

# A brief overview of the **Data for Road Incident Visualization, Evaluation, and Reporting (DRIVER) System**

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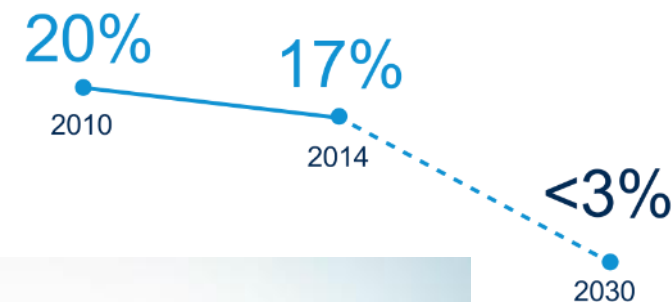


# World Bank twin goals

Goal 1: Improve equality



Goal 2: Reduce extreme poverty



# DRIVER overview

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## WHAT?

DRIVER – **D**ata for **R**oad **I**ncident **V**isualization, **E**valuation, & **R**eporting

**Web-based** and **open-source** system for **geo-spatially** recording & visualizing road crashes

A way to facilitate **coordination** between multiple agencies, as well as a means to standardize terms & definitions for reporting crash data

A suite of **visualization** tools to support data-driven decisions & a platform for monitoring the impact of interventions

## HOW?

Available for free on Bank's open-source code repository: <https://github.com/WorldBank-Transport/DRIVER>

Available wherever Open Street Map is available

Fields/variable easily modifiable

Can be adapted and maintained by local developer

# DRIVER overview

<https://roadsafety.gov.ph>

<https://vidasegura.prefeitura.sp.gov.br/plataforma>

<https://thailand.roadsafety.io>

<https://vietnam.roadsafety.io>

<https://brazil.roadsafety.io>

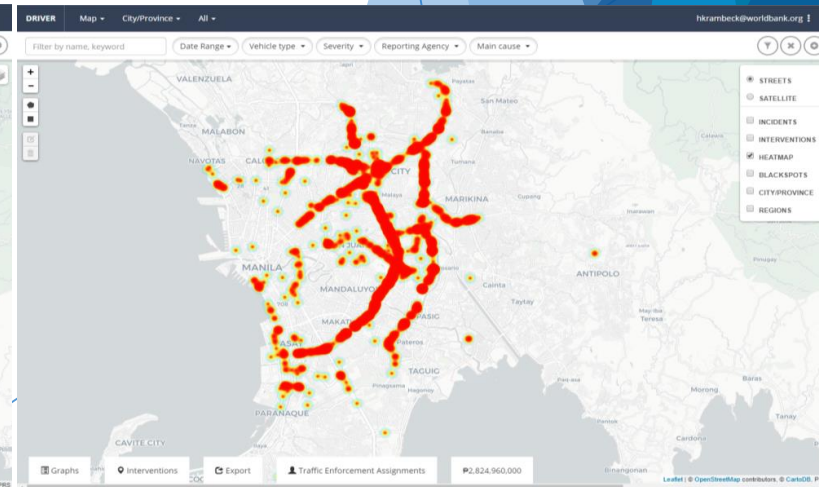
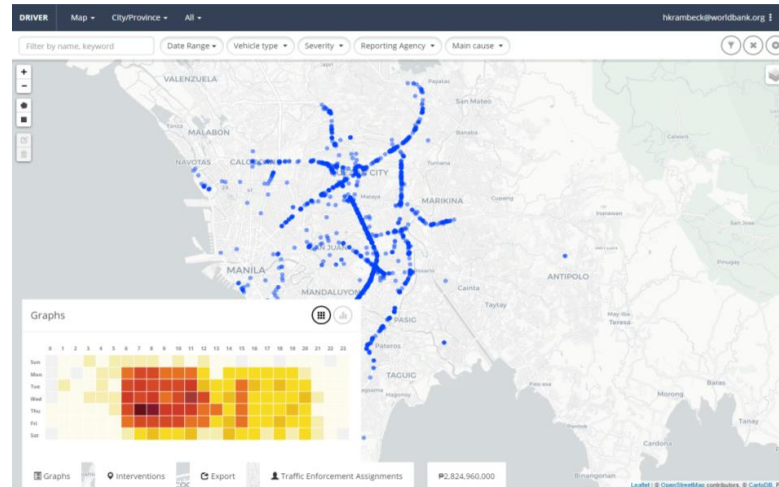
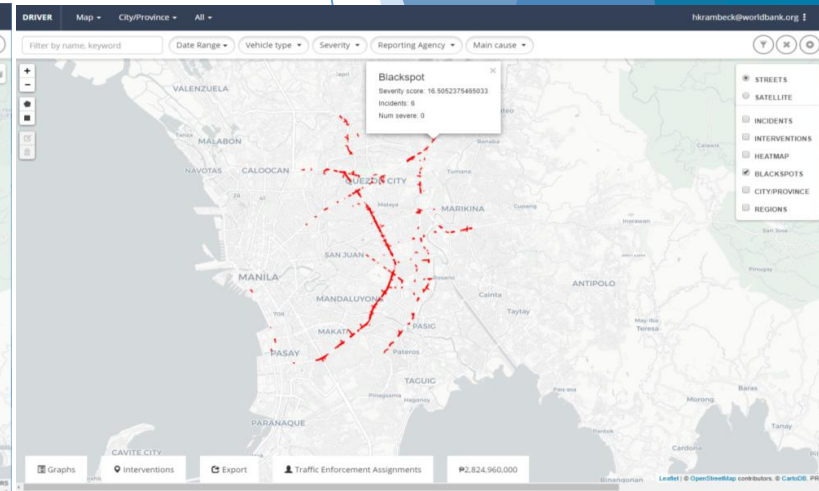
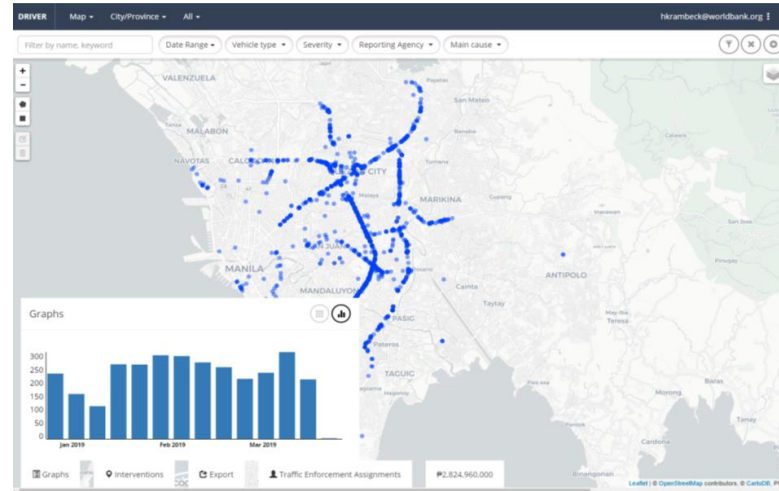
<https://bangladesh.roadsafety.io>

<https://mumbai.roadsafety.io>

<https://laos.roadsafety.io>

<https://malawi.roadsafetysa.com/>

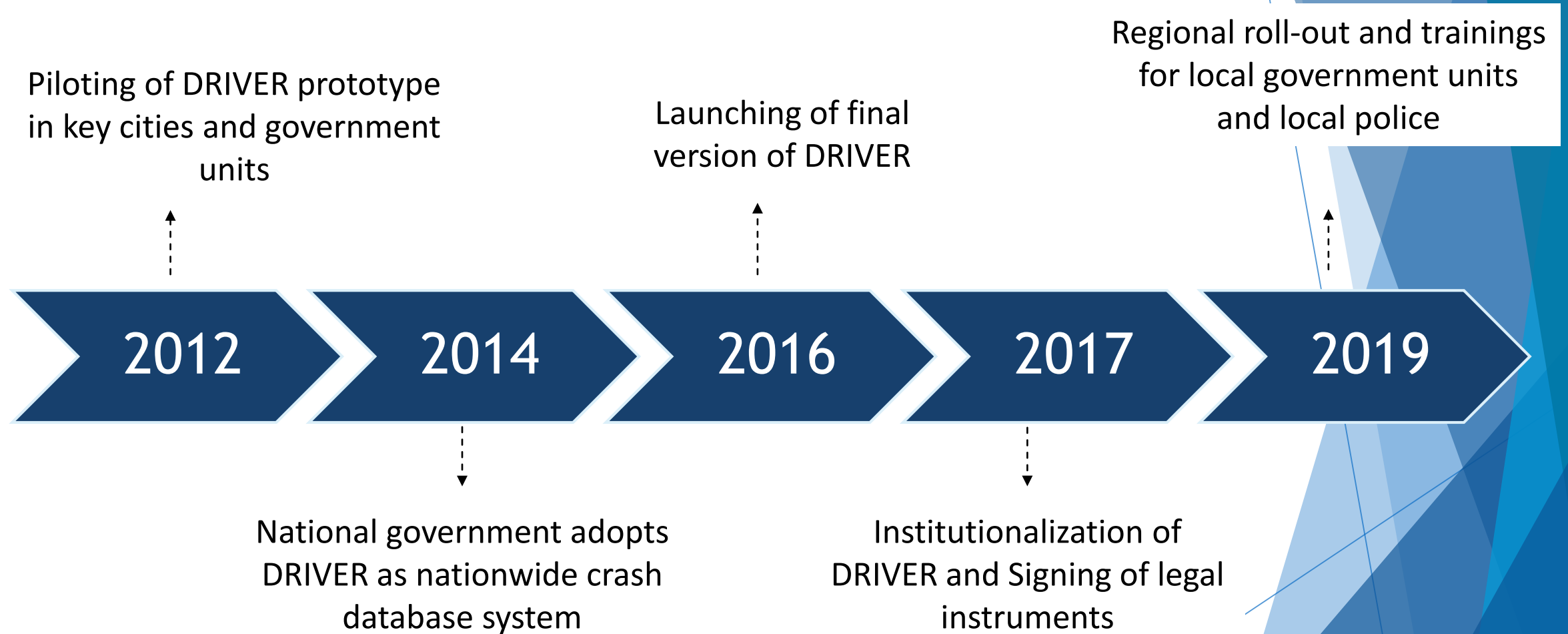
•••••







# DRIVER – Brief history



# DRIVER – Brief history

Department of  
Transportation (DOTr)

Focal Point for Road  
Safety  
DRIVER administration

## Data Providers

Philippines National  
Police (PNP)

Local Government Unit  
Traffic Management  
Agencies

Department of Health  
(DOH)

## Data Users

Department of Public  
Works and Highways  
(DPWH), DOH, PNP

Local Government Unit  
Planning and Engineering  
Units

DOTr, LTO

## Server Support

Department of Science and  
Technology



# DRIVER – Sustainability

## CONTINUOUS CAPACITY BUILDING





# DRIVER – Sustainability

## ENGAGING THE PUBLIC

### Forums



### Hackathon

**Road Safety Idea Hack 2017**

March 13 (Monday)  
8am - 12pm: Launch  
1pm - 5pm: Workshops

Up to PhP 180k worth of prizes at stake!

