Big Data

&

The Road to Safety

the problem

- Kenya ranks top 10 countries for death rate due to road traffic accidents
- Minibuses (matatus) transport 70% of the labor force
- 28% of matatus will be in an accident in any given year
- Economic costs 1-5% of GDP

- Lack of accountability in the public transport system→ moral hazard, adverse selection
  - No information
  - Perverse incentives
  - Inadequate rules of the game

innovation

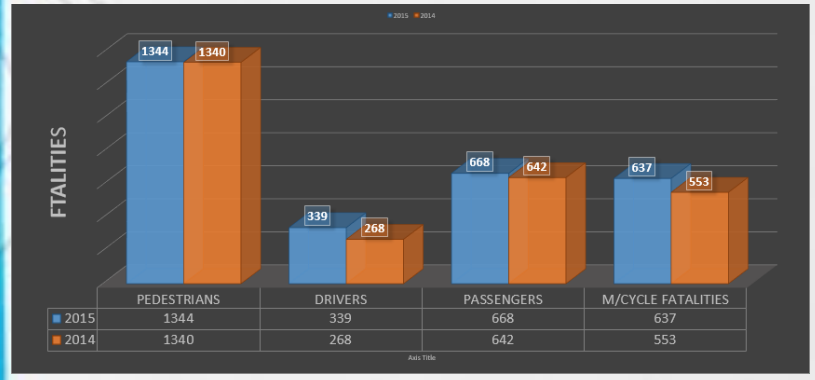
a platform for safety in rapidly growing cities in low-income countries

1. Empirically validated measurement system
2. Big data system
3. Adaptive experimentation to solve development problems

break from the past

TODAY

- Speed cameras
- Speed governors
- Seat belts
- Stickers
- Poor information on accidents and casualties
- No clear reduction in fatalities



SMART NAIROBI TRANSPORT

1. Driver knowledge & behavior

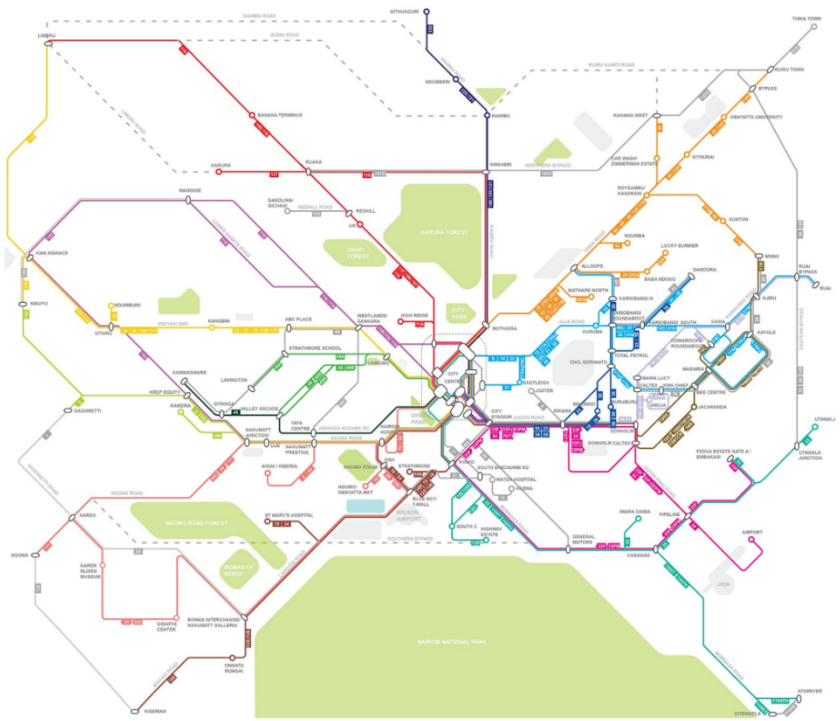
2. Owner tracking & management

3. Rider WiFi hotspot & feedback

affect

Insurance policy

Transport regulation



TOMORROW

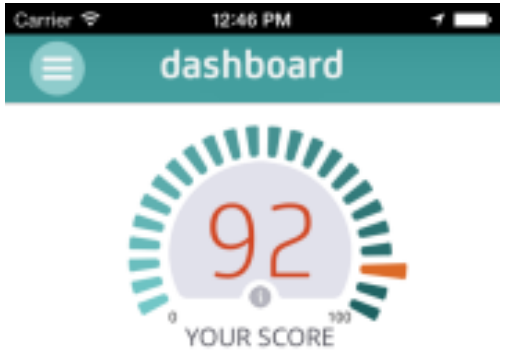
- Big data and functioning accountability system will be the road to safety for millions of people in low-income countries
- Saving lives!

