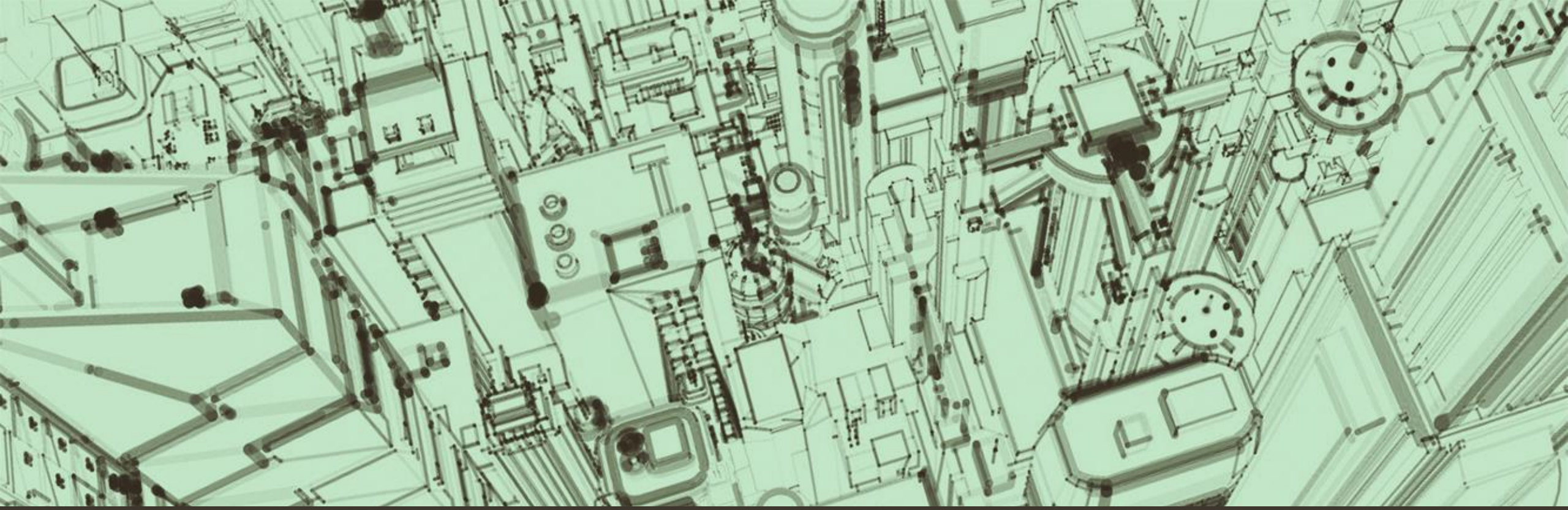
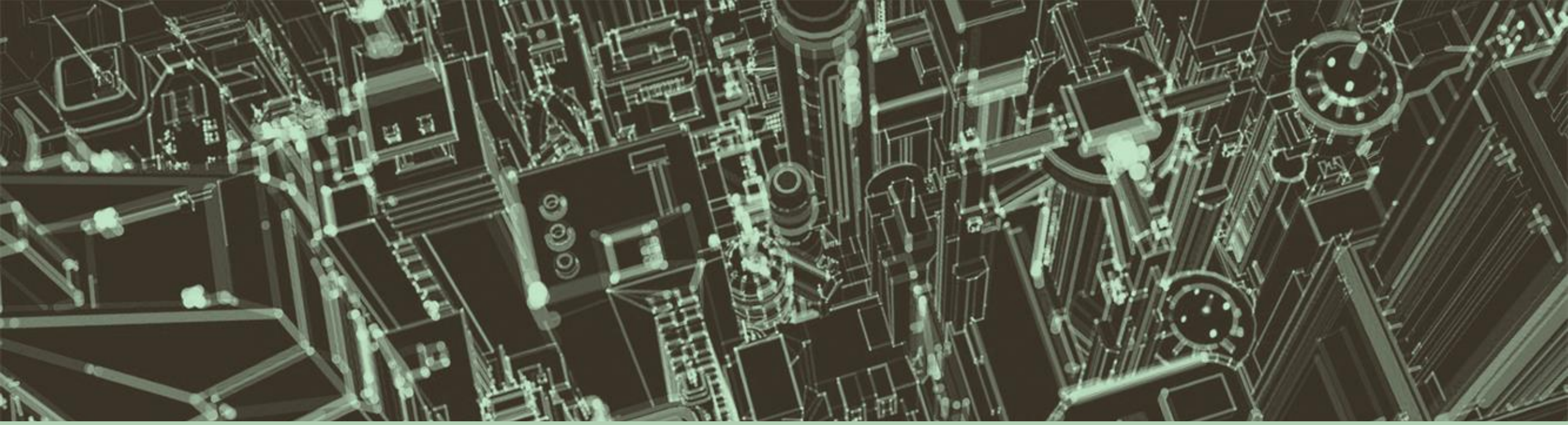