Register for free at  
<http://ideahack2017.eventbrite.com>

March 18 (Saturday)  
1pm - 5pm: Awards

#roadsafetyPH

Crowne Plaza Ortigas

**Sponsors:** Korea Green Growth Partnership, Globe L A B S, PETRON, Mapillary, azavea, Department of Education Schools of Government, MIRA, ULI Urban Land Institute Philippines, ImagineLaw, net@ Manila, MAPZEN, youthmappers, Map the Philippines, MOBILITY



# DRIVER – How does it work?

# The Interface – Log in

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Log-in using Gmail

Three Levels of Access: Public, Analyst,  
Admin

DRIVER

Road Incident Data System

Log in to DRIVER

USERNAME:

PASSWORD:

Sign-in

Log in with google.com



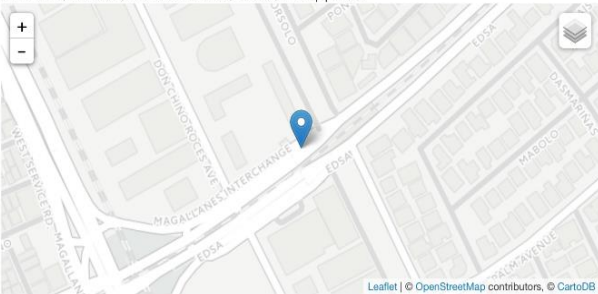


# The Interface – Incident recording

**DRIVER**
Record List ▾ City/Province
**View** **Edit**
hkrambeck@worldbank.org |

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🔍
✕
⚙️

DATE & TIME	SEVERITY	INCIDENT DETAILS
11/07/2017, 14:52:52	Prope	<div style="display: flex; justify-content: space-between;"> <div> <b>OCCURRED</b> November 7, 2017, 14:52:52 <b>LOCATION</b> 7 - 11, Magallanes Interchange, Kayamanan Subdivision, Bangkal, Makati, District I, Makati, Metro Manila, 1232, Philippines           </div> <div> <b>CREATED</b> November 7, 2017, 15:02:46           </div> </div>  <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> <b>LATITUDE</b> 14.54192 <b>WEATHER</b> ☁️ Partly cloudy day Powered by Forecast         </div> <div> <b>LONGITUDE</b> 121.01904 <b>LIGHT</b> Day <b>SEVERITY</b> Property <b>COLLISION TYPE</b> Side swipe         </div> </div>

DRIVER

Record List

City/Province

All

hkrambeck@worldbank.org

Filter by name, keyword

Date Range

Vehicle type

Reporting Agency

Main cause

Severity

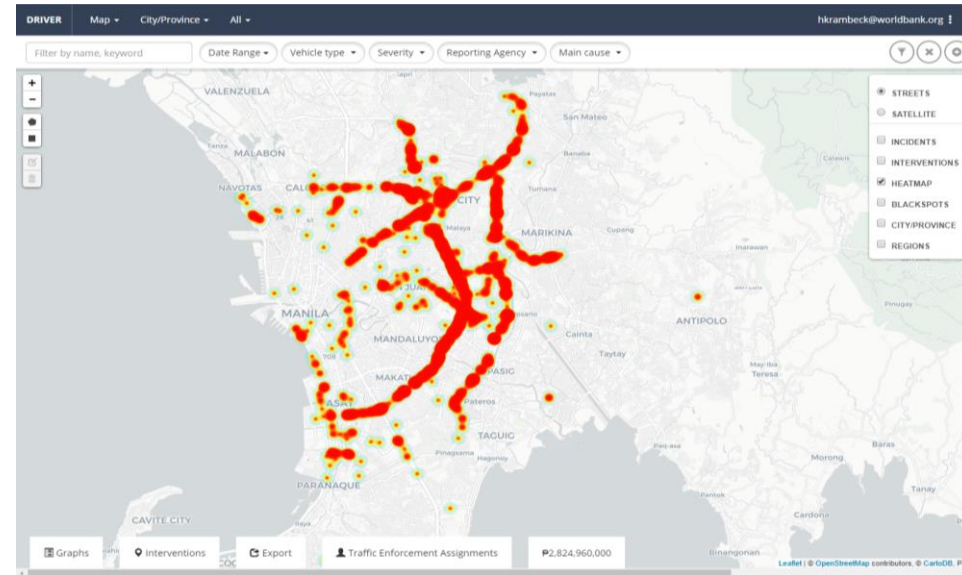
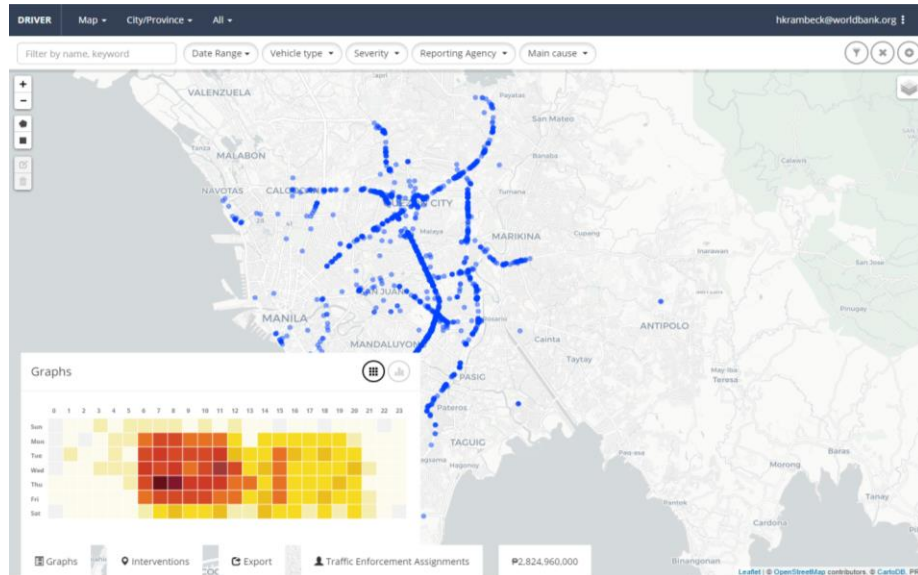
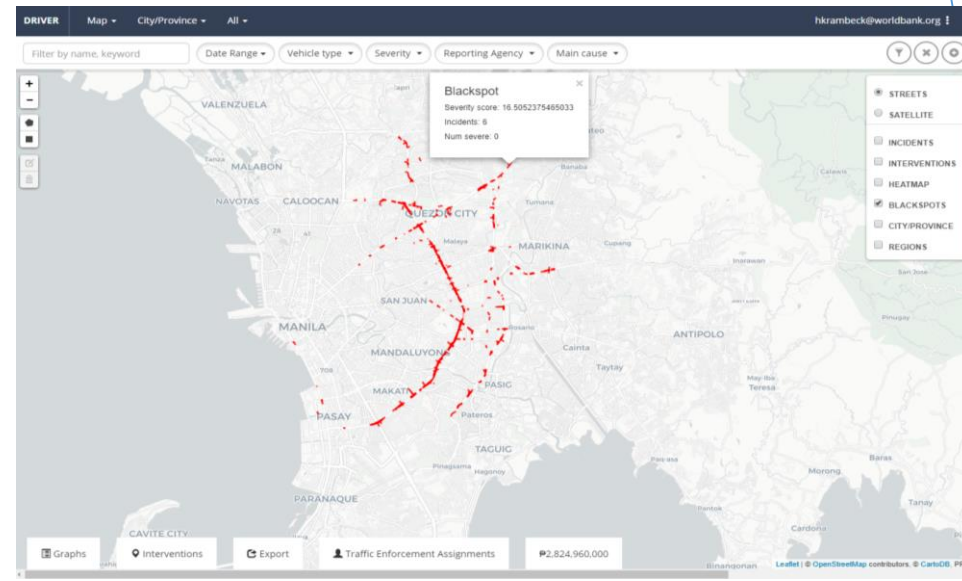
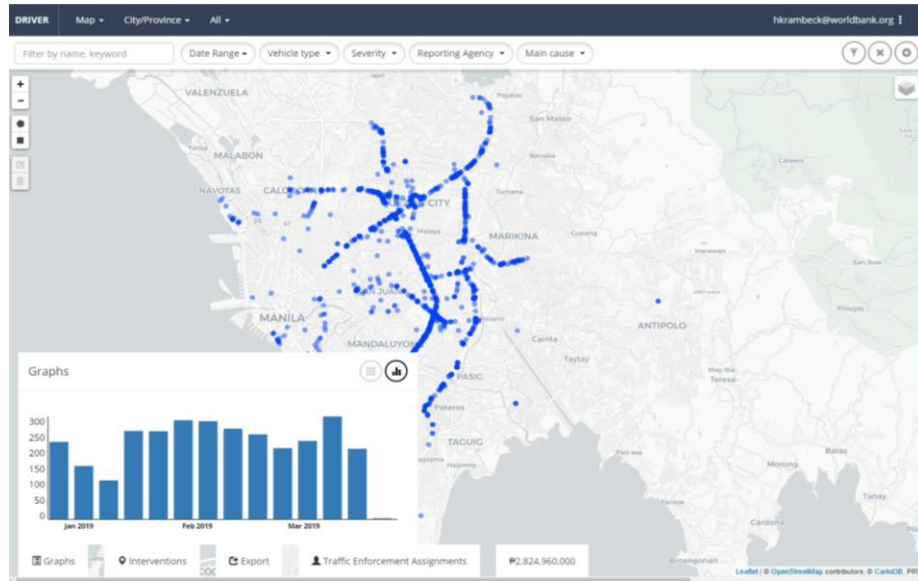
🔍