IDEA 1: EMPIRICALLY-VALIDATED MEASUREMENT SYSTEM

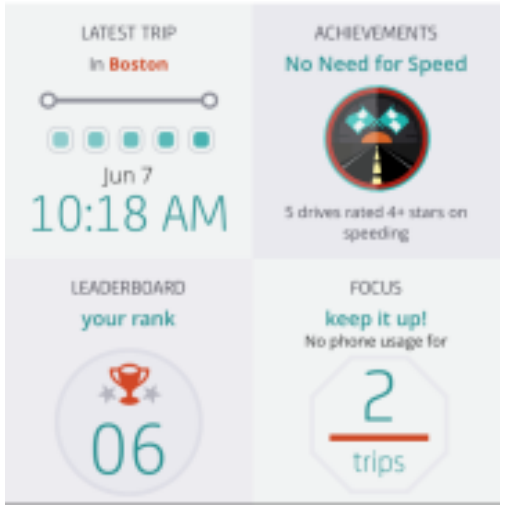
- WHAT FACTORS PREDICT ROAD TRAFFIC ACCIDENTS?
  - Physical characteristics of the road
  - Traffic patterns
  - Driver behavior

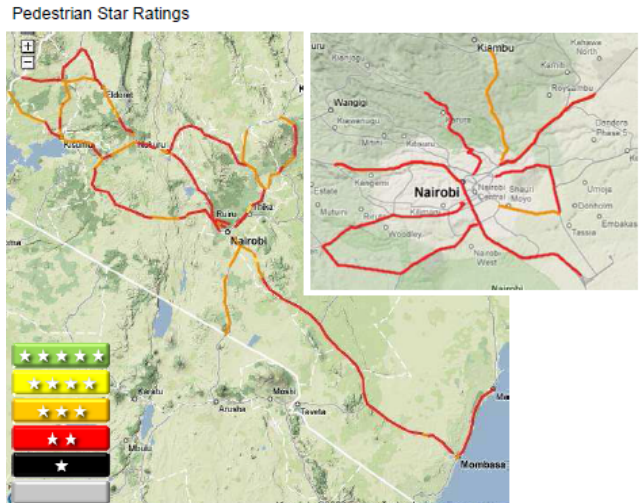
- HOW DO WE COLLECT DATA IN A COST-EFFICIENT WAY?
  - Testing technology-based data generation
  - Crowd-source rider-generated data
  - Triagulate with observation-intensive data
  - Evaluate trade-offs and select cost-efficient sustainable data collection path

IDEA 2: CONSTRUCT BIG DATA SYSTEM



- Collect essential data
- Create essential piece of infrastructure that can be replicated across the world
- Develop analytics strategies to make informed decisions about the needs of transport in developing countries
- Show how Big Data can impact everyday lives

