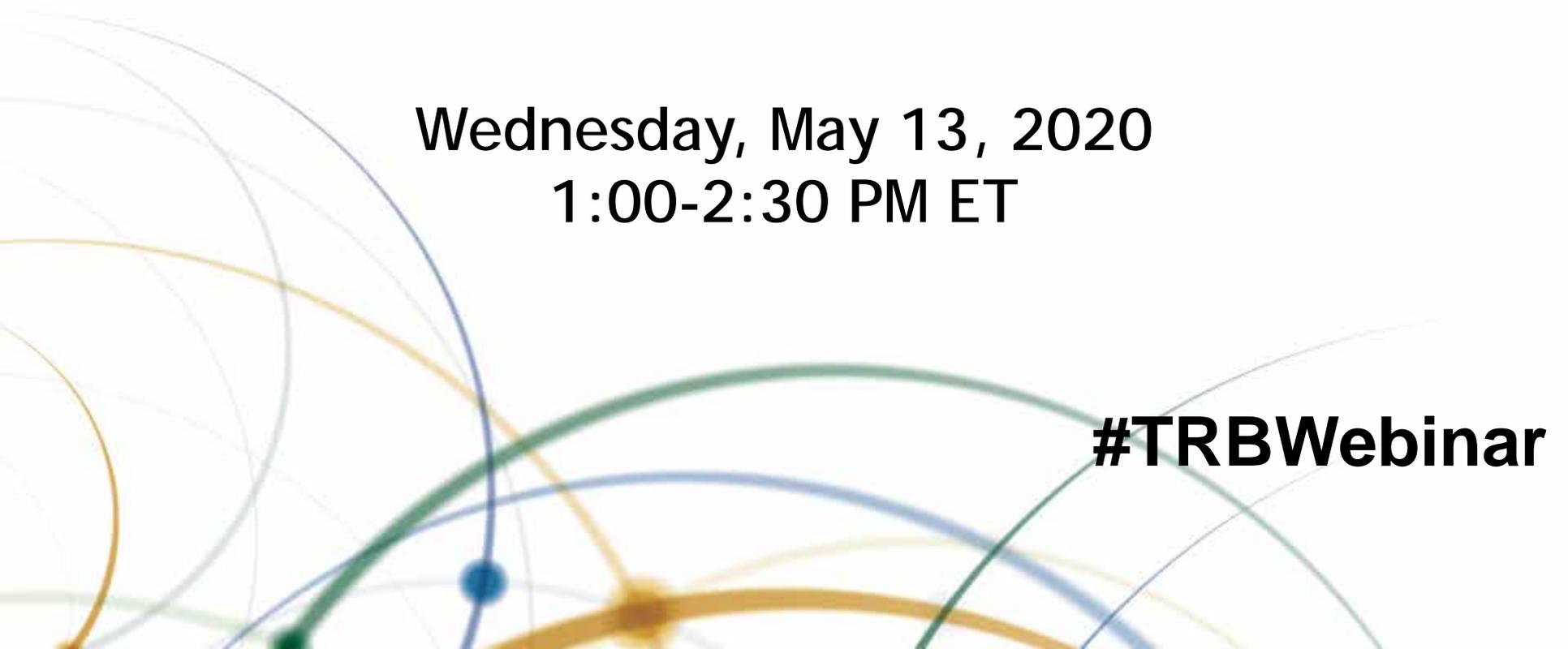




# Data sharing tips for public transportation agencies

Wednesday, May 13, 2020  
1:00-2:30 PM ET

**#TRBWebinar**



## Learning Objectives

At the end of this webinar, you will be able to:

- Identify the major benefits to transit agencies of sharing data
  - Discuss models for transit data sharing and for transit agency access to external data
  - Describe the major challenges and the factors affecting data sharing that are expected to evolve in the future
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# Public Transit Data Sharing: Now and in the Future

