trends in volume and factors influencing cycling

- **T - junctions** - are turning movement counts are done where two roadways intersect, capturing turning or travel direction of cyclists.

- **Intersection counts** - Intersection turning movement counts are done where more than two roadways and/ or major commercial driveways meet. At minimum, these counts capture turning movement counts.

How did we count?

The Bike Count Project is an event conducted by volunteer counters on standardized count sheets adapted from the **US National Bicycle and Pedestrian Documentation (NBPD) Project**[1] *(Annex 1)*. The Bike Count Project is considered a short-duration count program which is one of the two basic elements of a bicycle and pedestrian count program done in other countries.

Prior to the count, volunteer orientations were conducted so volunteers can familiarize themselves with the count form, and to also level off on how the count can be synchronized.

Where did we count?

There were **5 count sites** for Cebu City considering borders connecting exit and entry points across neighboring cities, historical count locations, areas with bike lanes and bike facilities, high collision areas, major streets near transit, and locations as recommended by respective LGUs. The count locations were also determined by the availability and number of volunteers per city *[See Table 1]*.

Table 1. Distribution of Count Location and Volunteers in Cebu City

Count Location	Location Type	Minimum No. of Volunteers Assigned *(Per day and hour)*
Colon St.	Screenline	4
Osmeña Blvd. (Sto.Nino)	Screenline	4
Osmeña Blvd. (UNITOP)	Screenline	4
General Maxilom Ave. (Mango Ave.)	Screenline	4
Francisco Llamas St.	T-Junction	4

[1]*Complete information on the project is available at bikepeddocumentation.org.*

What can we analyze from the count?

We equate the number of people on bicycles on the road to their contribution on:

(a) Generating cumulative savings from fuel costs avoided;
(b) How they can practically reduce fossil fuel consumption on our roads.

We used the number of cyclists counted to illustrate the benefits of active transport using the key formula and key assumptions:

Unit	Definition	Assumptions
Total No. Of Cyclists (passenger) per Day	Total number of cyclists data was collected	
Equivalent No. of Cars on the road	This represents the total number of cars that would have been replaced, if passengers opted to cycle instead	Average Occupancy of a Car - 1.7 (MUCEP 2012-2014)
Equivalent No. of Motorcycles on the road	This represents the total number of motorcycles that would have been replaced, if passengers opted to cycle instead	Average Occupancy of a Motorcycle - 1.2 (MUCEP 2012-2014)
Estimated Fuel Cost Savings per KM of Avoided Car and Motorcycle costs	This represents estimated fuel costs savings in 1 KM. This was avoided since passengers opted to cycle instead.	**Savings (PHP/KM)** = fuel consumption per kilometer (L/vkm) x fuel price (PHP/L) x Number of vehicles (v) Average fuel consumption per kilometer of Toyota Vios 1.5 = 0.065L/KM Average fuel consumption per kilometer of Yamaha NMax 125 = 0.022 L/KM Average Gasoline Price Per Liter (June, 2022) = ₱81.02 (Statista, 2022)
Estimated Tons of CO2 Emissions Avoided	This represents the total emissions avoided driven in 1 KM since passengers opted to cycle instead.	**T_CO2** = Emission factor of vehicle (g/vkm) × Distance Traveled by vehicle (km) × Number of vehicles (v) Emission factor of vehicle (Toyota Vios 1.5 MPG) = 158.5 g/vkm Emission factor of vehicle (Yamaha NMAX 125) = 54g/vkm Emissions considered are only CO2. We do not include other emissions such as NOx, PM, etc.

Limitations of the count

The count was implemented still within the COVID-19 pandemic period as an operating context. Although there were already gradual removal of restrictions, we still observed basic health and safety protocols, and observed physical distancing during the actual count. This affected the quality and accuracy of several data gathered.

Other limitations include lack of manpower and resources to do a 16-hour count, which would have been the ideal in order to estimate the annual average daily bicycle and/or pedestrian traffic.

