Real-time health threat management system in informal settlements

Presented at the Webinar on slum sanitation and COVID 19 - 4 June 2020

An online ecosystem for COVID response supporting two way communication for activ identification of emerging health threats and social protection needs and vulnerabilities for communities and settlements.

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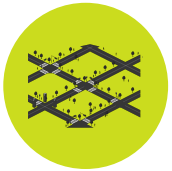
Filling the deficit for identification of health and social protection needs

Strengthening local resilience infrastructure

QCM Infrastructure will address capacity deficit issues such as:



Access to granular data

Real-time location specific

Monitoring

Social input need identification

Strategy formulation

Specific inputs for action planning

Planning and design insights

Two-way communication

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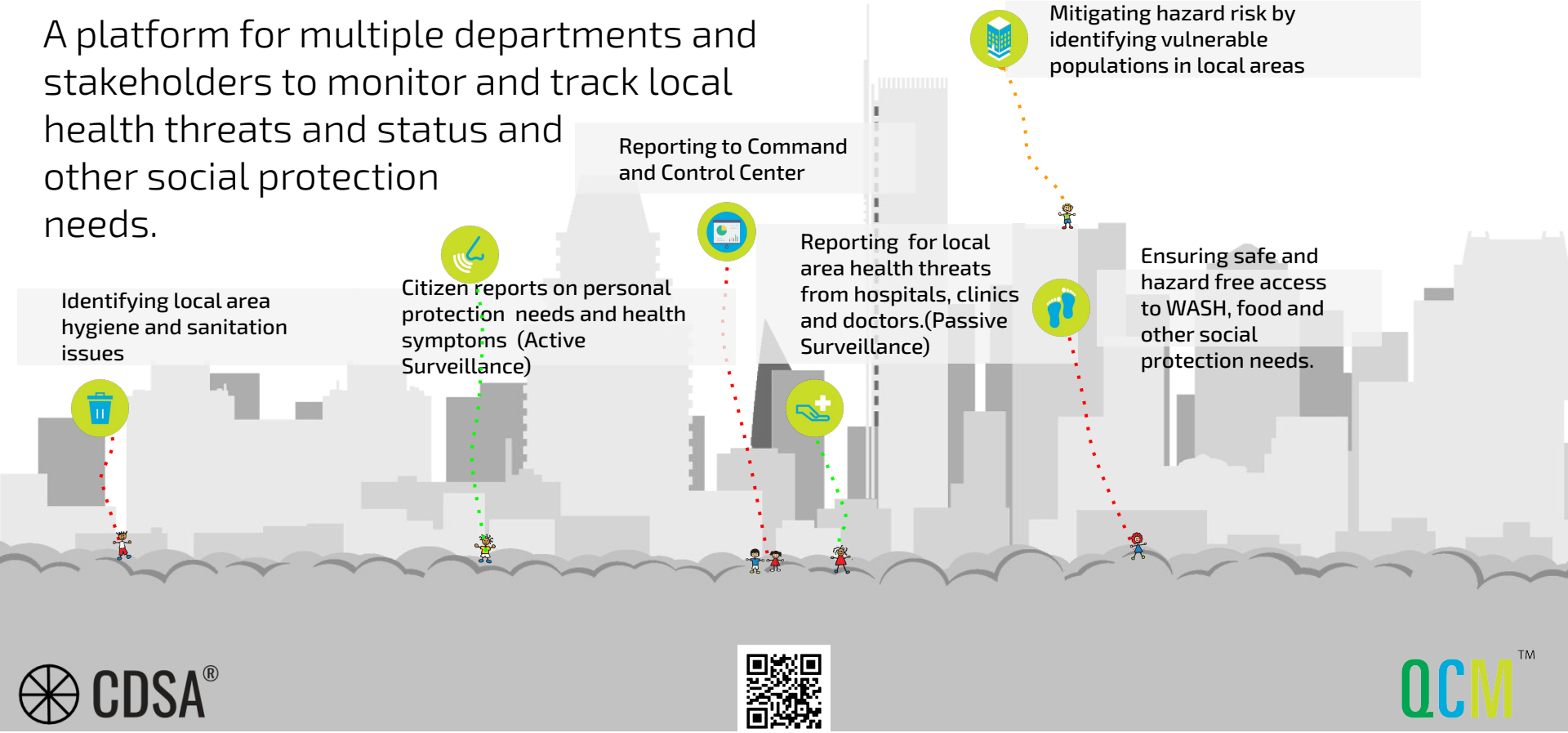
What kind of information and reports can be sent?