Micromobility in the Bronx

Novel Device Quantification and Assessment of Injury

Agenda

- Introductions
- Outline of SBH Process
- Overview of initial dataset
- Variables Collected
- Next Steps



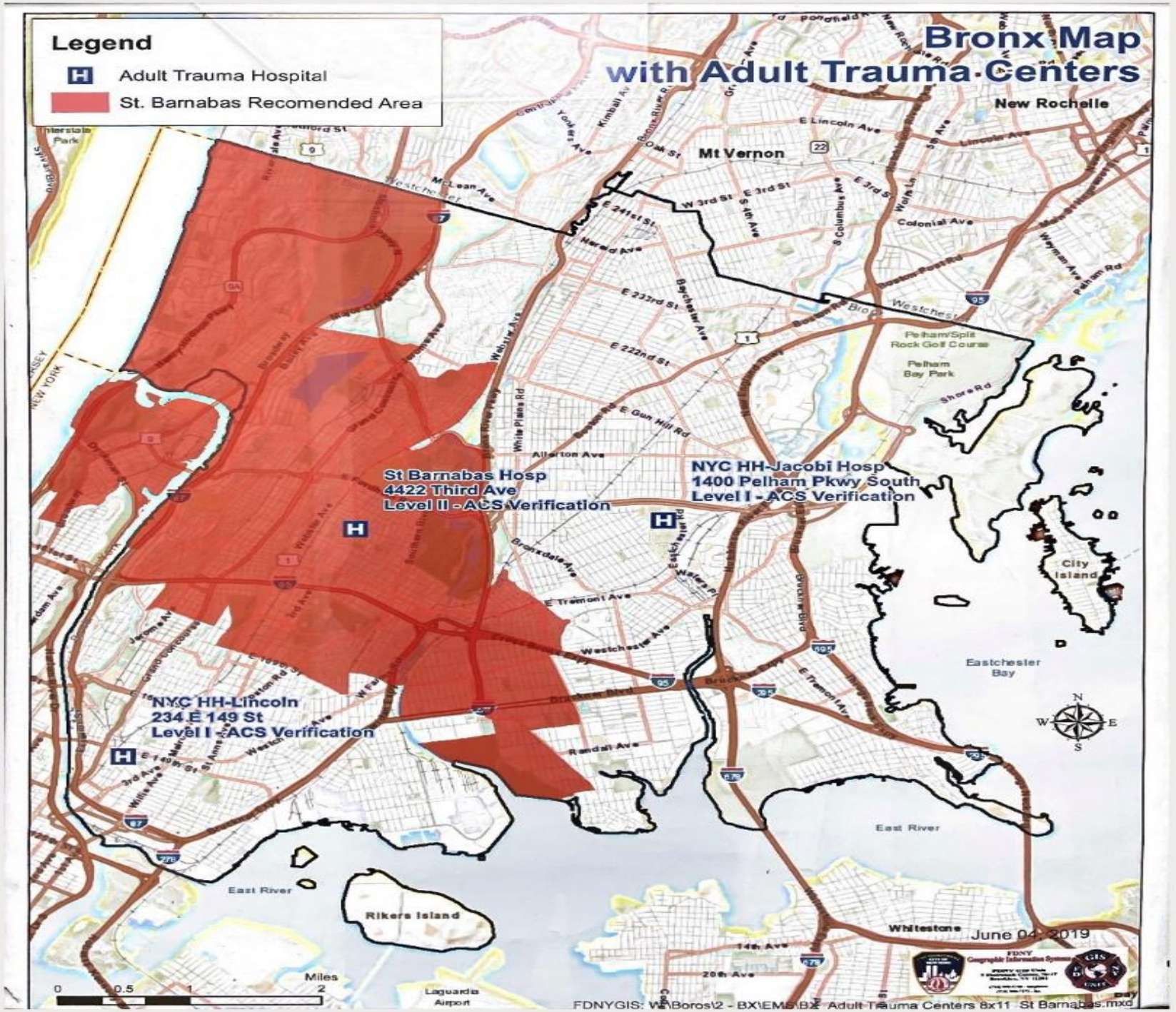
Introductions

SBH Micromobile Team

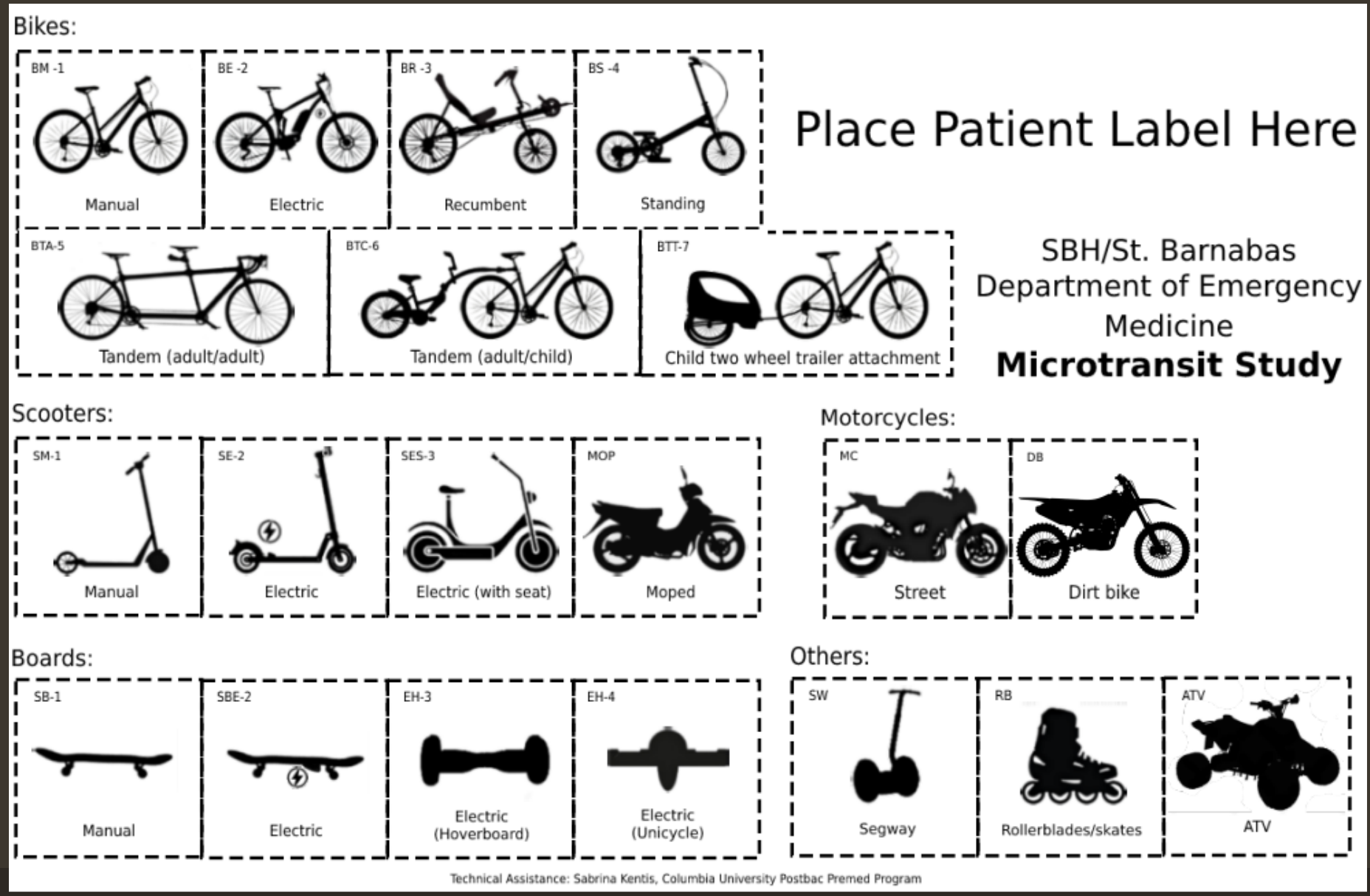
Dr. Angelo Mascia	**Coordinator – Lead PI**
Dr. Daniel Murphy	SBH ED Chairman
Erik Marketan	SBH Injury Prevention Coordinator
Dr. Somil Chheda	PGY4 – EM – Data Collection
Dr. Alexandra Bourlas	PGY4- EM – Data Collection
Dr. Samuel Fransen	PGY4- EM- Data Collection
Dr. Christopher Lin	PGY2- EM – Data Collection