Presentation of findings from TCRP Report 213  
May 13, 2020

EBP US (formerly EDR Group)  
Tufts University  
Kendril LLC

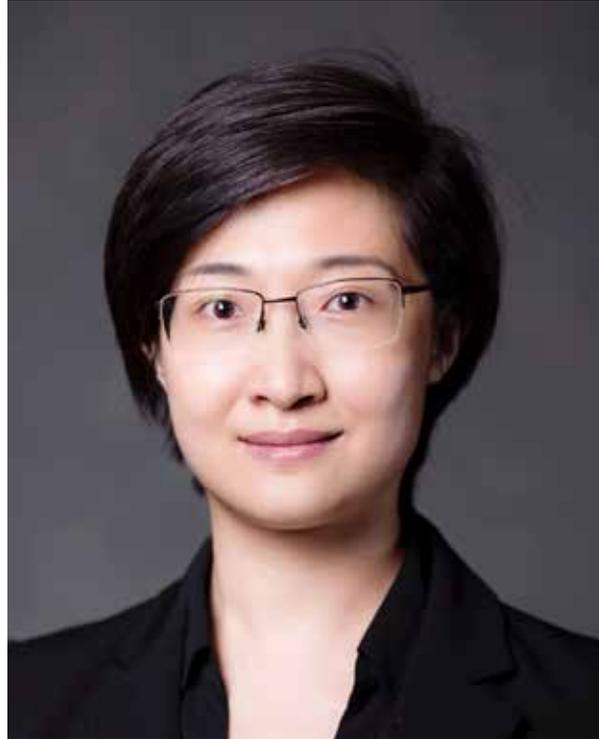
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# Presenters

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Cecilia Viggiano, Ph.D.  
Senior Associate  
EBP (formerly EDR Group)



Shan Jiang, Ph.D.  
Assistant Professor  
Tufts University

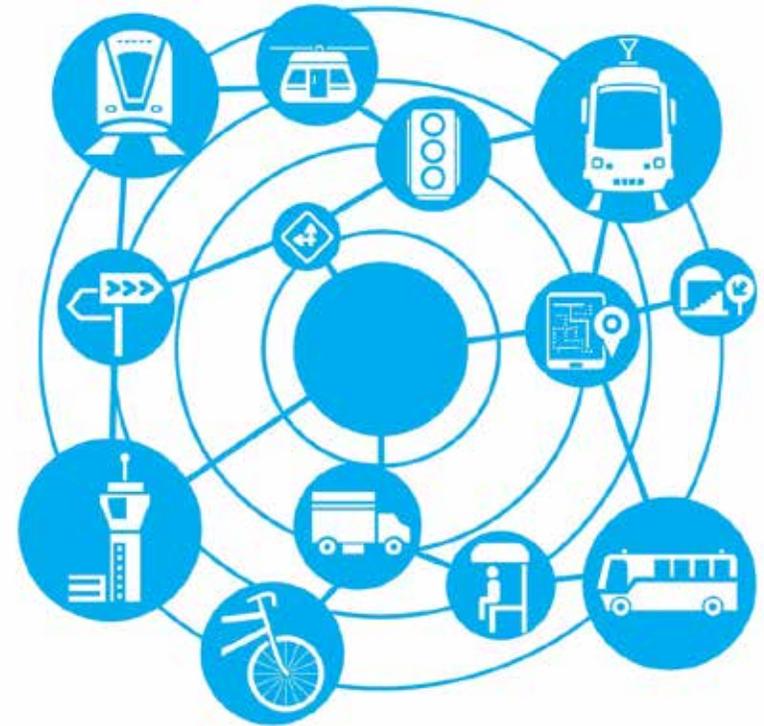


Melissa Chan, Ph.D.  
Principal  
Kendril LLC

# Agenda

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- Why share data? (And why not?)
- How do you share transit data?
- How do you get data from external entities?
- Lessons from other industries
- What can we expect in the future?