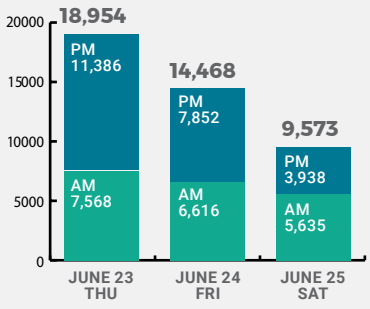
Count Results

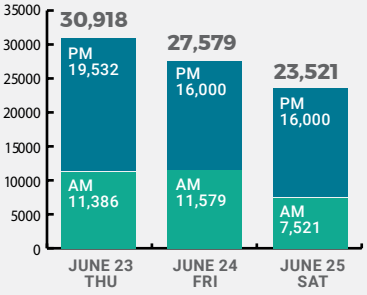
Total Bicycle: 42,995

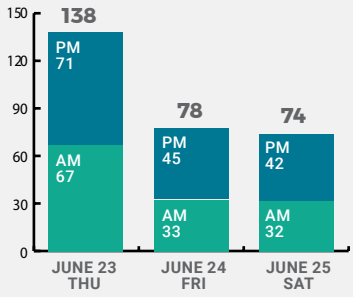
Total Pedestrian: 82,018

Total PMD-users: 290

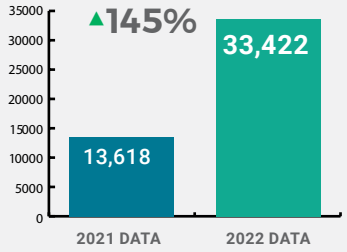
OVERALL AM & PM COUNT

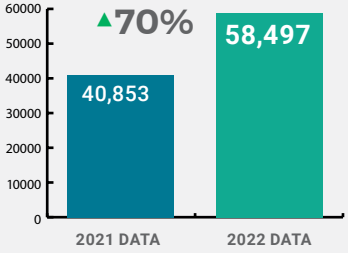


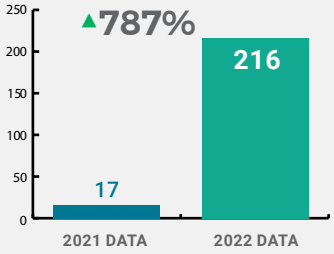




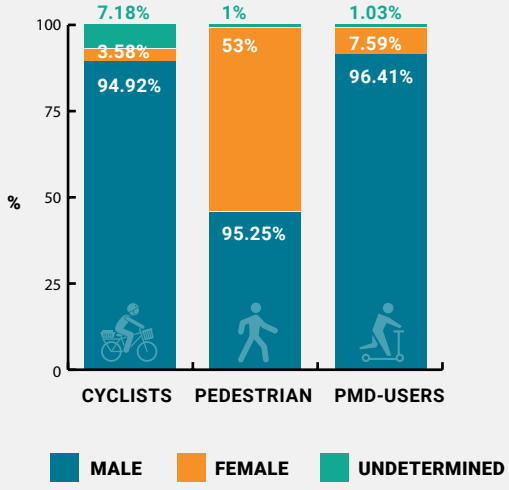
GROWTH RATE: 2021 VS 2022 DATA



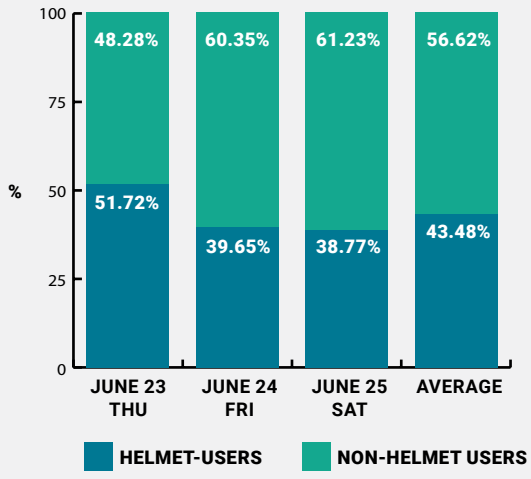




OVERALL GENDER DISTRIBUTION



OVERALL HELMET-USE DISTRIBUTION



Count Results

In 2021, SBLB together with 52 counters, piloted the count in the same count locations. This year, the total number of cyclists counted spiked by 145% compared to 2021. Increase can be due to several factors: (1) Easing of mobility restrictions due to downgrading of COVID-19 alert level in the city; (2) More counters joined the Bike Count this year, resulting in improved capacity to record the number of people on bicycles passing through count locations.

Results showed a higher number of people-on-bicycles in Cebu City during the weekdays of Thursday and Friday. It is assumed that the majority of the cyclists in the city are bike-to-work commuters.

Peak Hour

Date of Count	AM Peak Hour	PM Peak Hour	Location with Highest Count	
			AM	PM
June 23 (Thursday)	07:45 – 08:00	05:45 – 06:00	Francisco Llamas St. (2,391)	Francisco Llamas St. (3,176)
June 24 (Friday)	07:30 – 07:45	05:30 – 05:45	Francisco Llamas St. (2,658)	Colon St. (3,030)
June 25 (Saturday)	07:30 – 07:45	05:45 – 06:00	Francisco Llamas St. (2,060)	Francisco Llamas St. (1,492)

Potential contribution of cyclists on the road

What does the 42,995 of people-on-bicycles mean?