Involved NYC Trauma Center Sites & Site Contacts

- **Maimonides**
  - Gia Ramsey – Injury Prevention Coordinator
- **Bellevue**
  - Dekeya Slaughter – Injury Prevention Coordinator
- **Jacobi**
  - Gary Hecker – Injury Prevention Coordinator
- **NYP Methodist**
  - Paris Ayana Dattilo - Trauma Program Manager
  - Dr. Theodor Gaeta
- **NYP Queens**
  - Michele Schombs – Injury Prevention Coordinator
- **Mt. Sinai Morningside**
  - Charla Sarabia – Injury Prevention Coordinator


Legend
Adult Trauma Hospital
St. Barnabas Recomended Area
Bronx Map
with Adult Trauma Centers
New Rochelle
Mt Vernon
St Barnabas Hosp
4422 Third Ave
Level II - ACS Verification
NYC HH-Jacobi Hosp
1400 Pelham Pkwy South
Level I - ACS Verification
NYC HH-Lincoln
234 E 149 St
Level I - ACS Verification
City Island
Eastchester Bay
East River
Rikers Island
Whitestone
June 04, 2019
Miles
0
0.5
1
2
FDNYGIS: W:\Boros\2 - BX\EMS\B2 - Adult Trauma Centers 8x11 St Barnabas.mxd

SBH Process


Bikes:
BM -1
Manual
BE -2
Electric
BR -3
Recumbent
BS -4
Standing
BTA-5
Tandem (adult/adult)
BTC-6
Tandem (adult/child)
BTT-7
Child two wheel trailer attachment
Place Patient Label Here
SBH/St. Barnabas
Department of Emergency
Medicine
Microtransit Study
Scooters:
SM-1
Manual
SE-2
Electric
SES-3
Electric (with seat)
MOP
Moped
Motorcycles:
MC
Street
DB
Dirt bike
Boards:
SB-1
Manual
SBE-2
Electric
EH-3
Electric
(Hoverboard)
EH-4
Electric
(Unicycle)
Others:
SW
Segway
RB
Rollerblades/skates
ATV
ATV
Technical Assistance: Sabrina Kentis, Columbia University Postbac Premed Program

First Iteration of SBH Data –

Demographic Variable	Value
Average Age	31.9
Standard Deviation of Age	14.2
Males	166
Females	25
Percentage of Male Riders	87%
Percentage of Female Riders	13%
Operators : Percent	168 : 88%
Passengers : Percent	6 : 3%
Pedestrians : Percent	16 : 8%

DAY	
Monday	32
Tuesday	29
Wednesday	25
Thursday	26
Friday	30
Saturday	26
Sunday	23
Median Time	16:16
Time Standard Deviation	28 minutes

Injury Severity and Patterns

Overall ISS Analysis

Average ISS	**3.16**
ISS Standard Deviation	**3.56**
Mild ISS	**94%**
Moderate ISS	**4%**
Severe ISS	**2%**

