

Resurgence of Demand Responsive Transit Services

*Insights from BRIDJ trials in Inner
West of Sydney, Australia*

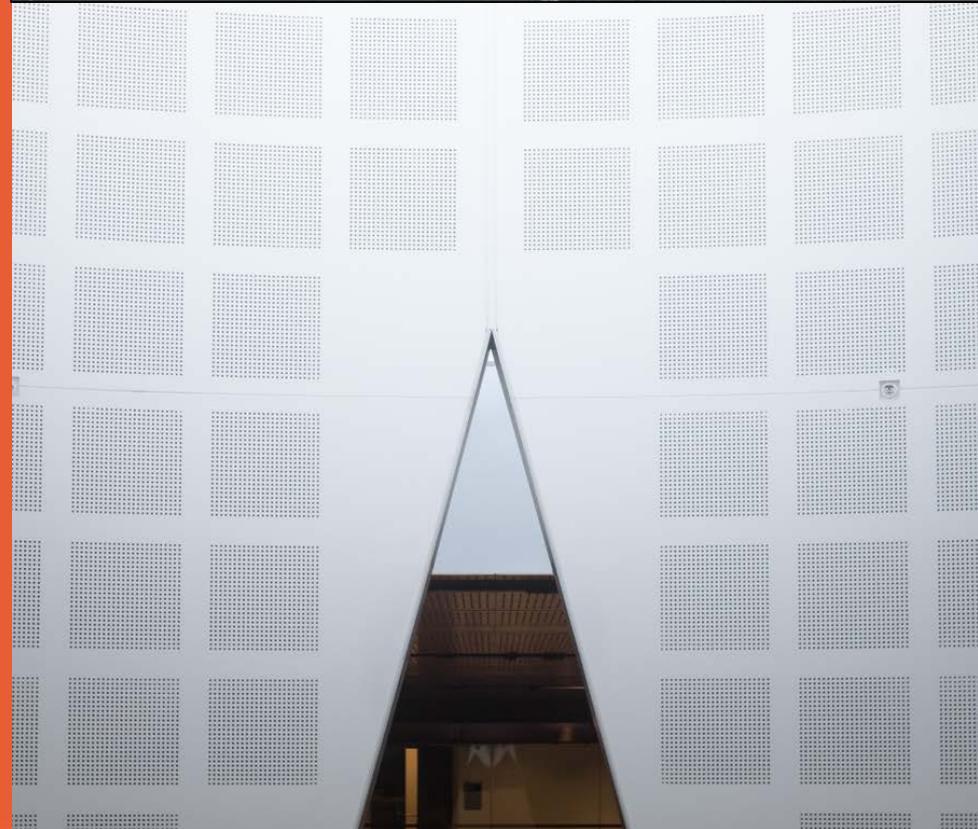
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- Co-authors of the paper

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Outline

- BRIDJ Operations in Sydney
 - Route overview
 - Patronage
 - Pick up and drop off locations
- Key Insights
 - Role of DRT in the general PT network
 - Service delivery structure
 - Barriers to use
 - Customers
- Conclusions and Future Investigations

BRIDJ Operations in Sydney

- In 2017 Transit Systems acquired BRIDJ
- In early 2018, Transit Systems won Australia's biggest-ever tendered metropolitan bus contract
- Unique contract as it has an integrated DRT component with some 10 DRT zones being implemented over time
- The Inner West services provided by Transit Systems' BRIDJ are a part of the Region 6 contract with TfNSW
 - First time Govt operator region in Sydney was tendered
- A second set of BRIDJ services are based in the Eastern Suburbs of Sydney (a part of a short-term trial not within the contracting model)

Role of DRT in the general PT network

Region 6 BRIDJ services have a variety of functions:

1. Peak feeder function

2. Connection function

3. Coverage function

“Gap Filling and more”?