Identifying urban health threats and informing sustainable resilience strategy

A platform for multiple departments and stakeholders to monitor and track local health threats and status and other social protection needs.



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An end to end system

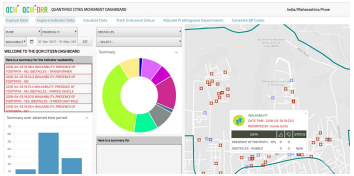
QCM Infrastructure

Data driven health threat management integrated with existing command and control

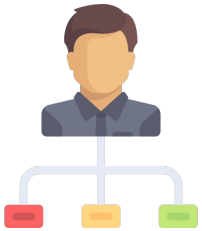
Data collection

Data types

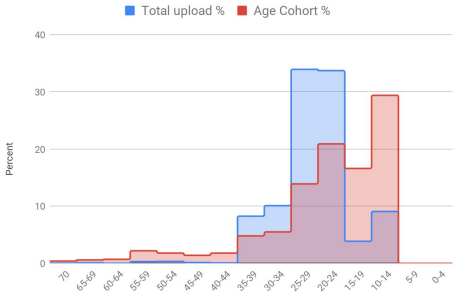
Dashboard for analysis and visualization



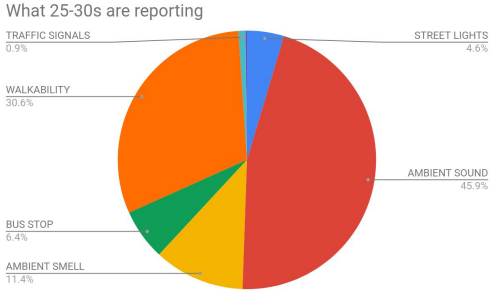
Access to data across various stakeholders



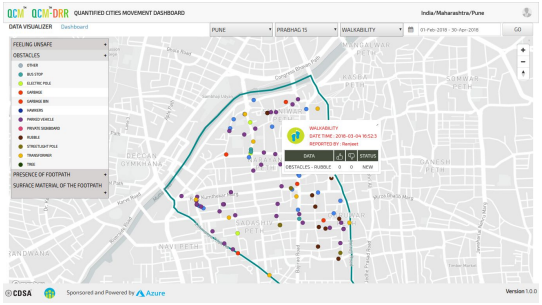
Who?



What and How much?



When and Where?



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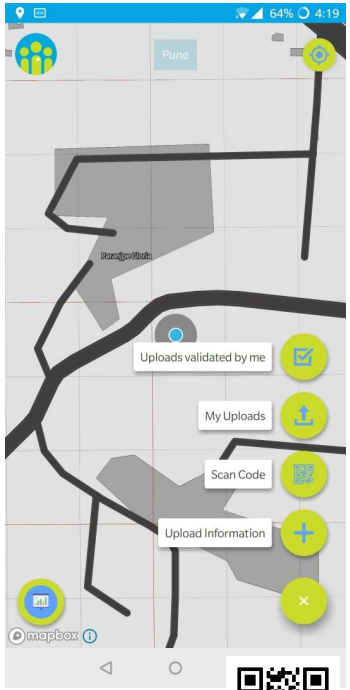
How do we collect data?

- Real Time
- Language enabled
- GIS enabled

iNagrik

Providing health posts/dispensaries, municipal health staff, sanitation staff, community health volunteers and other volunteers with iNagrik mobile application to enable near real time implementation, detection and reporting of location of symptoms and condition of confirmed or suspected COVID19 affected citizens.

iNagrik is the QCM mobile application created to enable cities to upload information to manage local area health threats.



Urban Local Body can track health threats and lack of medical supply inventory, manpower and other issues instantly and with location.

Health worker surveys and citizen reports reach the Command and Control Centre in real time with health threat incidence locations.

Quick and efficient response by emergency services for the reported health incidence through shared reports.

Enabling two way communication regarding awareness, announcements, polls and recommendations between the community, government and aid workers through notifications.

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How does the Ecosystem work?

