[redacted]

From: PPO Engagement <engagement@ppo.nsw.gov.au>
Sent: Friday, 14 February 2020 3:15 PM
To: [redacted]
Subject: FW: Webform submission from: Western Sydney Aerotropolis Planning Package

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From: [redacted] **On Behalf Of** DPE PS ePlanning Exhibitions Mailbox
Sent: Thursday, 23 January 2020 3:47 PM
To: [redacted] PPO Engagement <engagement@ppo.nsw.gov.au>
Subject: FW: Webform submission from: Western Sydney Aerotropolis Planning Package

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From: noreply@feedback.planningportal.nsw.gov.au <noreply@feedback.planningportal.nsw.gov.au>
Sent: Tuesday, 10 December 2019 10:36 AM
To: [redacted]
Subject: Webform submission from: Western Sydney Aerotropolis Planning Package

Submitted on Tue, 10/12/2019 - 09:36
Submitted by: Anonymous
Submitted values are:
Submission Type:I am submitting on behalf of my organisation
First Name: Becca
Last Name: Duane
Name Withheld: No
Email: [redacted]
Suburb/Town & Postcode: 2000
Submission file:
20191210-department-of-planning-using-big-data-to-support-livability.pdf

Submission: Hi - Thank you for the opportunity for us to provide feedback. We are excited to read about the development of Western Sydney Aerotropolis and Quantium sees an opportunity to contribute to this through the use of big data to measure and evaluate livability. The attached document outline our ideas for this and Quantium would be happy to assist should the opportunity rise. Look forward to hearing back and happy to discuss further. Thanks, Becca

URL: https://pp.planningportal.nsw.gov.au/draftplans/exhibition/western-sydney-aerotropolis-planning-package

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Using big data to support the creation of liveable cities

Western Sydney Aerotropolis Planning Suggsetions

10 December 2019

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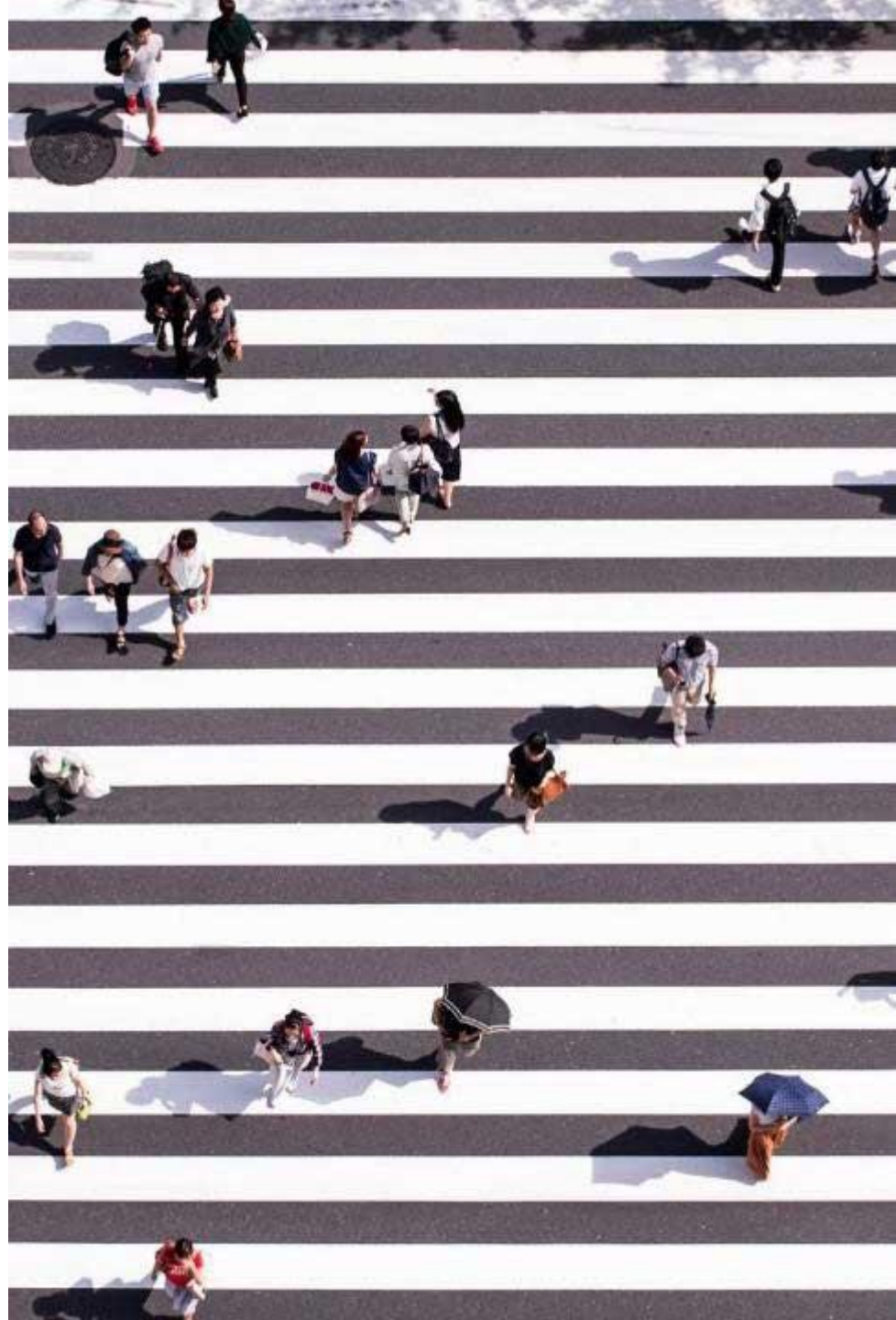