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# Why share data? (And why not?)

# Benefits

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- Innovation & Research
- Transparency & Increased Awareness
- Revenue Generation
- Cost Savings
- Data Reciprocity
- Supporting Multi-Modal Travel and Community Functions



Improved  
Performance and  
Customer Experience

# Risks and Costs

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## Risks

- Privacy
- Security
- Misuse
- Strategic Risks

## Costs

- Staff time and expertise

## Transit Passenger Data

## Transit System Data



Fare Card and Bank Card

Security Video

Wi-Fi and Bluetooth

App and Web Page

Survey

Passenger Counts

Incidents

Routes and Schedules

Vehicle Locations

Crew and Operations

Maintenance

Financial

Risks of Sharing

Privacy

Privacy

Security

Security

Misuse

Strategic

Benefits of Sharing

Transparency

Innovation & Research

Customer Information

Customer Information

Monetary Gain

Cost Savings

Data Reciprocity

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How do you share data?

# Public and Private Data Sharing

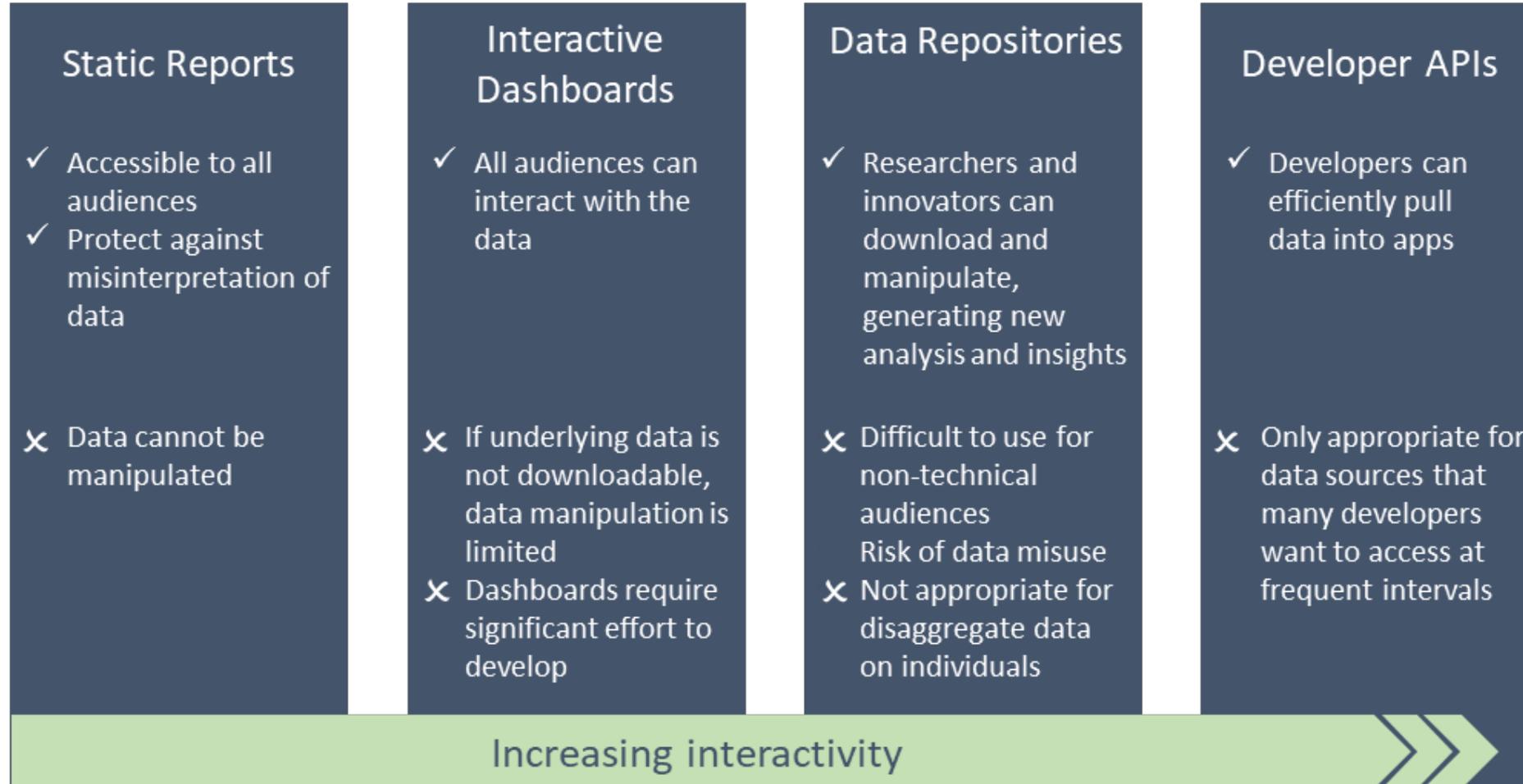
## Public Data Sharing

- ✓ Promotes transparency and increases customer access to information
- ✓ Can spur innovation
- ✓ Saves transit agencies time responding to individual requests in the long run.
- ✗ Lack of control over how the data is used
- ✗ Public release of data that can be used to identify individuals violates customers' privacy
- ✗ Depending on how data is shared, there may be significant effort required upfront

## Private Data Sharing

- ✓ Research partnerships can ensure data is analyzed to support transit agency needs
- ✓ Training of trusted partners and non-disclosure agreements can enable sensitive data to be safely shared
- ✗ Significant effort and resources may be required to develop individual data agreements and respond to individual data requests
- ✗ Perceived lack of transparency and equity – data is only shared with certain partners