✕

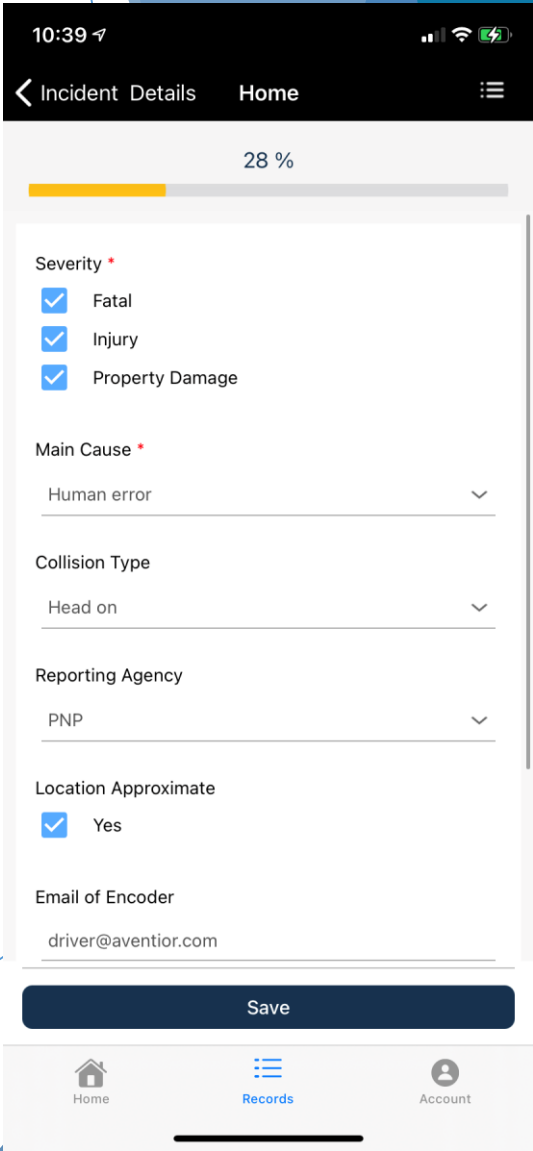
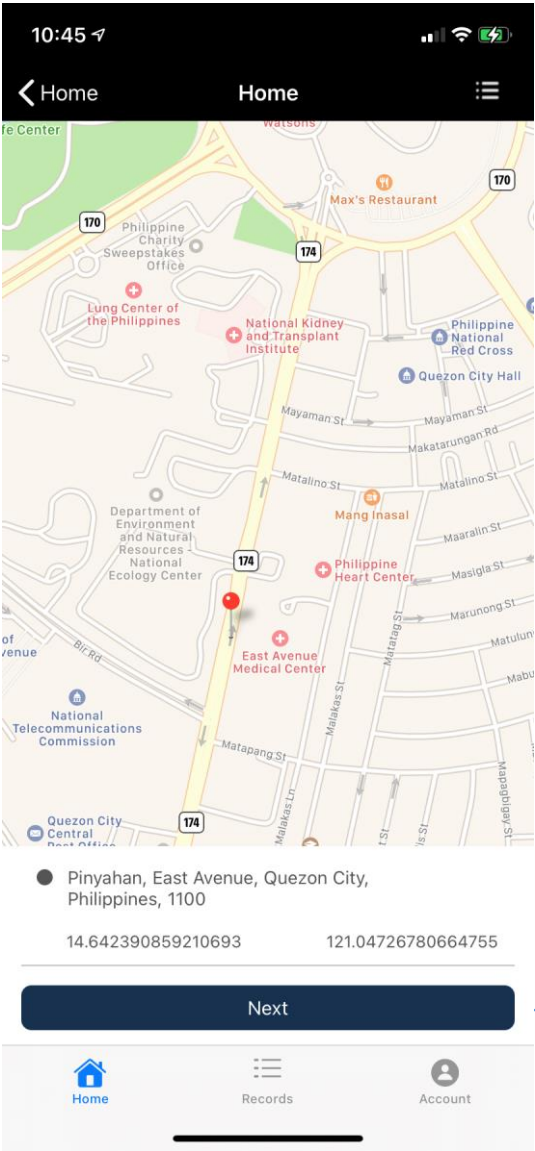
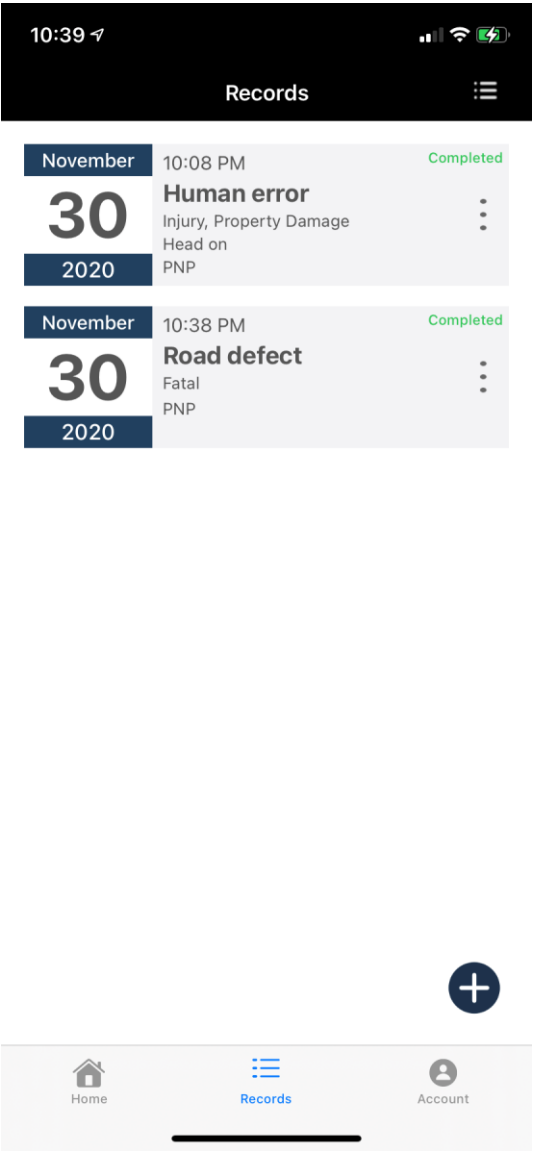
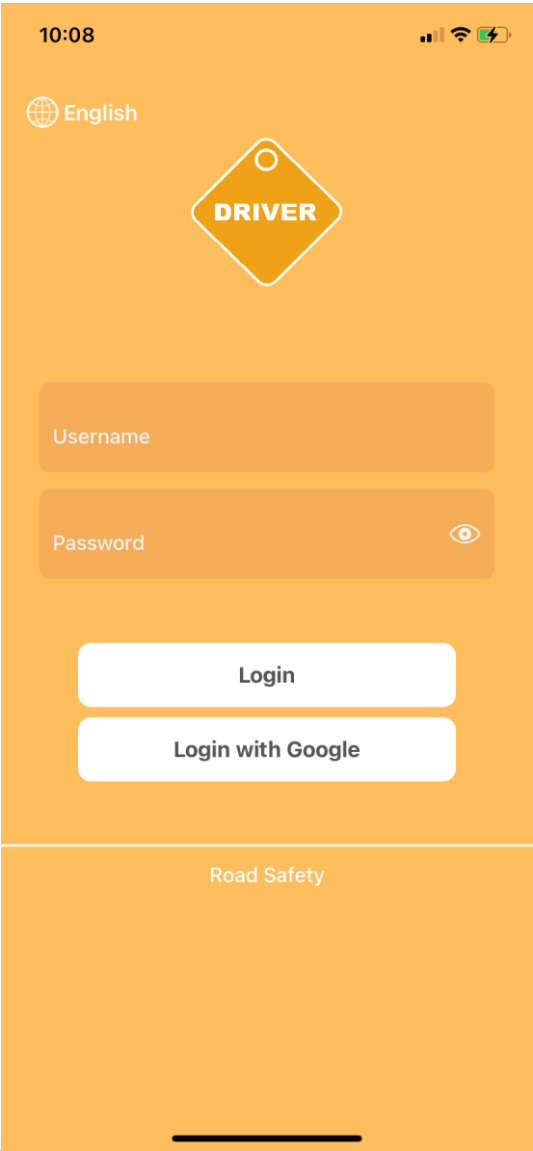
⛶

DATE & TIME	SEVERITY	MAIN CAUSE	COLLISION TYPE	DESCRIPTION	
11/07/2017, 14:52:52	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/07/2017, 14:17:18	Injury; Property	Human error	Hit pedestrian		<div>View</div> <div>Edit</div>
11/06/2017, 21:33:50	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 21:21:55	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 20:02:05	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 19:32:13	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 19:27:31	Property	Human error	Other (see description)	multiple collision	<div>View</div> <div>Edit</div>
11/06/2017, 19:22:29	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 19:09:42	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 19:07:43	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 18:36:38	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 16:43:10	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 16:31:50	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 16:30:17	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>
11/06/2017, 15:45:27	Property	Human error	Side swipe		<div>View</div> <div>Edit</div>