Agenda

01 Proposal: using big data to support the creation of liveable cities

02 Relevant Quantium experience

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01

Proposal: using big data to support the creation of liveable cities

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Context

The NSW planning Context

The development of the Western Sydney Aerotropolis is a priority precinct in development for NSW. The initial precincts of focus are: Aerotropolis Core, Northern Gateway, Badgerys Creek, Wianamatta-South Creek and Mamre Road Precinct.

This development has a goal of creating healthy, productive, liveable and sustainable cities for citizens with greater access and connectivity and all have a need to communicate progress and insights into a range of aspects, including:

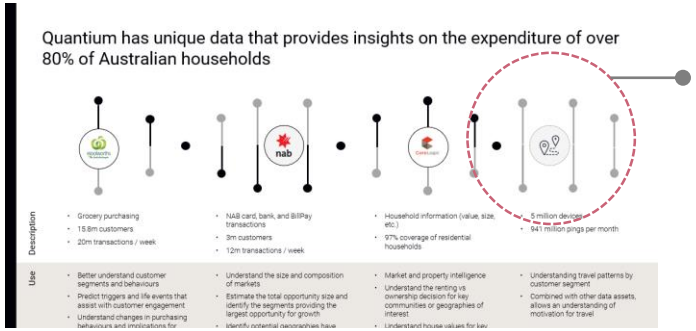
- Greater focus on outcomes measurement to support evidence based decision making;
- A focus on the "customer" lens and perspective;
- A granular view into local areas to enable micro-region decisions to be made; and
- Providing common understanding across stakeholders on key information to support greater collaboration.

Department of Planning and Environment NSW is seeking feedback on how this development.

The Quantium context

Quantium has historically supported government initiatives through data and analytics, collaborating with agencies at the NSW and federal level including the Department of Planning & Environment NSW.

In the upcoming months, Quantium is looking to expand its services through the inclusion of location data to enable a more comprehensive understanding of citizens within the community.



Quantium's location dataset covers over 5 million devices, creating hundreds of millions of travel journey data points each month

Quantium believes there is an potential opportunity to collaborate and address planning needs through the development of a Liveability Measurement Framework and the application of Quantium's big data ecosystem to this framework

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The Liveability Measurement Framework supports an outcomes focused approach to measuring and communicating priority planning initiatives

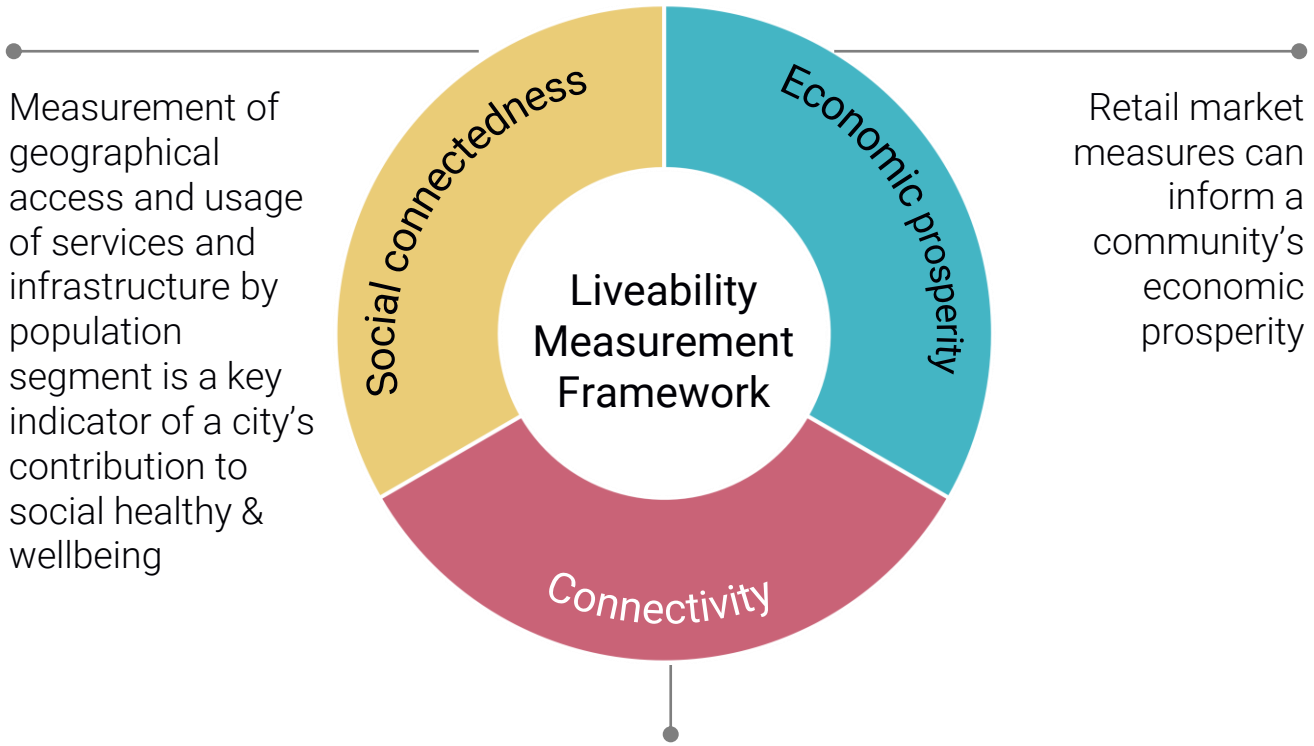
What is the Liveability Measurement Framework?