People icons made by freepik from www.flaticon.com

Stakeholder coordination for health threats and emergencies

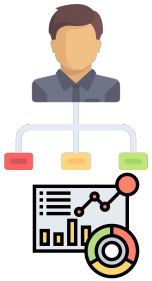
Departments report data for household and building level health monitoring

Citizens report symptoms, needs and emergencies

Medical professionals and emergency services can respond to reported health emergencies

Elected representatives improve local area policy through evidence based decisions.

Citizens awareness on reported health threats and monitoring progress.



Urban Local Bodies can track and manage reported health threats through the command and control center.

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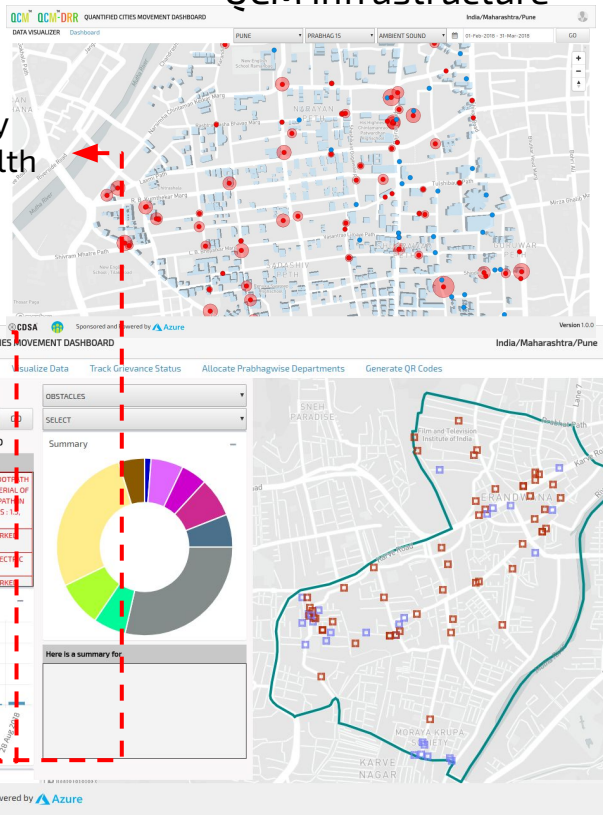

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Indicators for Precinct Level Reporting

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Intensifying resilience and social protection indicators in coordination with Urban Local Bodies and their line departments as well as other stakeholders.

1. Active surveillance and Health threat reporting (COVID19 symptoms etc.)
2. Social input status will evaluate access to:
   a. **Medical supplies**- disinfectants, masks
   b. **Food supplies**- public distribution system, food packets, water supply-sources and availability, milk and groceries.
   c. **Hygiene supplies**- public toilets, garbage disposal, sewage issues, functional hand hygiene stations
   d. **Other essential services-** LPG cylinders, electricity supply etc.

Water	Sanitation	Hygiene	Health care waste	Environmental cleaning
Advanced service To be defined at national level	**Advanced service** To be defined at national level	**Advanced service** To be defined at national level	**Advanced service** To be defined at national level	**Advanced service** To be defined at national level
Basic service Water is available from an improved source located on premises.	**Basic service** Improved sanitation facilities are usable with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, and at least one toilet accessible for people with limited mobility.	**Basic service** Functional hand hygiene facilities (with water and soap and/or alcohol-based hand rub) are available at points of care, and within 5 meters of toilets.	**Basic service** Waste is safely segregated into at least three bins and sharps and infectious waste are treated and disposed of safely.	**Basic service** Basic protocols for cleaning available, and staff with cleaning responsibilities have all received training.
Limited service An improved water source is within 500 meters of the facility, but not all requirements for basic service are met.	**Limited service** At least one improved sanitation facility, but not all requirements for basic service are met.	**Limited service** Functional hand hygiene facilities are available at either points of care or toilets, but not both.	**Limited service** There is limited separation and/ or treatment and disposal of sharps and infectious waste, but not all requirements for basic service are met.	**Limited service** There are cleaning protocols, or at least some staff have received training on cleaning.
No service Water is taken from unprotected dug wells or springs, or surface water sources; or an improved source that is more than 500 m from the facility; or the has no water	**No service** Toilet facilities are unimproved (pit latrines without a slab or platform, hanging latrines and bucket latrines), or there are no toilets or latrines at the facility.	**No service** No functional hand hygiene facilities are available at either points of care or toilets.	**No service** There are no separate bins for sharps or infectious waste, and sharps and/or infectious waste are not treated/disposed of.	**No service** No cleaning protocols are available, and no staff have received training on cleaning.

example

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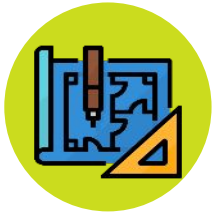
How does the system support the preparedness and response strategy for COVID-19 in Settlements?