# The Interface – Incident visualization

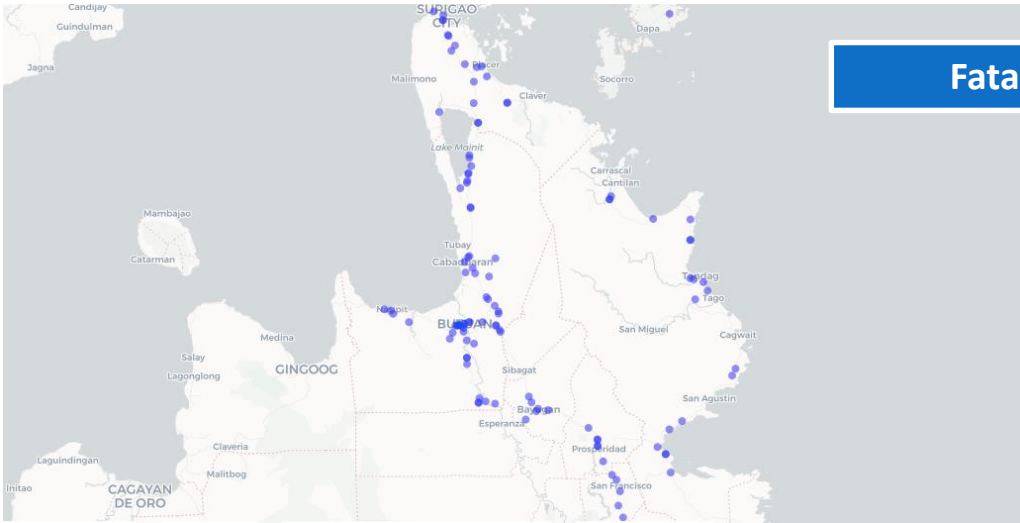


# Smartphone apps

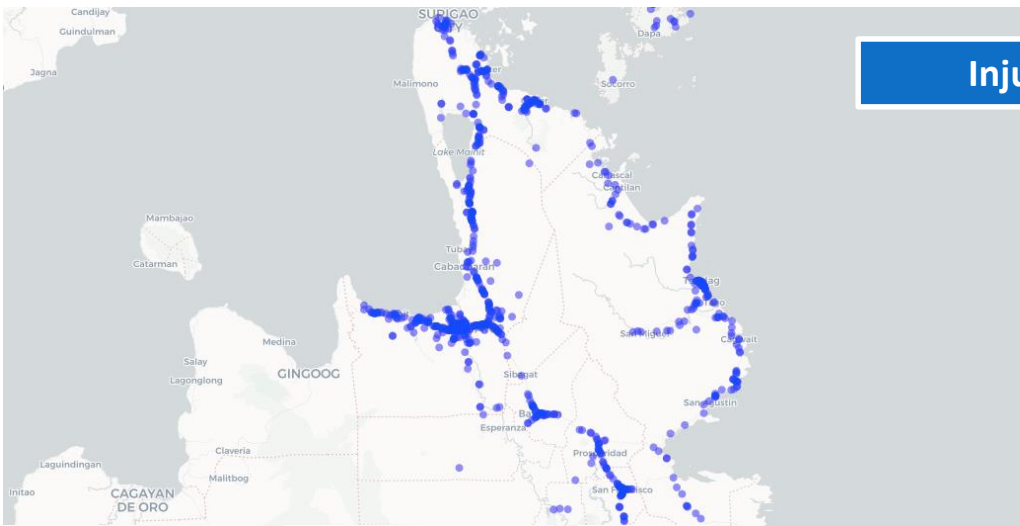




# Examples: Managing high risk road sections



Fatal



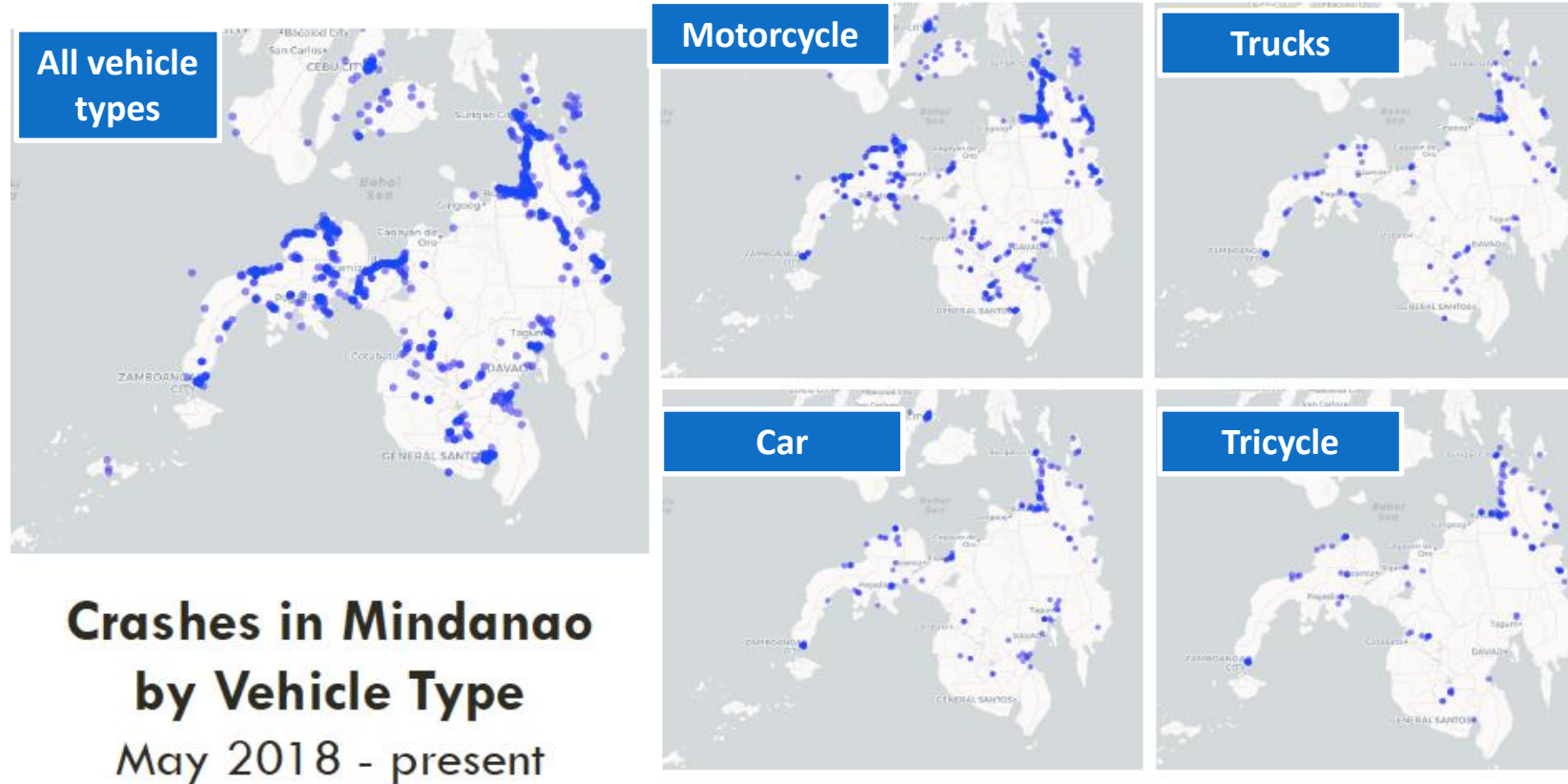
Injury



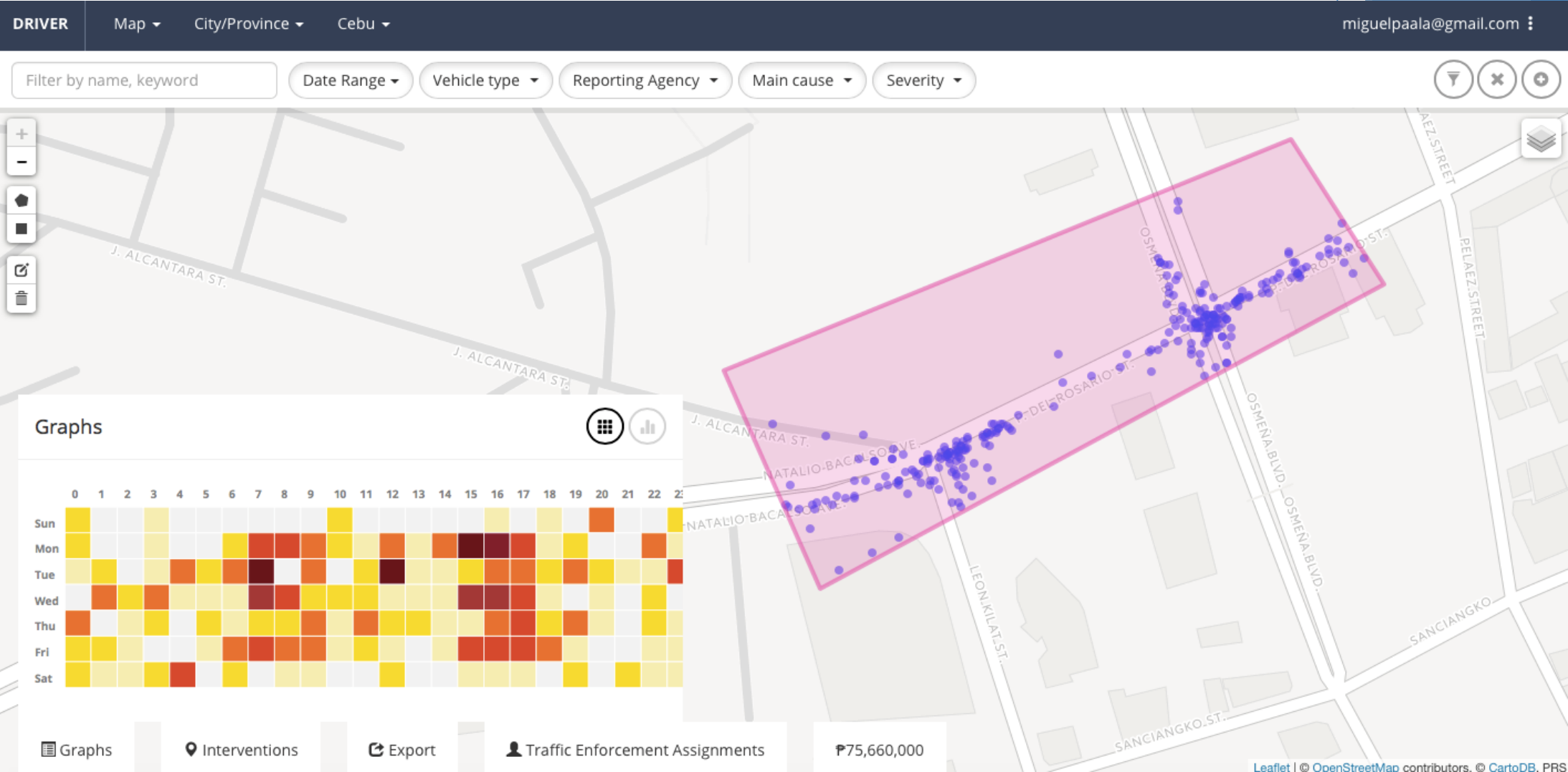
Crashes in Region XIII, Philippines,  
by severity  
January 2018 - present