DIAGNOSIS CATEGORY	COUNT	%
SPRAIN / STRAIN	26	8%
ABRASION	167	48%
LACERATION	68	20%
FRACTURE	55	16%
EFFUSION	1	0%
AC JOINT SEPARATION	2	1%
CONTUSION	14	4%
CELLULITIS	1	0%
DEGLOVING INJURY	1	0%
AVULSION	4	1%
HEMATOMA	5	1%
PNEUMOTHORAX	1	0%

Data Dictionary

Age	Int
Gender	char(1)
Vehicle Code	Variable
Mode	Variable
Helmet	char(1)
ESI	Int
Triage Time	
ISS	Int
Date	
Operator	char(1)
Passenger	char(1)
Pedestrian	char(1)
Diagnosis 1	Variable
Diagnosis 2	Variable
Diagnosis 3	Variable
Diagnosis 4	Variable

Identifying and Documenting Micro-mobile Modes of Transport
A Novel Identification Template

Erik Marketan, BA, EMT-P/CC, Injury Prevention Coordinator
Department of Emergency

SBH Health System
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Plan:

As NYC emerged from the COVID lockdowns in the early summer of 2020, fear of subway and bus travel led to an significant increase of an already expanding use of micro-mobile devices. Electric scooters, dock/dock-less shared bikes, shared mopeds, electric skateboards, skateboards all compete with traditional single owner pedal bicycles, eBikes, motorcycles, dirt bikes, ATVs and traditional vehicles. This has created confusion for Emergency Department trauma teams when determining the kinematics of trauma, whether it be the operator injured, the pedestrian or other rider injured in a collision.

American College of Surgeons (ACS) verified Trauma centers maintain a trauma registry of admitted trauma patients, trauma deaths and transfers. Trauma Registrars and Injury Prevention Coordinators report difficulty with accurate data and pattern analysis due to variety of terms and descriptions free typed into different places in the electronic medical record: history and physical, trauma flow sheet, ED comprehensive note, tertiary note and consult note.

There was an opportunity for an improved method to allow patients to precisely identify either: 1- the micro-mobile device they were operating, 2 – the device operated when struck by another device, 3 – what device struck them as a pedestrian. This resulted in accurate documentation, trauma registry entry and injury prevention analysis and prevention programming.

Do:

Devices were organized into Categories of Bikes, Scooters, Motorcycles, Boards (Manual, Electric, Electric Hoverboard, Electric Unicycle), Others (Segway, Rollerblades/skates, ATV). Each device was assigned a code for data entry (e.g. traditional pedal bicycle was assigned [BM – 1], electric eBike [BE-2]. Branding was omitted (e.g. Revel). Layout on a 11x14 page includes an area for a patient label. Copies were laminated and placed in the Trauma Bay and in a folder for inclusion in patient records.

The intersection of Arthur Avenue, Crescent Avenue, Quarry Road and East 184th Street is 250 feet from the SBH Emergency Room. A complicated '4 Way Stop' at the terminus of the nationally famous Belmont Shopping District, it includes two curved streets as well as a road that terminates at the bottom of a steep hill. Passenger car and truck traffic is slow, with no pass through right-of-way.

Study:

Utilizing the template, modes of transport passing through the intersection were observed and recorded at three (3) intervals of (1) hour over two days. 134 Devices recorded in three (3) 1 hour intervals over 2 day. 101 (75%) were not wearing helmet. Only 33 (25%) wore a helmet. Electric Bikes n-41 (30%), Manual Bikes (n-38) (28%) and Mopeds n-37 (27%) represented 85% of all devices observed. There was 1 minor crash of a manual scooter.

Graph 1:
Observed Intersection Data
'4 Way Stop' Arthur Ave, Cresent Ave, Quarry Road, E 184th
9/3/2020 [1000-1100Hrs, 1515-1615Hrs]
9/8/2020 [0830-0930Hrs]