BRIDJ Operations in Sydney



A BRIDJ DRT vehicle in the Inner West

(Capacity = 18 seated + 8 standing, fully accessible by wheelchairs)



A BRIDJ DRT vehicle in the Eastern Suburbs

(Capacity = 16 seated, no standing and not accessible by wheelchairs)

BRIDJ Operations in Sydney

The customers who book the BRIDJ service via the mobile app are directed to a nearby location to get on board.

Inner West BRIDJ Route Overview



THE EXPRESS CONNECTION TO AND FROM THE TRAIN

WEEKDAYS:	REGULAR FARE:
6:00AM — 11:30PM	\$3.10
WEEKENDS & PUBLIC HOLIDAYS:	CONCESSION:
8:00AM — 8:30PM	\$1.50
FREQUENCY:	7:00PM — 11:30PM
EVERY 30 MINUTES	EVERY 60 MINUTES

TO CENTRAL STATION SAVE

10 MINS

Save up to 10 minutes getting from Mortlake to Central Station via BRIDJ + Train

TO PARRAMATTA SAVE

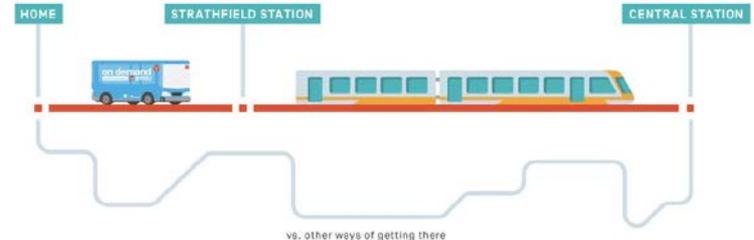
27 MINS

Save up to 27 minutes getting from Mortlake to Parramatta via BRIDJ + Train

TO CIRCULAR QUAY SAVE

24 MINS

Save up to 24 minutes getting from Mortlake to Circular Quay via BRIDJ + Train



BRIDJ Operations in Sydney

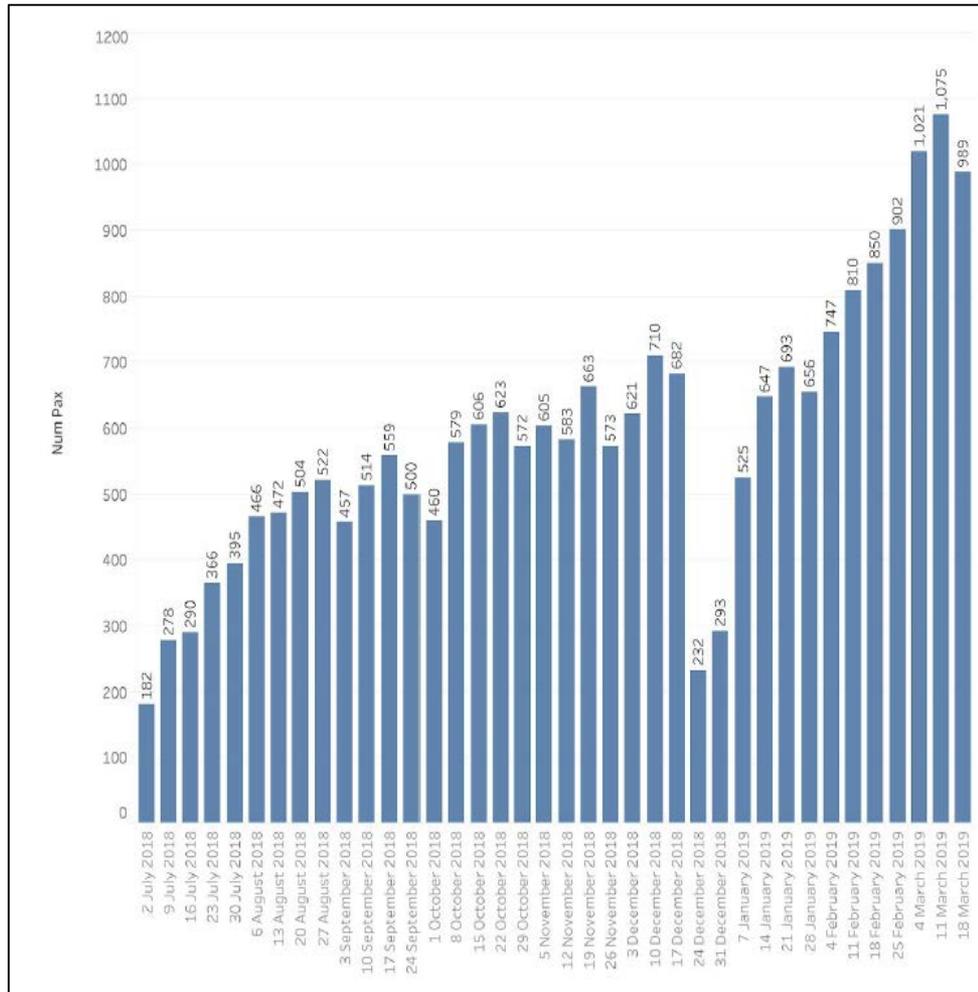
Operational Analysis – Pick ups and drop offs