# Examples: Mass action treatments

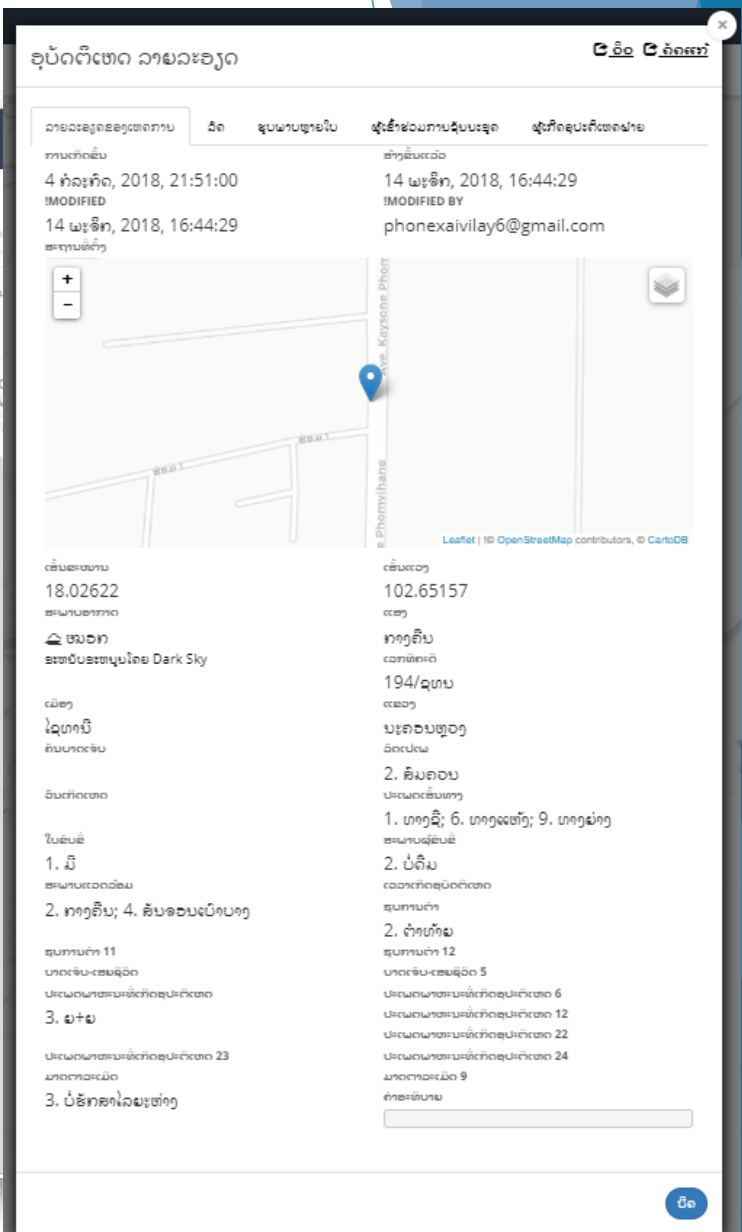
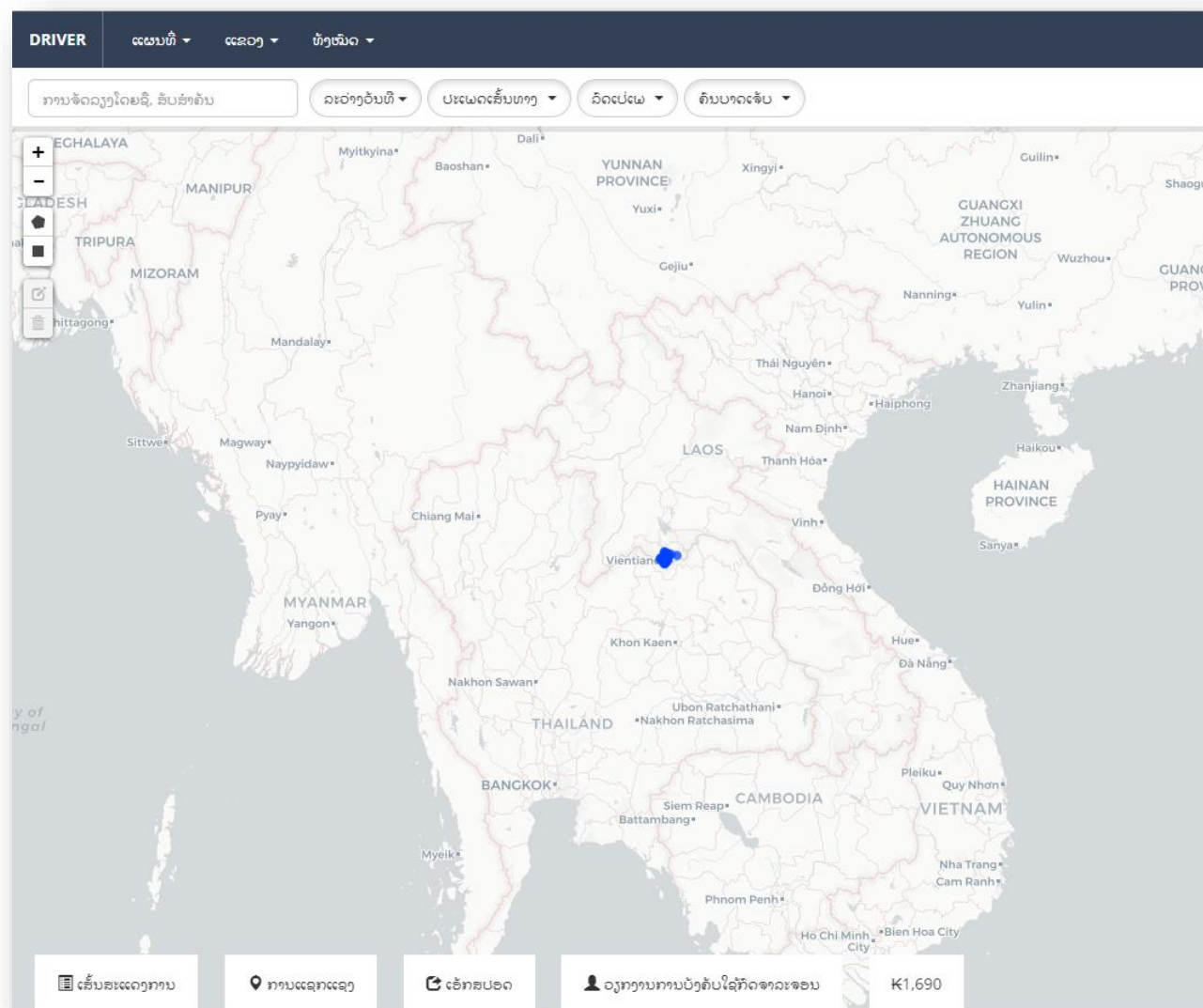


# Examples: School zones



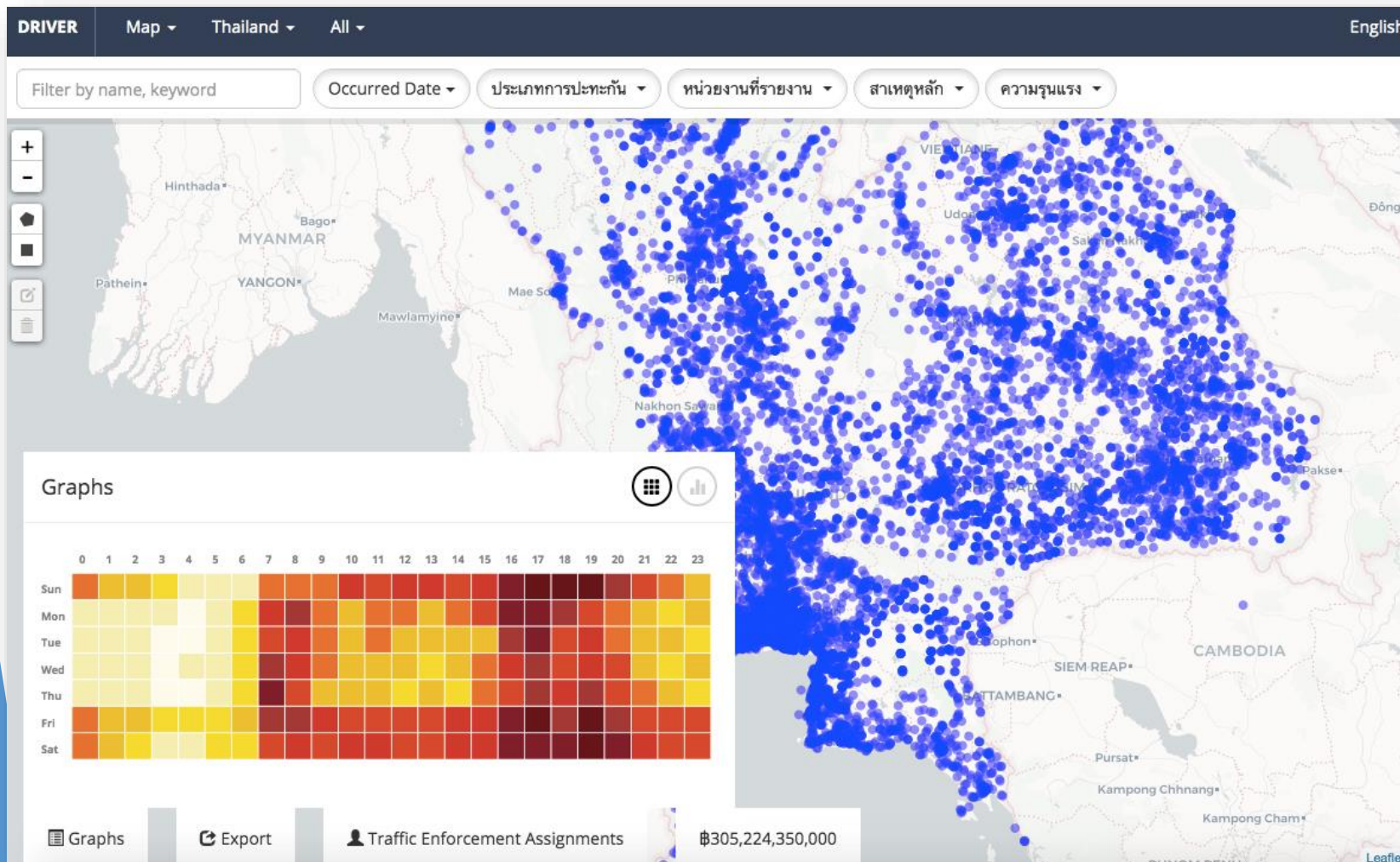
# DRIVER pilots

# Vientiane - Laos





# Bangkok - Thailand



### Incident Details

[View](#) [Edit](#)