Real-time Surveillance Mechanism:

Real time Surveillance:
Active Surveillance: Provision of mobile application for enabling citizens, volunteers and health workers in surveillance, contact tracing, IPC, managing quarantine and isolation centers, supply of ration to homes if needed etc.

The surveillance dashboard will be directly linked to health workers and volunteers as well as incident commanders wherein they can get instant updates.



Passive surveillance:
Report of number of cases and follow up on patients under treatment at civil dispensaries, health posts, health & family welfare centers will be monitored through a passive surveillance mechanism.

How does the system support the preparedness and response strategy for COVID-19 in Settlements?

Monitoring and coordination Mechanism:

Identification of high risk individuals

Survey uploaded by health workers can work as triggers for action in real time when the survey is submitted. The report can be sent to the command and control center, to the incident command system and other important functionaries depending on the Local administrative bodies' covid preparedness and response strategy.

Mapping and Dashboard interface to Incident command:

Coordination mechanism shall be strengthened for the Incident Commanders through the provision of an interface to the Incident command center and would comprise of dashboards and maps representing real time and time series data along with location of cases, facilities and containment areas. This interface can be shared in real time with representatives from NHS, Housing & Urban Affairs, Emergency services, elected representatives, prominent NGOs already serving the area, community leaders, etc.

How does the system support the preparedness and response strategy for COVID-19 in Settlements?

Two-way Communication Mechanism:

Awareness and advice through push notifications:
Enabling two way communications for non pharmaceutical interventions such as informing the community to adopt covid related lifestyle changes such as social distancing, use of face-mask, frequent handwashing, etc.

Risk communication will be designed to create awareness on: Common signs and symptoms of COVID-19 for high risk population particularly elderlies with co-morbidities like hypertension, cardiovascular diseases, diabetes, renal disease etc. Notifications will be sent regarding surveys, polls, announcements and suggestions.

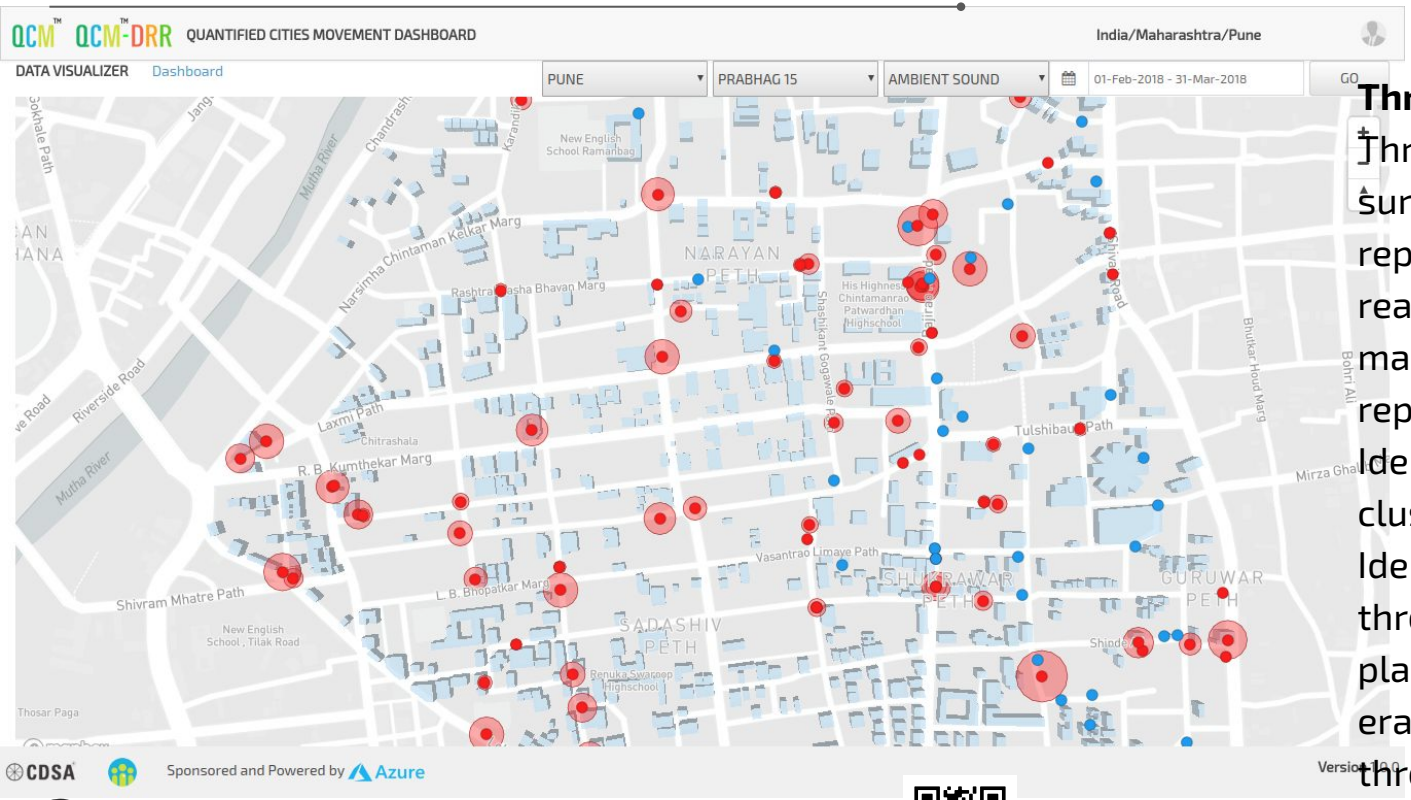
Mapping and Analysis for infrastructure gap identification