Count Date	Total No. Of Cyclists (passenger) per Day	Equivalent No. of Vehicles Avoided	Estimated Daily fuel costs Savings (per KM)	Estimated TONS OF CO2 Emissions Avoided (in a 1 KM drive)
June 23 (Thursday)	18,954	11,149	₱99,817.45	1.77
June 24 (Friday)	14,468	8,511	₱76,192.83	1.35
June 25 (Saturday)	9,573	5,631	₱50,414.29	0.89
Overall Total	**42,995**	**25,291**	**₱226,424.57**	**4.01 tCO2**

**Average occupancy rate of a car is 1.7 passenger, MUCEP (2012-2014)*

Count Date	Total No. Of Cyclists (passenger) per Day	Equivalent No. of Motorcycles Avoided	Estimated Daily fuel costs Savings (per KM)	Estimated TONS OF CO2 Emissions Avoided (in a 1 KM drive)
June 23 (Thursday)	18,954	15,795	₱33,784.37	0.85
June 24 (Friday)	14,468	12,057	₱25,788.34	0.65
June 25 (Saturday)	9,573	7,978	₱17,063.30	0.43
Overall Total	**42,995**	**35,829**	**₱76,636.01**	**1.93 tCO2**

**Average occupancy rate of a motorcycle is 1.2 passenger based on MUCEP (2012-2014);*

- More people are moved by bicycles, compared to cars and motorcycle. 42,995 people on bicycles during the three-day count is equivalent to 25,291 cars or 25,29 motorcycles taken off the road.
- As bicycles do not consume fossil fuels, especially gasoline and diesel, the 42,995 people riding on bicycles were able to save some ₱76,636.01- ₱226,424.57 per kilometer from fossil fuels alone. These estimates do not include savings from regular maintenance, parking and mortgage.
- Using GHG emissions reported by common car and motorcycle brands, it is also estimated that the 42,995 cyclists were able to avoid 4.01 - 1.93 tons of CO2-emissions per kilometer.

Key Recommendations

1. **Bike count should be an institutionalized and funded bi-annual program of the City.** The two bike counts per year will greatly help in the city's planning and implementing active transport initiatives.

2. **City to invest and Integrate Automated Counters in Bike Counts:** Implementing a permanent count program is crucial in order to accurately estimate the annual average daily traffic of cyclists.

   Investing on automated counters by local government units is highly recommended especially in dedicated bike lanes that had the highest number of pedal traffic. A permanent counter is an automated device in place 24 hours per day, 365 days per year. Its purpose is to gather a continuous record of how bicycling changes over time and over external factors such as weather and infrastructure, policy changes. Francisco Llamas St. and Colon St. are suggested locations for the installment of permanent counters due to its high volume of traffic.

3. **Expand the count window to 3 hour** ideally 5AM - 8AM in the morning and three hours in the afternoon: 4PM - 7PM. There should at least be 2 counts (1 weekday and weekend) to compare the mobility of the people during weekdays and weekends. It is recommended to conduct it during Mondays, Friday, Saturday, or Sunday.

4. **Preparation is key.** The success of manual bike count is contingent on the commitment and turn out of volunteer counters. Volunteer orientations and training are key, and enough lead time should be devoted for the preparations.

5. **For Bike Count organizers to increase location coverage** including secondary roads and more entry and exit points in the city. All boundaries of a city must be covered so that we know the movement of the bikers who move-in and move out of the city. This way we can use the data to lobby with several municipalities to synergize their active transport initiatives.

6. **Recommendations on the Bike Count Trainings.** Several dry run simulations be done prior to the actual count to help volunteers familiarize with the area and to scout for a strategic count station where they can observe the traffic and movements of cycling public.

   For more accurate data and for validation purposes, it is recommended to form a bike count team in each observation station or count location. It is ideal that they be equipped with cameras to record the area where they are counted, and with click counters. It is also recommended that the team in an area be composed of at least 3 members: 1 member to be assigned to count using bike flow directional movements, another member to capture different genders and the last member to capture helmet use.

In case there are enough volunteers, it is ideal that the fourth volunteer be assigned as an alternate to relieve a team member in case the volunteer goes into health break. If the count will be repeated in the next season, or in the next year, it is ideal to assign that an experienced bike count volunteer be assigned in each team to coach and mentor new volunteers.

It is also recommended to provide more resources to volunteers additional resources such as counter clickers, clipboards, and tumblers for hydration to avoid the use of plastic bottles. It is also ideal that budgets and resources are allocated to organize dry runs and orientations before the actual count, and after the count to allow debriefing and data consolidation.

7. **Conduct Supplemental Studies to Understand Cycling Behaviors and also Generate more baseline Data.** One of the highlights of the bike count is documenting the significant gender gap in everyday cycling that needs to be addressed urgently. While the bike count is limited to those who rode their bicycles during the peak commuting hours, the bike data strongly suggests that there is work to be done to encourage more women to cycle as mobility or trip choice. More studies should be done to learn and understand the unique cycling needs and preferences of women in an urban context.