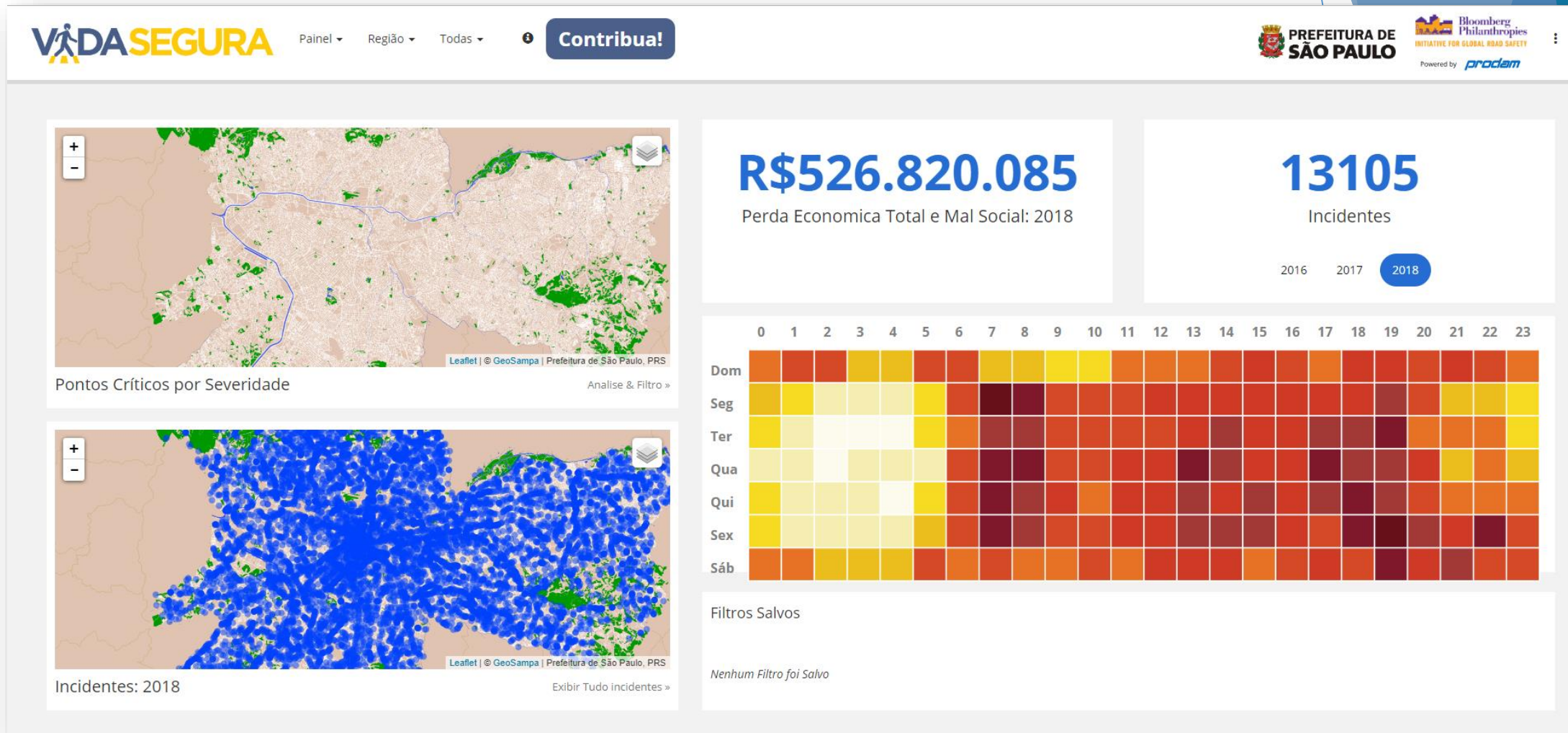
รายละเอียดเหตุการณ์	ยานพาหนะ	คน	ภาพถ่าย
OCCURRED			CREATED
May 17, 2019, 11:25:00			June 6, 2019, 19:44:40
MODIFIED			MODIFIED BY
June 6, 2019, 19:58:50			incubusv@gmail.com
LOCATION			
พระประแดง, บางกระสอบ, จังหวัดสมุทรปราการ, 10130, ประเทศไทย			

LATITUDE 13.64912  
LONGITUDE 100.54053  
WEATHER LIGHT  
☀ Clear day  
Powered by Forecast  
Day  
ความรุนแรง  
บาดเจ็บ  
ประเภทการปะทะกัน  
ชนท้าย  
หน่วยงานที่รายงาน  
หน่วยการจราจรท้องถิ่น

สาเหตุหลัก  
ผู้ใช้ถนนบกพร่อง  
รายละเอียด

เมื่อเวลาประมาณ 11.25 น. ของวันที่ 17 พฤษภาคม 2562 บริเวณถนนพหลโยธินฝั่งถนนปู่เจ้าสมิงพราย มีรถบรรทุกพ่วง 22 ล้อ ยี่ห้ออิชูซุ สีขาว ทะเบียนเลขทะเบียน 81-9812 ชัยภูมิ ท้ายหมายเลขทะเบียน 81-9813 ชัยภูมิ ชนมาจากด้านกาญจนาภิเษกหน้าไปทาง ถนนพหลโยธินฝั่งถนนปู่เจ้าสมิงพราย เบรคไม่ทันเสียหลักชนท้ายรถบรรทุก 10 ล้อ ยี่ห้ออิชูซุ สีเขียว หมายเลขทะเบียน 61-0855 กรุงเทพมหานคร ชนมาจากด้านกาญจนาภิเษกหน้าไปทาง ถนนพหลโยธินฝั่งถนนปู่เจ้าสมิงพราย กระเด็นไปชนป้ายเหล็กนอกทางโค้งหักจำนวน 1 อัน มีผู้ได้รับบาดเจ็บเป็นหญิง 1 ราย แขนหัก เจ้าหน้าที่มูลนิธิป่อเต็กตึ๊งนำส่งโรงพยาบาลราชวิถีรักษา รมชัยปราการ มีทรัพย์สินทางราชการเสียหายเป็นป้ายเหล็กนอกทางโค้งหักจำนวน 1 อัน บิดการจราจร 1 ช่องทาง สามารถสัญจรได้ 1 ช่องทาง ได้มีเจ้าหน้าที่รปภ. และสายตรวจและเจ้าหน้าที่ตำรวจ ส.ส.ร. ได้อำนวยความสะดวกในการจราจรและรถออกเคลื่อนย้ายออกพื้นที่ที่รถเกิดเหตุได้เคลื่อนย้ายออกจากพื้นที่ที่เวลา 18.26 น. ครับ