- Currently no bus service directly connects patrons from the circled area (in Blue) to Strathfield station
- BRIDJ fills this gap

BRIDJ Operations in Sydney

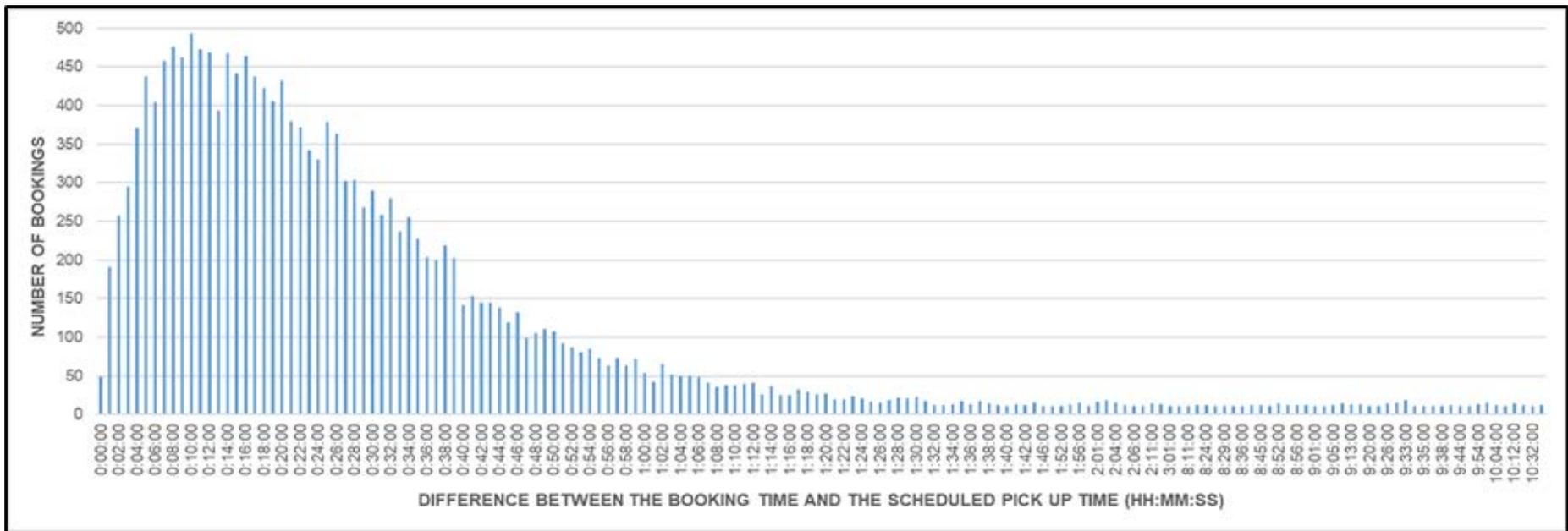
Operational Analysis – Weekly Patronage Levels