# Public Data Sharing Methods



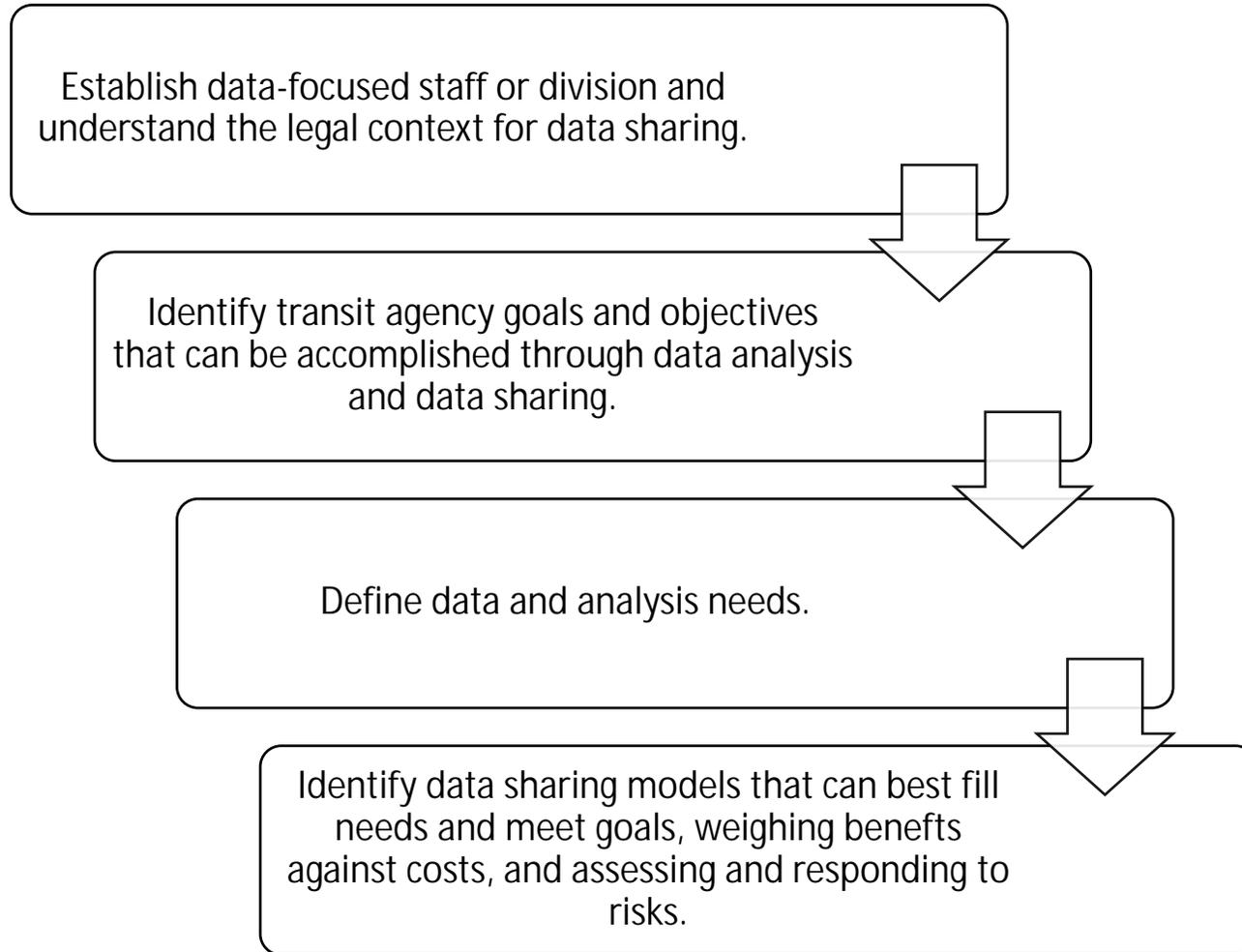
## Challenges

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- Internal organizational needs
- External needs: protocols and data standards

# Developing a Data Management Process to Leverage Data Sharing

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# Establish Data-Focused Staff

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- £ Do you have a dedicated staff person or division focused on managing data?

*If not, consider your transit agency's needs. Large transit agencies likely require a team of data-focused staff. For a small transit agency a single staff person may be sufficient. For very small agencies, a staff member at a local government agency may play this role.*

Data management staff should include individuals with the following skills

- £ Database administration and maintenance, including understanding of security and permissions.
- £ Data analytics, including the ability to use scripts to automate data analysis processes and work with larger data sets, and an understanding of how analysis of different data sets can answer key questions and achieve transit agency goals.
- £ Knowledge of privacy risks and techniques that can be applied to preserve privacy of data pertaining to individuals, including personally identifiable information (PII)

# Establish Goals and Objectives

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- Work across departments
- Which goals can be achieved using internal or external data?

Consider goals in areas including:

- £ Public transit system performance
- £ Cost savings
- £ Revenue generation
- £ Customer information
- £ Transparency
- £ Multi-modal travel
- £ Benchmarking

# Data and Data Analysis Needs

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£ Do you have a data catalog? Is it complete?

To check for completeness, consider:

£ Have you checked in with points of contact across departments to ensure that all data is included in the data catalog?

£ Are there other data types that are not collected but are needed to meet transit agency goals?

*This can inform data collection, data purchases, and external data requests.*

£ Do you have data sharing protocols in place?

Specifically:

£ Do you have a data sharing risk assessment methodology?

£ Do you have data privacy protection protocols?

£ Do you have a protocol for responding to information disclosure (public records) data requests?

£ Do you have a method for making data sharing decisions and forming data sharing agreements, including designated decision makers?

# Evaluating Models

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## Privacy Risk Assessment

- £ Does the data contain names, addresses, or other personal data such as social security numbers?
- £ Does the data contain individual records or records pertaining to a small sample of individuals that could be used to identify an individual based on their travel patterns?
- £ Could the data be linked to other available data sets and used in combination with these other data sets to identify individuals?