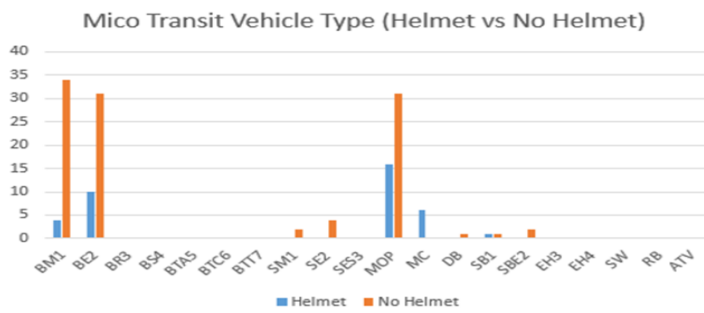

Figure 1: Microtransit Template

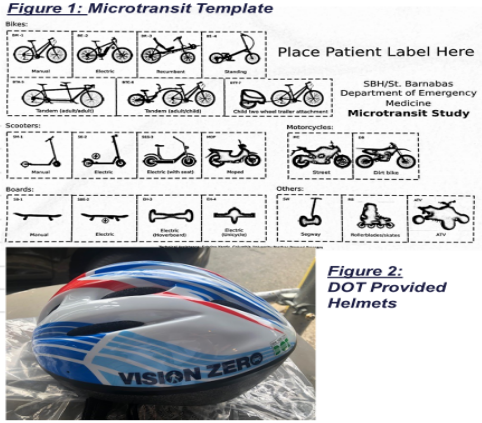

Figure 2:
DOT Provided Helmets

Act:

We requested and received an initial donation of 150 rider helmets from **NYC DOT/Vision Zero** in 4 sizes (Toddler, S, M, L, XL) in late June. The ED helmet distribution initiative maintains a par level of 5 in each size. Micro-mobile trauma was then identified at the physician level, the micro transit device was identified based on our template, and helmet use and access to helmets was determined from the patient. If the patient did not own or have a helmet, the DOH helmet was provided to them and recorded at discharge, with fit and use instructions.Clinical use of the template in SBH trauma activations has increased as the providers become more familiar with it and will be a required documentation in EMR. Our participation in the NYC Regional Trauma Advisory Committee (RTAC) has allowed the template to be shared with all NYC Trauma Centers. NYP Morgan Stanley Children's Hospital, our transfer agreement Pediatric Trauma Center, has begun to use it, among others. NYC DOT Vision Zero plans to ask Trauma Centers to join a reporting collaborative, using the template to receive fresh data on injuries specific to devices; to detect trends and focus resources, study and consider policy initiatives.

With more accurate recording, the study of these largely unregulated and exponentially increasing modes of transportation can be analyzed specific to patient characteristics, injury characteristics (GCS, ISS, MTP, AIS) and contributing factors (i.e. drug/alcohol use, helmet use).

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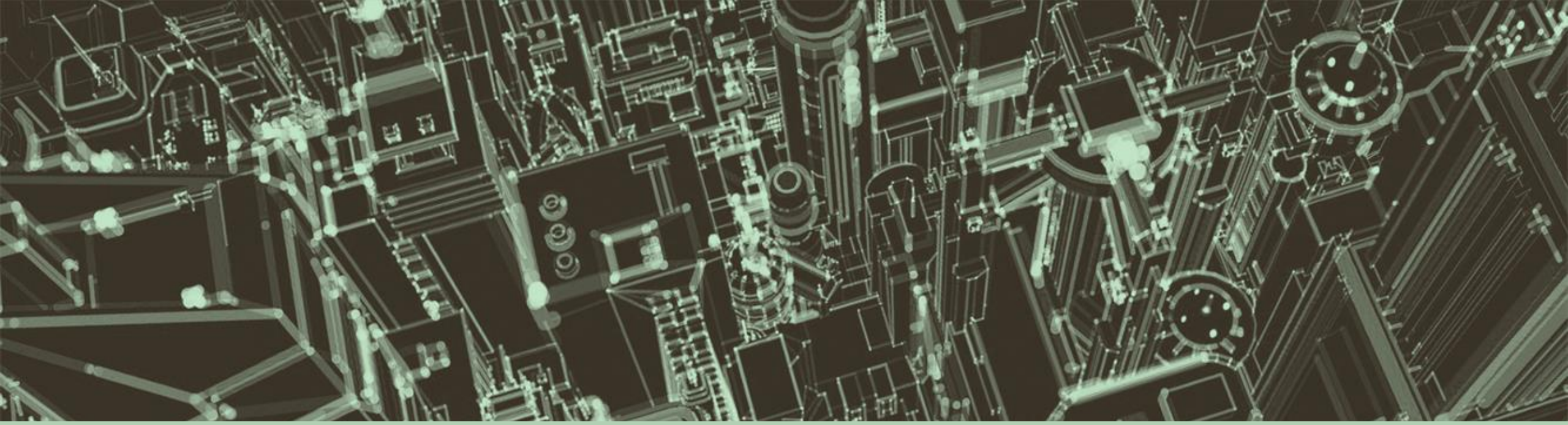
Mattaalla@sbhny.org