Infrastructure and vulnerability sorting and querying

Threat sorting and infrastructure gap identification: Threats can be sorted at building level. The sorting can take place on the basis of threat type, magnitude and intensity. Through analysis and sorting, gaps can be identified in order to support decisions for urban management and planning.

Mapping

Mapping assets and features in real time for management and planning



Threat and stress location:

Threats identified through surveys, testing and self reporting can be located in real-time. Threat magnitude can also be reported.

Identifying and managing clusters of health issues.

Identifying location based threats and creating action plans for mitigation and eradication of health threats.

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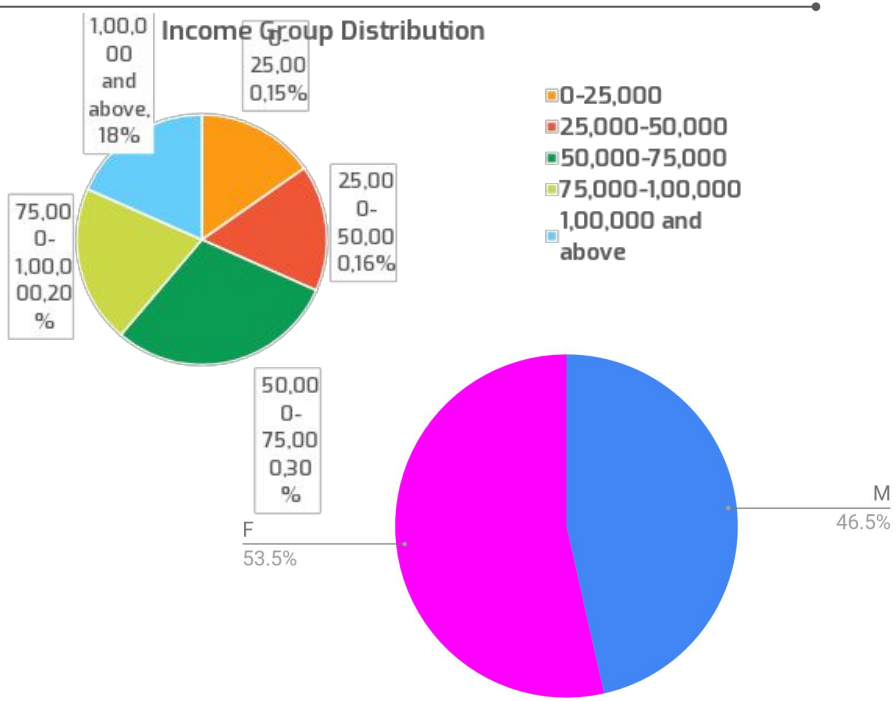
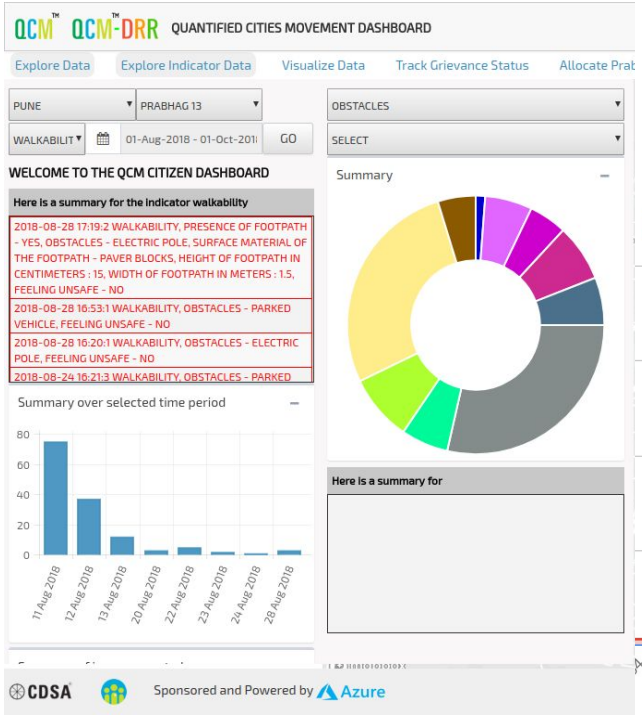
Identification of vulnerable groups