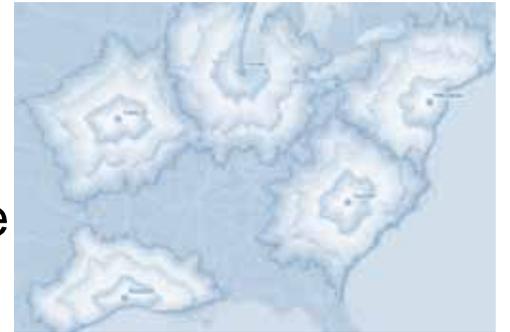
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How do you get data from external entities?

# Accessing External Data: Motivations

Mobility data from external sources can:

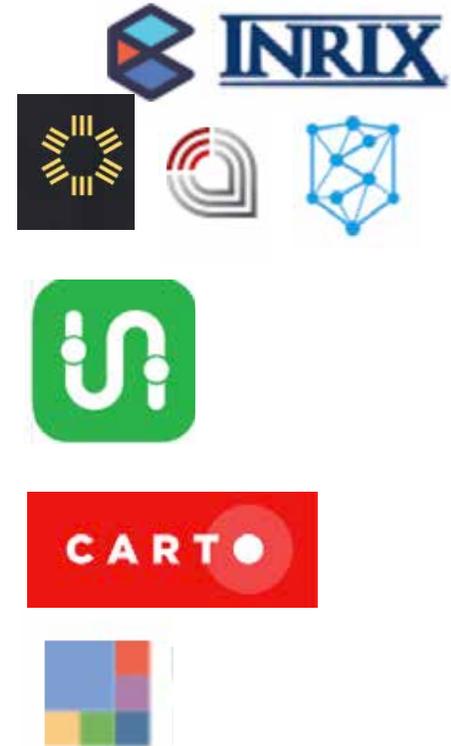
- help transit agencies evaluate overall demand patterns in their service area and determine how to better meet peoples' needs
- inform bus operations and route alignment decisions, and help improve bus arrival predictions by analyzing road speed data
- allow transit agencies to understand impacts of disruptive events and incidents that prevent people to use transit services
- enable transit agencies to identify access and egress modes and distances.



# Accessing External Data: Data Sources

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- Public Data Sources
  - Census, weather, and GIS data from cities, states, and regional agencies
- Private Data Sources
  - Location data from mobile sources
    - e.g., smartphone location-based services, and other GPS-containing devices
  - Data from transportation apps
    - e.g., transit planning and fare payment apps, private mobility providers' apps, and mobility as a service apps
  - Other data collected by and pertaining to private providers
    - e.g., geospatial data management and visualization companies, organizations that offer data analysis solutions for multimodal transportation analysis.



# Accessing External Data: Means

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## Purchasing data or commissioning data analysis:

Transit agencies and their cities have started to purchase travel demand matrices derived from cell phone data all over the world

- E.g., Transport for London (using Telefonica data, 2019), other transit agencies in the US purchased OD estimation data produced by cell phone data analytics companies.
- Some were able to share purchased data among departments in the city,
- Others were limited to use data for specific projects.
- Some purchased data can be used indefinitely
- In many cases data are provided by service subscription-based software-platforms, and data dashboards.

# Accessing External Data: Means

## Through mobility service partnership

### Mobility Data Specification

#### Information Briefing

October 31, 2018

#### Introduction

Similar to a common language, the Mobility Data Specification (MDS) gives cities an elegant and cost effective tool to actively manage private mobility providers and the public right-of-way. MDS allows cities to collect valuable insights through a shared data vocabulary and to communicate directly with product companies in real time using code. Today, it enables cities to manage dockless scooters, bikes, taxis, and buses. Tomorrow, that could be autonomous cars, drones, and whatever else the future may hold.