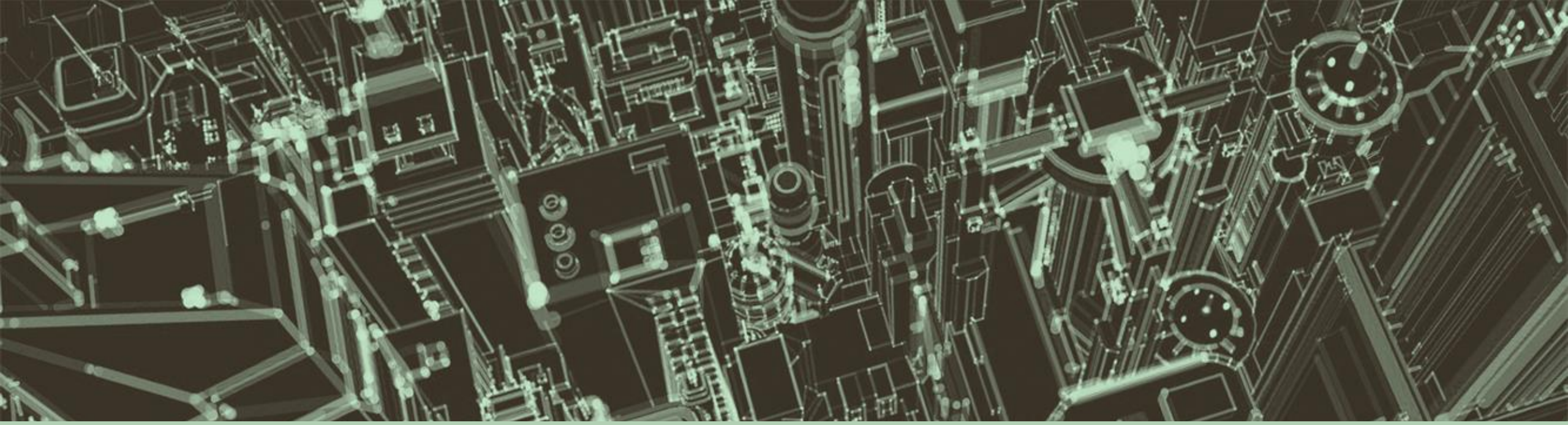
Current Project Status

Expansion to Multi-Center Sites

- SBH has began data analysis of it's 2022 data with >300 recorded SBH ED presentations
- We have received a strong interest in other sites who are also using our device identification tool with several sites beginning data collection
- Looking at possible processes for centralized data collection and analysis
  - Technical difficulties and hospital EMR restrictions may hinder true ability to cross-share data.

2022 Snapshot Data View

- Approximately 400 SBH ED micromobile related presentations.
- Decrease in prevalence of ride-share scooters
- Majority remains “Moped” category
- 4 Micomobile related fatalities including a 4 year old child
- October 2022
  - 13 high acuity transit related presentations
    - 7 microtransit related
    - 6 pedestrian struck



Moving Forward

Discussion of timelines, deadlines, future work

The Future

- Looking for additional NYC sites that would be willing to collect data and join our collaborative.
- Interest in working with data specialists to identify best practices for data analysis of this set
- Continue our collaboration with the DOT with one project goal to provide injury data to align policies to promote safety.

Thank you!

SBH Contacts

- Dr. Angelo Mascia – Lead Project Coordinator
  - amascia@sbhny.org

- Mr. Erik Marektan – SBH Injury Prevention Coordinator
  - emarketan@sbhny.org