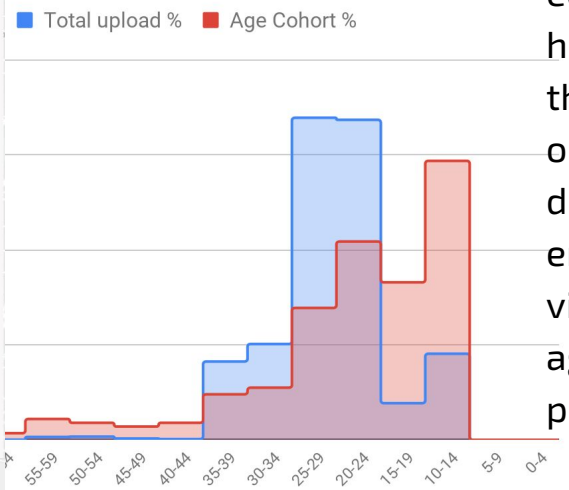


Stakeholder centric planning: In the event that households are surveyed, the QCM ecosystem generates graphs for various types of data such as gender and age breakdown of threats amongst the surveyed population. This enables pin-pointed policy and planning interventions for various vulnerable groups.

Tracking Trends to monitor and predict

Data querying for trends





Tracking and management:
Various data can be tracked and queried through the QCM ecosystem. Anonymized data on households that was collected through surveys can be queried,in order to make informed policy decisions. Using time series data enables long term planning and visioning as well as comparison against base years in order to track planning outcomes over years.

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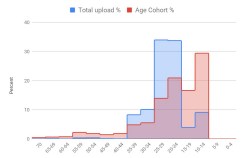
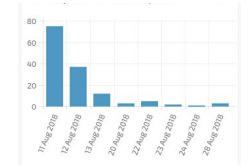
Decision Support for Planning and Policy

Applying the data for improved outcomes

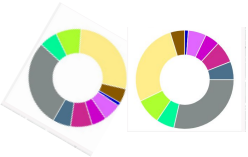
Filling gaps in infrastructure: Reports enable the creation of spatial and temporal evidence that helps in identifying gaps in infrastructure, social inputs and resources.



Comparing against quality standards: By engaging citizens, scientists and surveyors in reporting neighborhood level stress and risk, QCM facilitates best practices in urban policy and planning by mitigating stresses that are identified through comparison with legislated quality standards and suggest solutions.



Benchmarking and comparing against baselines: Due to the potential of continuous and timely data collection, the ecosystem presents great opportunities for baseline studies and benchmarking. Stakeholders can compare the current situation to baselines and benchmarks in order to monitor marginal changes for various indicators including but no limited to quality of life, climate change, disaster risk reduction and resilience etc.



Comparisons between wards and between cities: For standardized datasets, stakeholders can compare various indicator levels between wards and administrative precincts or even cities.

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