#### Standard Data Sharing

In Los Angeles, permitted shared use mobility providers (like scooters and bikes) must provide real-time information about how many of their vehicles are in use at any given time, where vehicles are at all times, and the physical condition that vehicles are in. Additional information includes:

- Parking Verification
- Operating Cost
- Customer Cost
- Vehicle Utilization
- Percent Battery Charge
- Start Trip Data
- End Trip Data



LA Metro Launches Partnership with Via to Provide On-Demand Service to Three Busy Transit Stations



Energy & Utilities Transportation Buildings & Infrastructure Environment Resilience

#### DEEP DIVE

## 1 year in: Uber's 'rocket shot' Cincinnati partnership

Through the Cincinnati Mobility Lab, the ride-hailing giant has already studied the city's curbside and augmented its travel information system to increase efficiency.

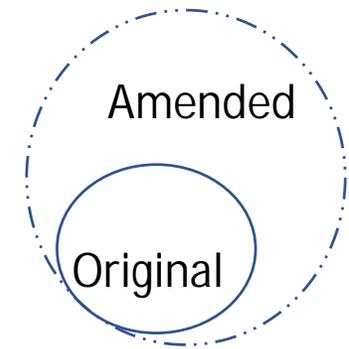


# Accessing External Data: Means

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Through mobility service partnership

- **An incremental approach**
  - Transit agencies gain insights from the received data and program experience
  - Negotiate with mobility service partners to receive more data based on the contract amendment
- **Custom agreement upfront**
  - Seek a mobility provider willing to share data via the procurement process
  - Carefully negotiate a detailed data agreement upfront, including
    - ü Variables and their level of granularity to be shared
    - ü Designation of researchers who have access to the data and where it would be housed
    - ü Designation of what data would be made public
    - ü Data ownership and access by aggregation level and duration.

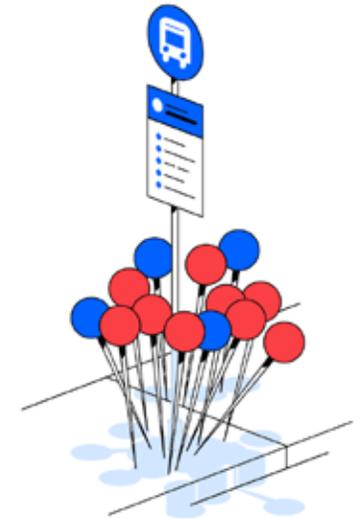


# Accessing External Data: Means

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## Through third party

- An evaluation entity (e.g., a consulting firm)
  - Was hired by one of the MoD programs to evaluate the partnership program
  - Worked directly with the TNC company, the city, and the transit agencies
    - Data provided by the private mobility provider is not subject to state public records laws
  - Published a report on the final evaluation findings
- SharedStreets initiative (<https://sharedstreets.io/>)
  - Offered free and open software to allow mobility service companies to aggregate data to the street level to be shared with public agencies.
- UW Transportation Data Collaborative (<https://www.uwtcd.org/>)
  - Provides policies, protocols, and platforms
    - to enable data sharing and analysis of sensitive data (generated from public or private mobility services) with partnering agencies to create data-driven policy and support research uses
  - Allows data to be exempt from public records requests
  - Is an innovative model to address data ownership, access, and privacy and ethical issues in the interest of partner organizations



# Accessing External Data: Means

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## Through regulation

- Many cities have begun regulating and managing private mobility companies that operate on their public right-of-way
  - e.g., Cities require micro-mobility companies to share data regarding trip and fleet availability, with specific expectations for the frequency at which data is shared (Migurski 2018).
- Public transit agencies can work with
  - cities and states to develop and push regulation that can facilitate public agencies' access to external data streams
  - state legislatures to update public records laws that pose impediments to data sharing.