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# Fortaleza - Brazil

Sinistros ▾ Engenharia ▾ Fiscalização ▾ Gerência

Minha Conta ▾

Intervencões de Engenharia

Infraestrutura Cicloviária

Infraestrutura para Pedestre

Infraestrutura para Ônibus

Semáforo

Operação e interdição de pista

Moderação de Tráfego

Renovação/Implantação de Sinalização

Projeto geométrico

Planejamento e Análise

Outro

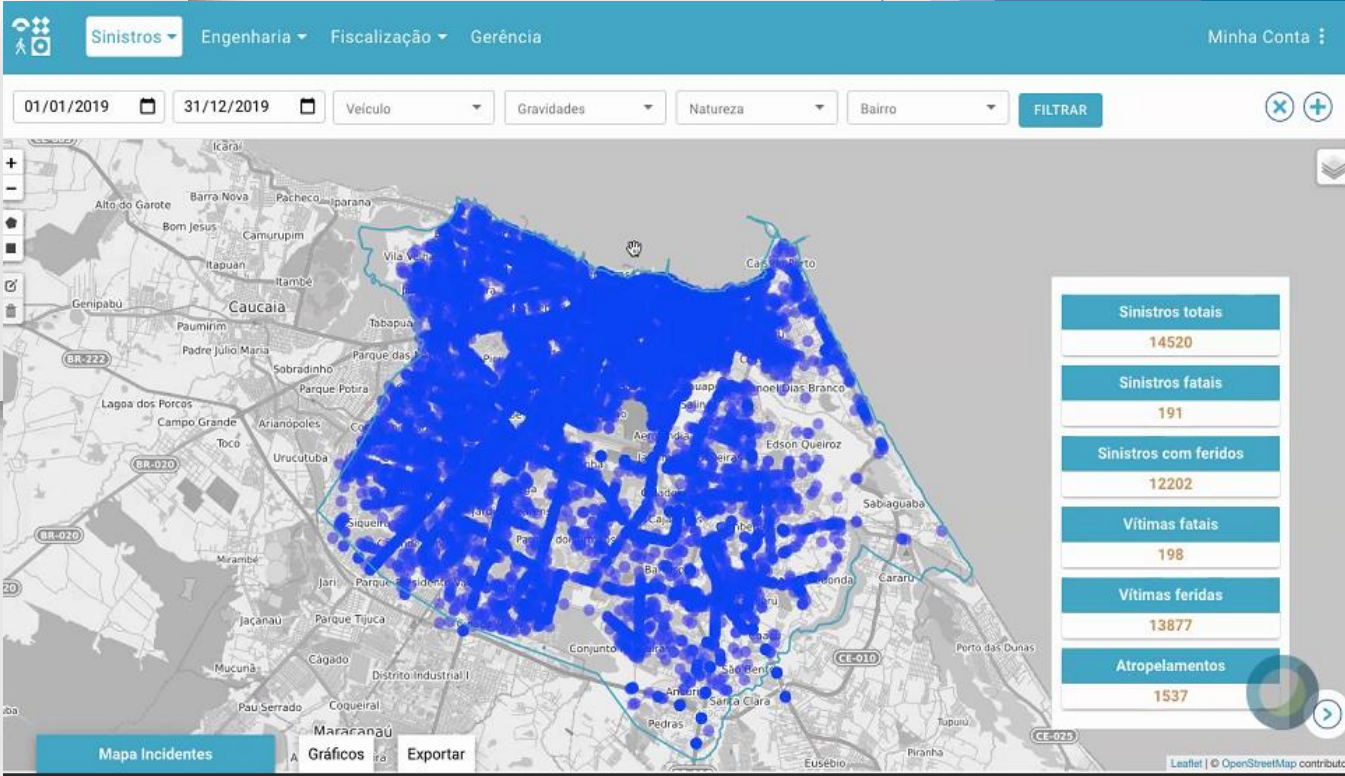
Especificação

Convencional

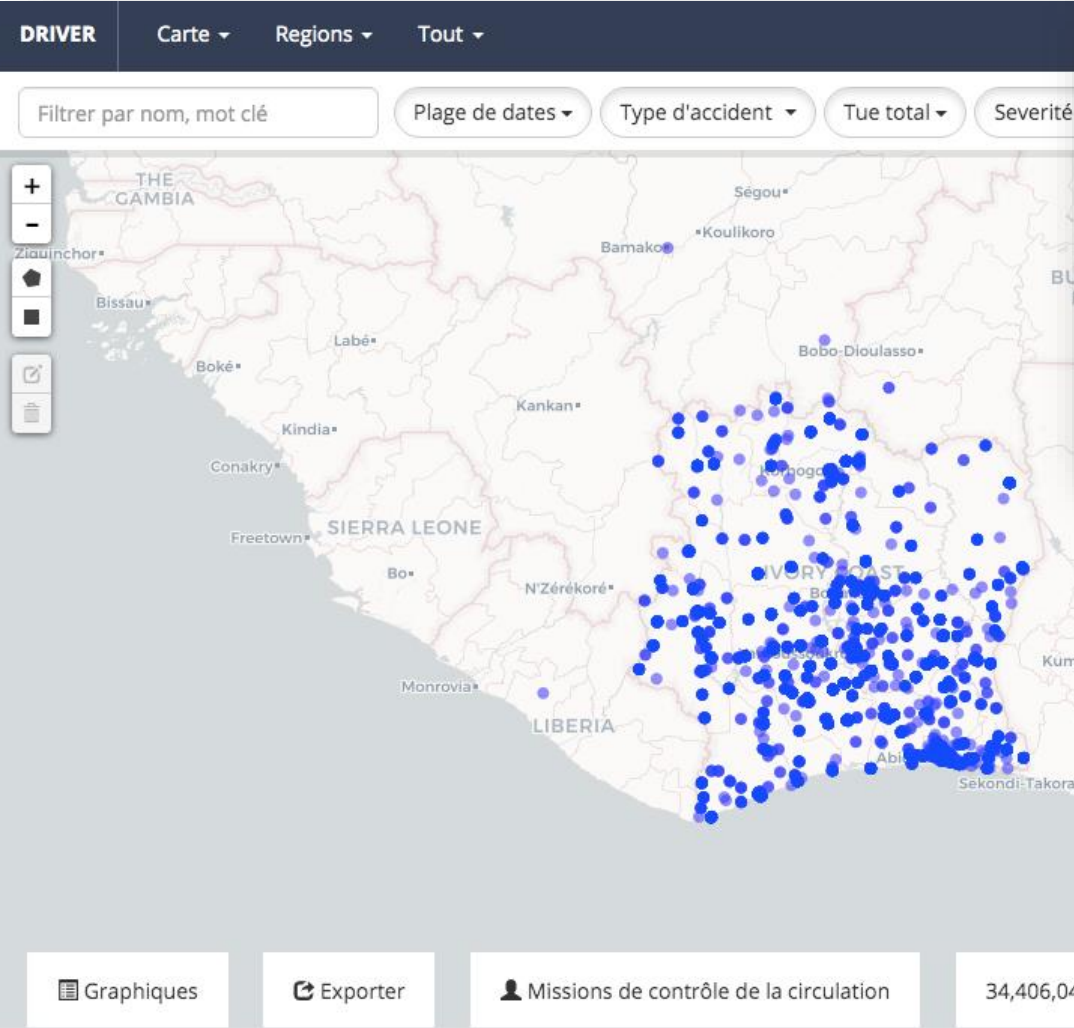
PESQUISAR

SALVAR ENGENHARIA

CANCELAR



# Ivory Coast



1 Janvier, 2010 - 16 Septembre, 2020

Accidents par Type d'accident et Severité

TYPE D'ACCIDENT	FAIBLE	ELEVÉE	TRÈS ELEVÉE	TOTAL
V / V	1716	2674	384	4774
V / 2R	1453	3620	655	5728
V / P	6726	7882	1025	15633
V Seul	1687	1841	475	4003
2R / 2R	251	824	201	1276
2R / P	960	1498	281	2739
2R Seul	230	515	217	962



# DRIVER – How to locally adapt it?

# Local adaption – Github repository

The screenshot shows the Github repository page for **WorldBank-Transport / DRIVER**. The repository is described as "DRIVER - Data for Road Incident Visualization, Evaluation, and Reporting". It has 17 watchers, 10 stars, and 11 forks. The repository is on the **master** branch and has 1,516 commits, 5 branches, 1 release, 16 contributors, and is licensed under GPL-3.0. The commit history shows the following entries:

Commit	Description	Time Ago
ddohler	Add API documentation	26 days ago
	Remove invalid docker tag option to fix deployment	7 months ago
	Create script to run through all blackspot phases	11 months ago
	Fix problem with multi-aggregation on boundaries	3 months ago
	Bump ansible-role-letsencrypt version	5 months ago
	Add API documentation	26 days ago
	Bump schema builder library version.	9 months ago
	Pin angular version	3 months ago

# Local adaption – Documentation

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## Development

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This section describes the competencies for a DRIVER developer.

### Core competencies

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- Proficient in a Linux environment, including shell scripting
- Knowledge of infrastructure tooling such as Vagrant, Ansible, and Docker
- Web development experience, specifically Python/Django and Javascript/Angular, including knowledge of HTML/CSS
- Experience with a relational database system

### Preferred competencies

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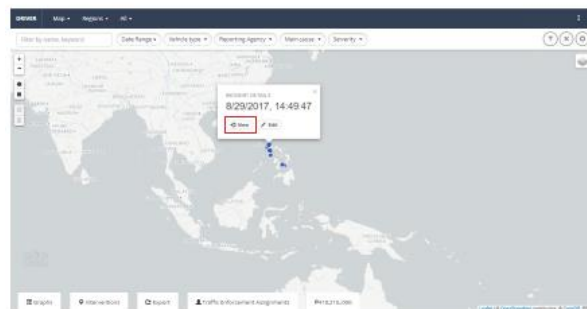
- Experience with:
  - PostgreSQL
  - Redis
  - Nginx
  - Gunicorn
  - Celery
- GIS experience, specifically using Windshaft
- Knowledge of statistics and R
- Knowledge of these additional technologies is also beneficial:
  - NFS
  - OAuth2
  - Javascript package/build tools (Grunt and Bower)
  - Monit
  - ufw

# Local adaption - Manuals

## EDITING AND DELETING INCIDENTS

Analysts may also edit incidents already recorded in DRIVER. To edit an incident, go to the Map first, then click an individual incident you wish to edit by selecting one of the blue location pins.

Once selected, a pop up will appear that will prompt you to either view or edit an incident. Click "Edit".



The Incident Input form will appear again. You may edit details of the incident from here, and also delete them.

To save edited data, click the "Save Incident" button on the right.

To delete an incident, click the "Delete Incident" button on the right.

## ENCODING INTERVENTIONS

Interventions are actions made by Analysts in order to alleviate a road incident. These may come in the form of disciplinary action, road safety precautions, etc.

To access add an Intervention, analysts must first go to the Map and click the "Intervention" tab found below.



Clicking on this will prompt the "Add Intervention" button to appear. Click this.



## Intervention Input Form

Intervention Location & Time (A)

LOCATION

LATITUDE

LONGITUDE

OCCURRED FROM

OCCURRED TO

Intervention Detail (B)

TYPE

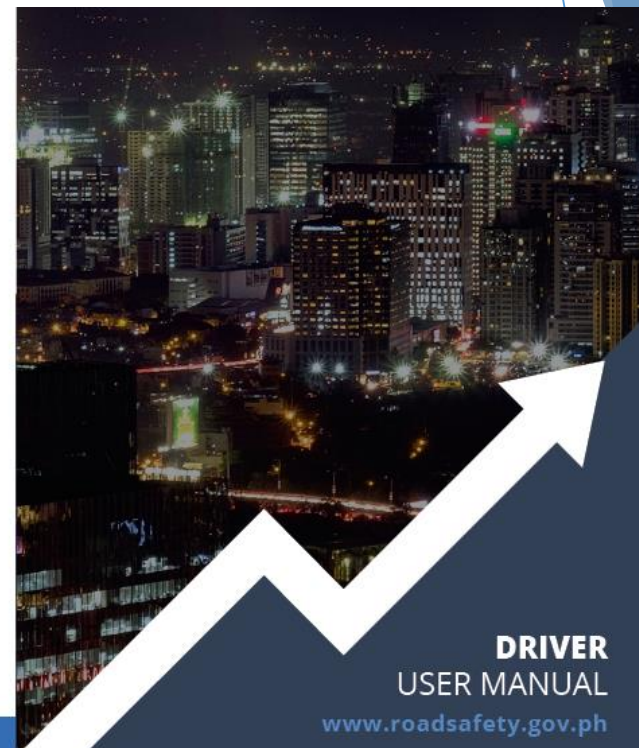
Addressing Accident and Other Causes

(A) **Intervention Location & Time**  
Record location, time, etc. where the intervention took/ will take place.

(B) **Intervention Detail**  
The details and the action taken by officials to alleviate the road incident

## Editing & Deleting Interventions

Just like editing incidents, click on a pinned intervention on the map. This will show an "Edit" button. You may edit and delete interventions in the same way.



## DRIVER USER MANUAL

[www.roadsafety.gov.ph](http://www.roadsafety.gov.ph)

DRIVER is a web application aimed at improving road safety reporting and data analysis. It provides data entry tools, map interfaces, custom report and filter tools, multiple concurrent user editing, and data exports.

## CONTACT US

DRIVER 0917-123-4567  
Email: [driver@driver.ph](mailto:driver@driver.ph)

View the full DRIVER manual on  
[www.roadsafety.ph](http://www.roadsafety.ph)

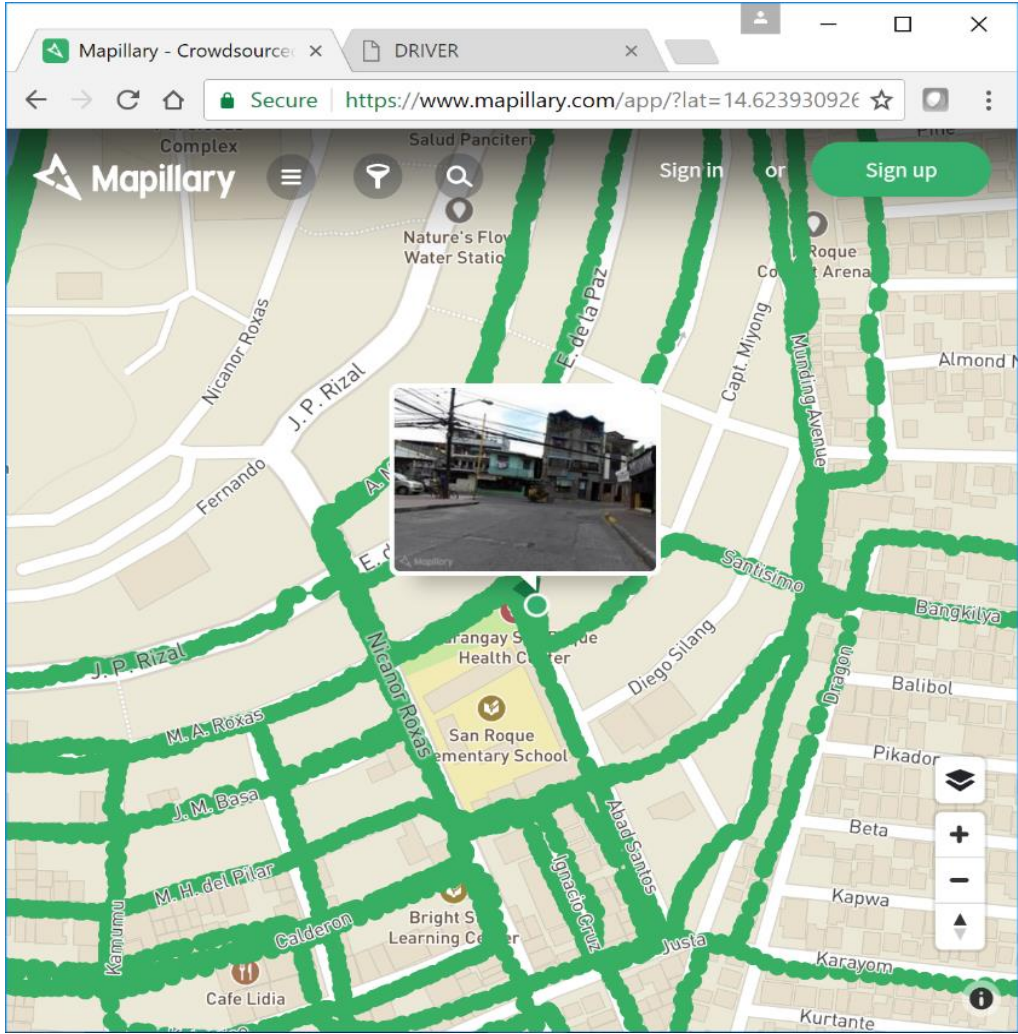
Visit DRIVER on  
[www.roadsafety.gov.ph](http://www.roadsafety.gov.ph)