   Another key area for study and action is bicycle users' behavior. Turning movement counts are useful for traffic impact studies and safety studies. These counts are used to determine exposure rates at high collision crossings, as well as to retime or reconfigure traffic signal phasing. Rather than penalizing what are seemingly illegal bike traffic flow such as counterflowing, policymakers, traffic planners and others need to collect data on cycling movements, relate it to cyclists needs and preferences to produce better bike facilities like bidirectional bike lanes, bike, and pedestrian bridges, end-of-trip facilities (bike parking), etc.

   Likewise, more accurate data on savings and GHG emissions can be generated if there is a baseline data on the average distance traveled by people riding bicycles, and comparison can be done using average trip distance of other modes of transport particularly motorcycles and cars in Cebu City.

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Annex

Annex 1: Sugbu Count Locations	
Location	**Location Type**
Colon St.	Screenline
Osmeña Blvd. (Sto.Nino)	Screenline
Osmeña Blvd. (UNITOP)	Screenline
General Maxilom Ave. (Mango Ave.)	Screenline
Francisco Llamas St.	T-Junction

Annex 2: Bike Count Forms

Table Count Form		
LOCATION:	DATE:	TIME: × 06:00am - 08:00am × 04:00pm - 06:00pm
WEATHER:	NAME:	
NOTES:		TOTAL NO. CYCLISTS COUNTED:

Time Interval	MALE		FEMALE		NOT DETERMINED	
	With Helmet	No Helmet	With Helmet	No Helmet	With Helmet	No Helmet
00:00-00:15						
00:15-00:30						
00:30-00:45						
00:45-01:00						
01:00-01:15						
01:15-01:30						
01:30-01:45						

Figure 1. Table count form

Diagram Count Form (Screenline)		
LOCATION:	DATE:	TIME: × 06:00am - 08:00am × 04:00pm - 06:00pm
WEATHER:	NAME:	

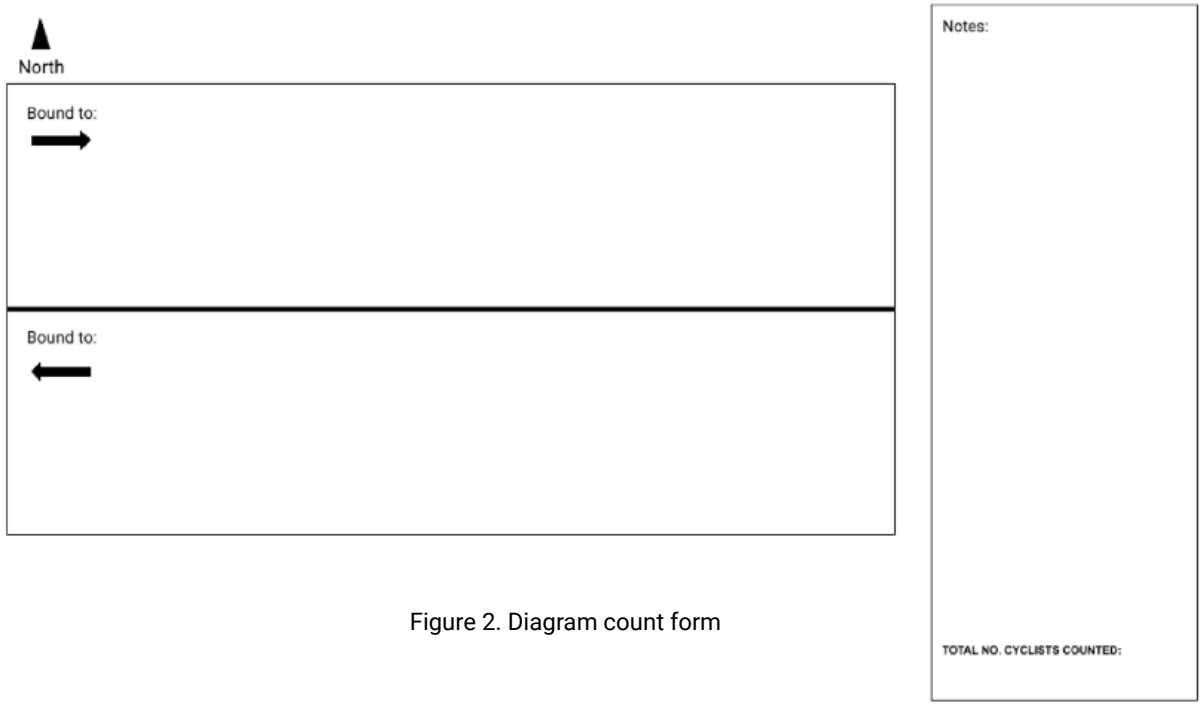

Figure 2. Diagram count form