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# Lessons from other industries

# Lessons Learned

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## Standards

- Consistent data format
- Consumer education and consent

## Privacy

- Protecting individuals
- Representing an aggregate

## Value Add

- Operational and customer data
- Downloads and platform access

# Electric Utility Customer Data Access - Standards

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XML Formatted Data Standard

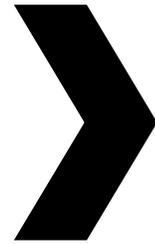
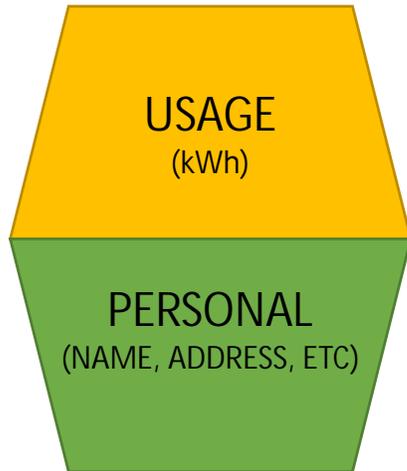


+ Process for Customer Engagement,  
Education, and Informed Consent to  
Share Data

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= Customers Empowered to Share or Limit Data Access

# Electric Utility Customer Data Access – Privacy Protection

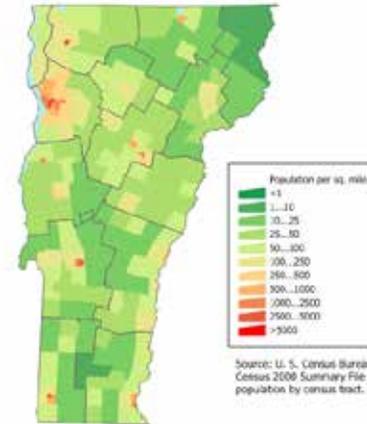


15/15 Rule



- ü Colorado
- ü California
- ü Illinois

Municipality



- ü Vermont

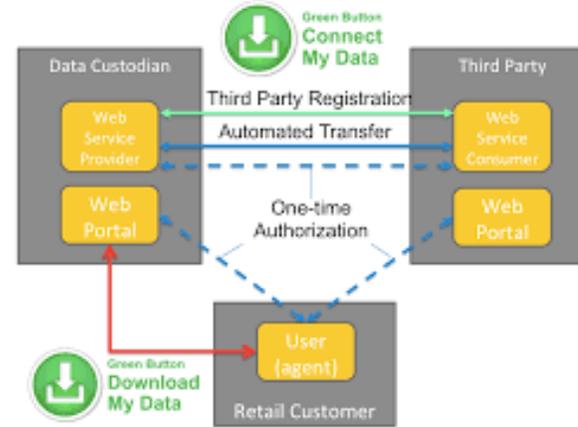
# Electric Utility Data – Adding Value

## Operation Data



PGE.COM

## Customer Data



GREENBUTTON.GITHUB.IO

## Mixed Data



CONSTANTCONTACT.COM

One-time download



Real-time API



App support



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What can we expect in the future?

## Evolving Regulation

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- Potential for new legislation that can impact data sharing, as we have seen with General Data Protection Regulation (GDPR) and California Privacy Act (CCPA)
- Possibility of new exemptions to public data disclosure laws

## Open Data and Open Data Tools

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- New data standards – TCRP G-18 is developing standard data structures for transit ITS data
- Coordination with cities to access external data sets
- Analytical tools that can be shared across organizations

# Today's Panelists

Glen Weisbrod



Cecilia Viggiano



Shan Jiang



Melissa Chan



# Relevant upcoming TRB conferences

## TRB National Transit Safety and Security Conference and APTA Mid-year Safety and Security Seminar

November 16-18, 2020

**#TRBWebinar**

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- Become a Friend of a Committee  
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  - Networking opportunities
  - May provide a path to become a Standing Committee member
- For more information: [www.mytrb.org](http://www.mytrb.org)
  - Create your account
  - Update your profile



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