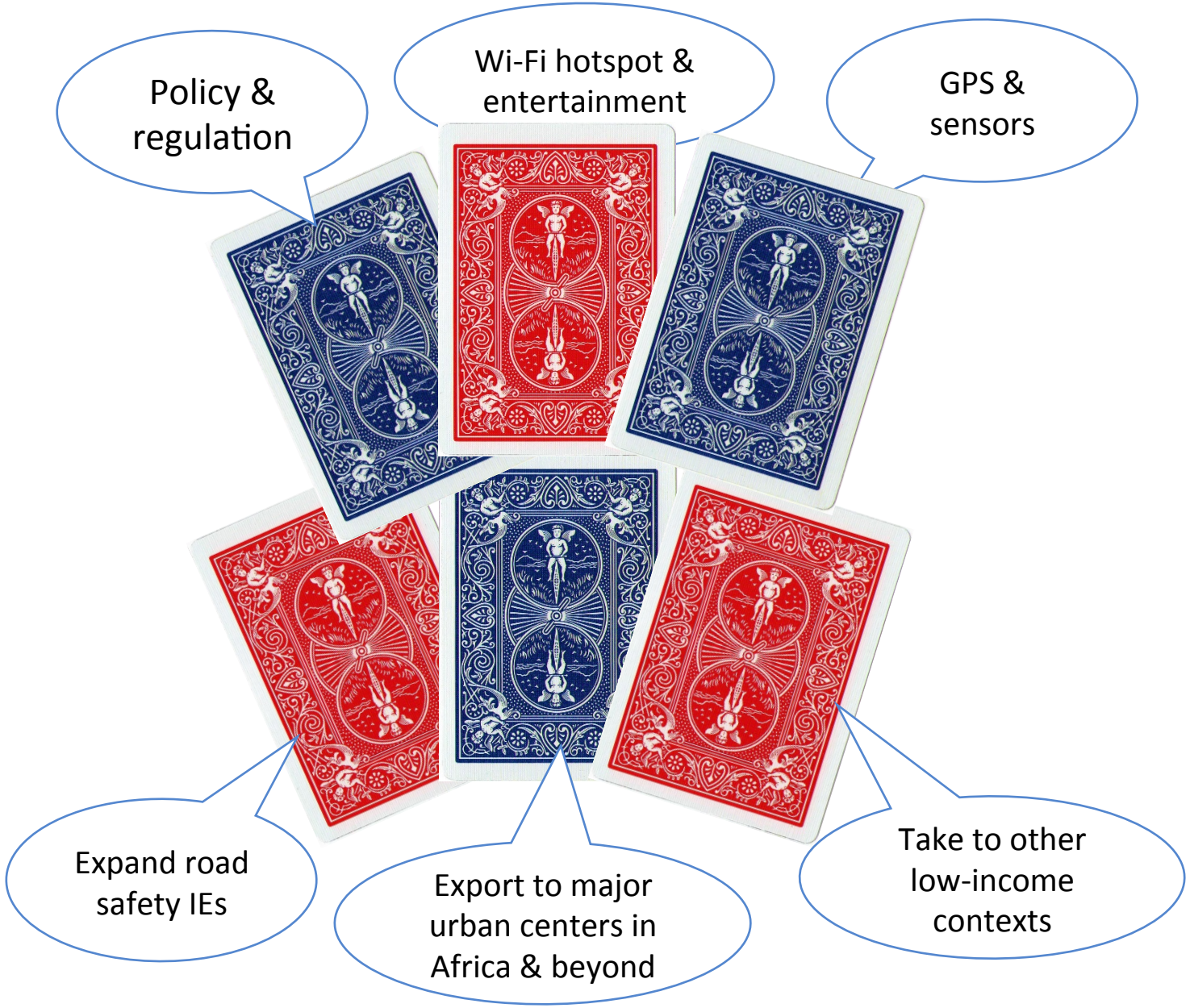


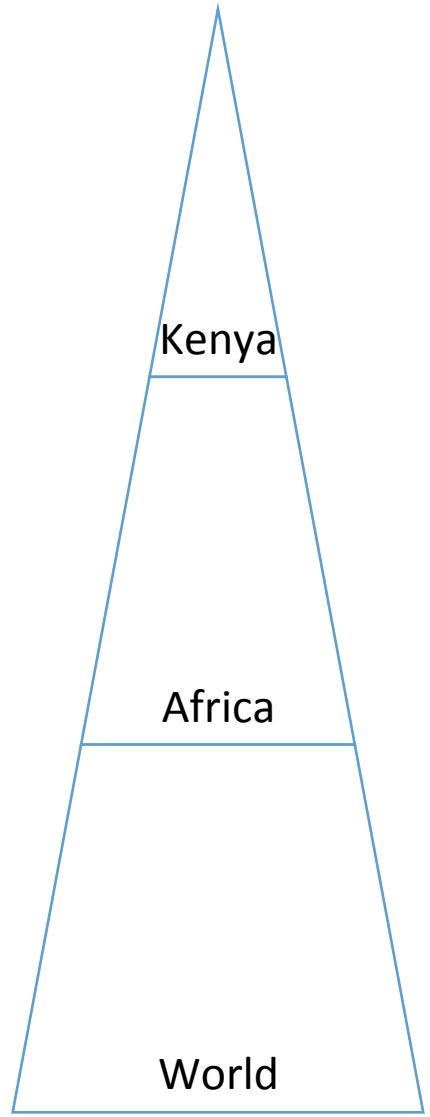


IDEA 3: EXPERIMENTALLY TEST DIFFERENT RULES OF THE GAME TO INFORM ACCOUNTABILITY RELATIONSHIPS

- partner with regulator-insurer-owners-drivers-riders
- generate knowledge on the factors that define a well-functioning accountability structure in weak-capacity contexts
- conduct structured set of field experiments to test provision of information and incentives to matatu owners, drivers and riders
- use early findings to build new set of experiments
- find combination of interventions that is most effective in reducing Road Traffic Accidents

Align partners incentives to develop scalable strategies





SEMI-FORMAL TRANSIT PROVIDES MOBILITY AROUND THE WORLD

Matatu -Nairobi

Jeepney - Manila

Dhaka

Ndiaga Ndiayes - Dakar

Collectivo – Mexico City

Manical – Panama City

Lima

Marshrutkas - Russia

research team

Arianna Legovini

IMPACT EVALUATION AT SCALE!

Head of DIME. $300M in external funding over the past decade. Bridging the gap between policy and research. Triggering policy change on the basis of field experiments. Founded large experimental research programs in new fields.

Guadalupe Bedoya

TAKING SAFETY SERIOUSLY!

Economist in the Development Impact Evaluation team at the World Bank's Research Group. PI of impact evaluation projects in Kenya, Peru, and Afghanistan. Focus on developing and measuring the impact of accountability systems to improve safety (patient safety, building safety, road safety).

Sarah Williams

DRIVING THE digitalMATATUS!

Assistant Professor of Urban Planning and Technology and the Director of the Civic Data Design Lab at Massachusetts Institute of Technology (MIT). Williams has been named one of the top 25 planners in technology and 2012 Game Changer by Metropolis Magazine.

Syon Bhanot

IT'S BEHAVIOR STUPID!

Assistant Professor of Economics at Swarthmore College. Academic Affiliate at the Busara Center for Behavioral Economics. Field experiments on decisions where individuals lack sufficient context to make optimal choices. Environmental conservation, financial decisions, cooperation, and decisions by the very poor.