# DRIVER – Latest developments

# Enhancements - Mapillary



Crash Details

11/2/2020, 12:18:0



Mapillary

Show Mapillary Street view

LATITUDE

15.453680224345835

LONGITUDE

120.93750000000001

WEATHER

Clear Day

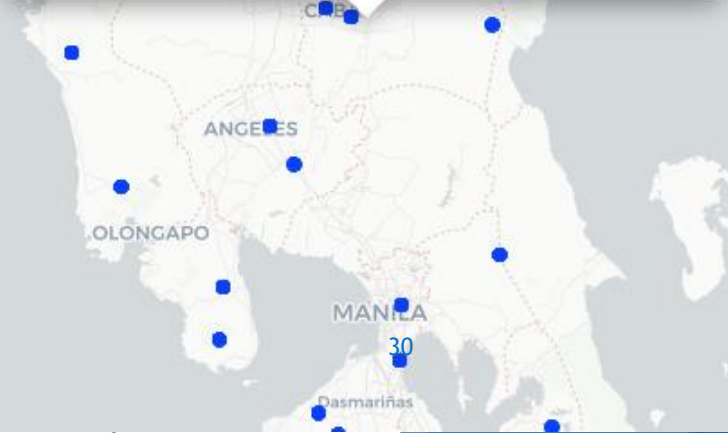
POWERED BY FORECAST

LIGHT

Dawn

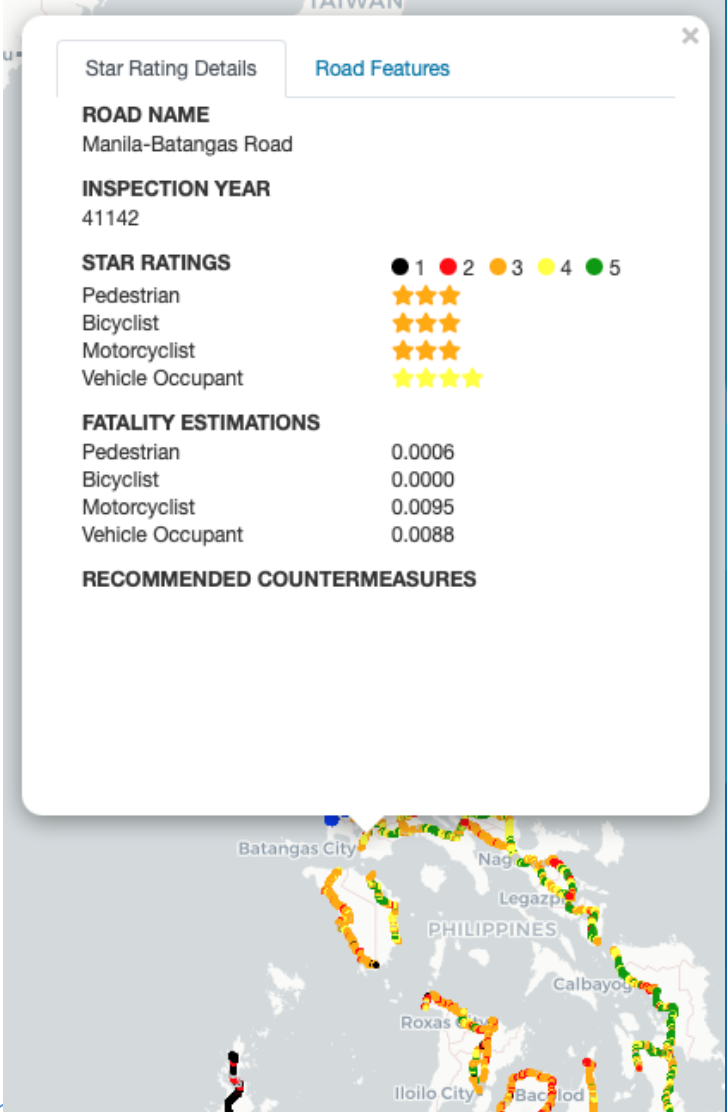
View

Edit



# Enhancements - iRAP

iRAP's Star Rating gives a simple, objective measure of infrastructure safety for every road user type.



# Enhancements – Crash diagrams

12:14

< Crash Diagram

Home

42 %

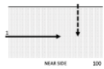
Crash Type

Pedestrian on foot

Movement Code


100 – Near side

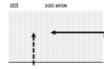
Image



NEAR SIDE


100





100

NEAR SIDE



Proceed to Vehicles

Home

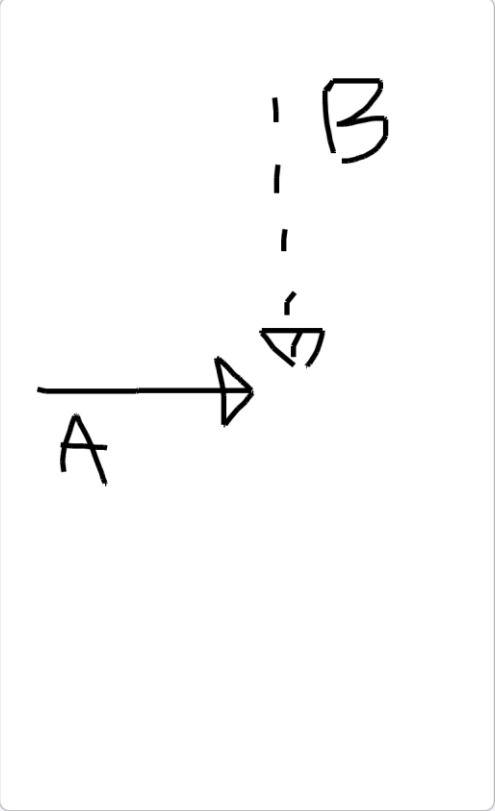
Records

Account

12:14

< Photo

Home




Edit

Save

Home

Records

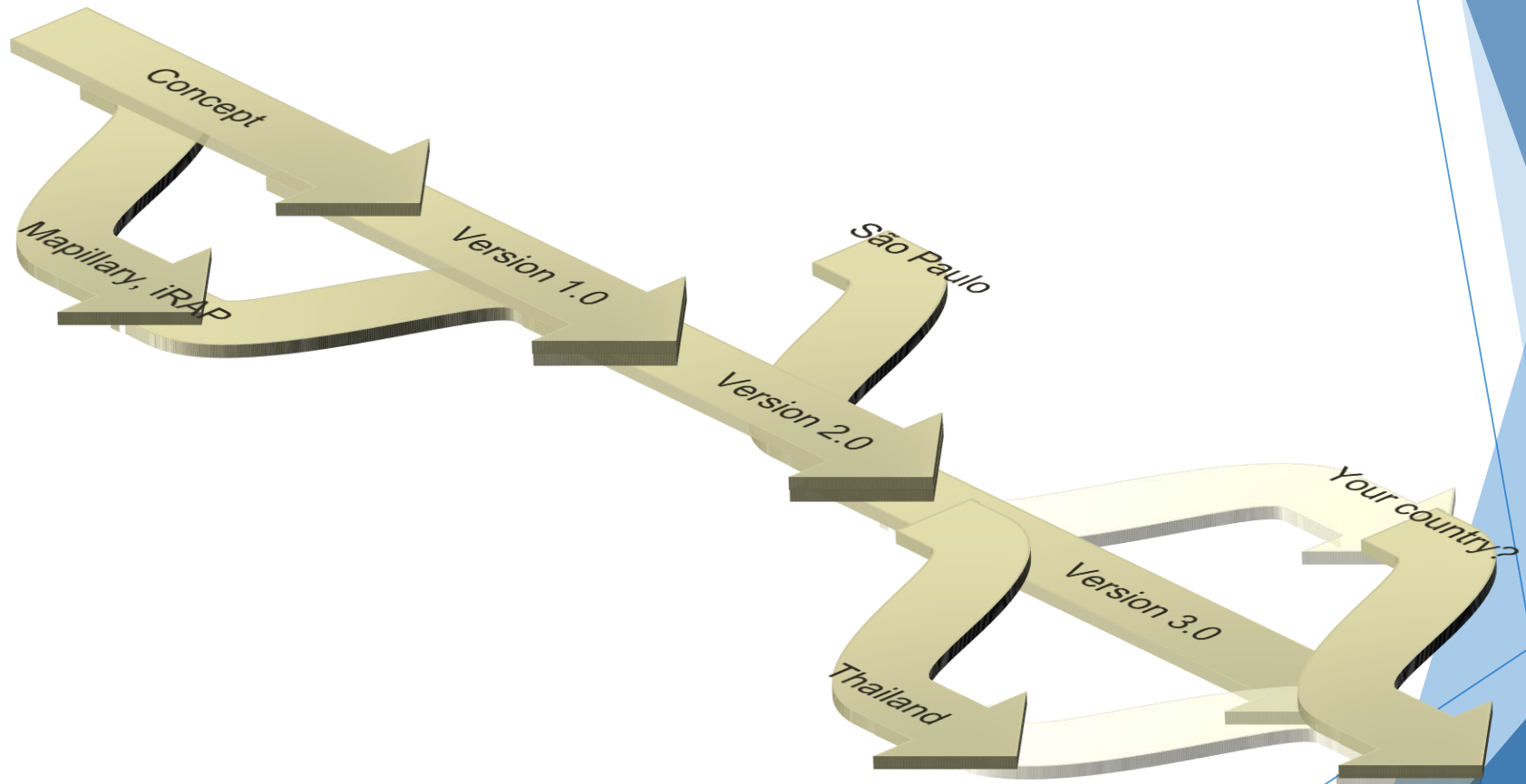
Account

 **WORLD BANK GROUP**  
Transport



# Future development

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# International partners and donors

*With thanks to donors for their financial support:*



*And acknowledging the international partners involved in the development of the tool:*



UNIFOR





# Thank you!

***Alina F. Burlacu***  
*Senior Transport Specialist*  
*The World Bank Global Road Safety Facility*  
[fburlacu@worldbank.org](mailto:fburlacu@worldbank.org)