Number of Passengers per booking	Number of Trips	Percentage of Trips
1	19,359	91.58%
2	1,424	6.74%
3	271	1.28%
4	59	0.28%
5	25	0.12%

- >90% of the bookings are for a single person (commute to work trips)
- Uniform growth in patronage since July 2018 (except December holidays)
- Since commencing, BRIDJ has seen approx. 30-60% growth in total passengers, each month

Distribution of Time in Advance the Bookings are made: the majority of the trips are booked 5 to 20 minutes in advance



Key Insights

(1) Role of DRT in the general PT network

- Region 6 BRIDJ services have a variety of functions;
 1. Peak feeder function
 2. Connection function
 3. Coverage function

(2) Service delivery structure

- To deliver efficient and optimal outcome for customers, the service structure should be varied by the time of the day
- Future software development roadmap for BRIDJ needs to be framed around delivering the above targets

(3) Barriers to use

- Competition with other fixed route services
- Higher fares due to the lack of Opal benefits

Key Insights

(4) Customers

- Customers are engaged and are willing to provide well considered feedback...

Customer Feedback

- 13,681 ratings with a 4-5 star
- 94.2% ratings with a 4-5 star

* as at 27 Mar 2019

“

Such a lovely driver.
Smooth and very
comfortable ride.

[CABARITA]

”

 **BRIDJ**

“

All drivers I've had through
BRIDJ have been so helpful
and nice. I'm sure if more
people get to know of this
service the buses will be
fully booked

[BURWOOD]

”

 **BRIDJ**

“ Goooooooooooood ”

[STRATHFIELD]

 **BRIDJ**

Conclusions and Future Investigations

(1) Identify local service inefficiencies

- Identify fixed route services that should be truncated or completely converted into DRT services
- Spatial analytics of smart-card data have a huge potential in identifying areas/routes where DRT can replace fixed routes to obtain cost-efficiency and/or service improvement

(2) Identify barriers to use

- Customer feedback indicate the higher cost of service is limiting them becoming regular users
 - Lack of transfer discounts is a major impediment for the growth in patronage for BRIDJ services.
- Over 90% of the customers pay for the DRT services by Opal card, but are not provided with added Opal benefits like mode transfer discounts or weekly caps

Software Enhancement Plans

- While the current software BRIDJ relies on ‘on demand’, it is closer to the fixed route end of the spectrum than the point to point end.
- BRIDJ is hoping to further enhance the existing software to enable them to seamlessly change their operations across this spectrum, depending on various service objectives, demand settings, times of day and locations.

Conclusions and Future Investigations

(3) Establish right KPIs

- A complete rethinking is required around KPIs for DRT services
- Need to understand and quantify what the intangibles such as reliability / on-time running, and convenience really mean to the customers in a dynamic world without timetables

(4) Understand how DRT interacts with existing transport system

- Ideally DRT should complement the existing PT system, not provide redundant services
- Seamless connections across journeys between two modes?
- Integration of fare structures?
- Impact on general traffic?
- DRT services could (?) soon be integrated into MaaS applications

Thank you!

Questions?

Demand Responsive Transit (DRT)

- A user-oriented form of transport with flexible routes and timetables based on passenger needs
- Initially emerged in the 1970s to serve the specialist niche markets of remote communities and mobility impaired people
- DRT has historically been viewed as inefficient and expensive to provide
- Since the turn of the century, DRT has moved to become a mainstream public transport mode offer;
 - Advancements in ICT (e.g., smart phone apps and computer aided dispatching systems) has enabled operators to provide DRT services more efficiently and cost-effectively
 - Greater support from authorities for the use of low-carbon mobility solutions
 - An ‘anticipated increasing’ appetite by users for sharing economies (e.g., Uber Pool and emerging MaaS)