Under the LMF, a series of measurement metrics will be created with regard to:

- *Existing NSW planning initiatives* –metrics should be relatable to the outcomes of NSW government initiatives;
- *Customer focus* – metrics should help measure how population segments are affected by government priorities; and
- *Geographic granularity* – metrics should be available at a granular level but aggregable at a higher level.

A key aim of this proposed project is to apply of Quantium's big data ecosystem to the LMF.

Figure 1: Description of Liveability Measurement Framework



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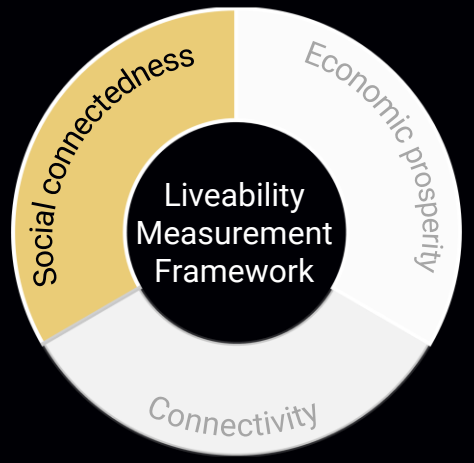
Measuring social connectedness

Proposed metrics / dimensions of interest	Example metrics	Proposed data source and methodology	Potential limitations
▪ Access of facilities by demographic segment ▪ Usage of facilities by demographic segment ▪ Demographic segments can include lifestage affluence (families vs singles & couples, high vs low affluence) ▪ Point of interests may include local facilities such as parks, libraries, schools, childcare centres	▪ % of families who has access to libraries ▪ % of families who visit quality parks on a weekly basis ▪ % of residents in Greensquare who have gym memberships ▪ % change in CBD visitors during Vivid	▪ Use linked retail/ banking data to determine customer demographic segment ▪ Use point of interest data sourced from DoP&E or publicly to determine location of facilities ▪ Use location data to determine usage of local facilities	▪ Availability of point of interest data ▪ Granularity of banking data ▪ Granularity and linkage of location data to broader Quantium ecosystem



Measurement of geographical access and usage of services and infrastructure by population segment is a key indicator of a city's contribution to social healthy & wellbeing

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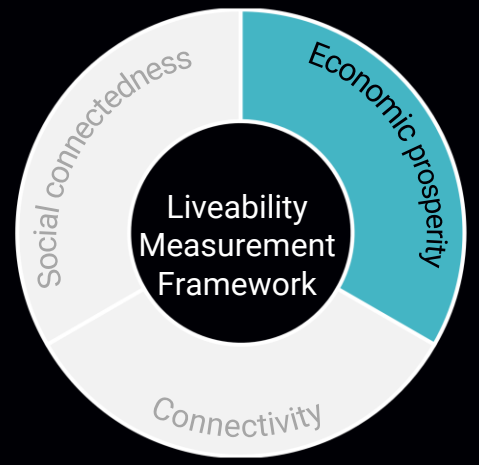
Measuring economic prosperity

Proposed metrics / dimensions of interest	Example metrics	Proposed data source and methodology	Potential limitations
▪ Volume and growth of local retail activity ▪ Retail activity by sector (eg clothing, food, leisure, supermarkets etc) ▪ Timing of retail activity (eg seasonal, day vs night time economy, weekday vs weekend)	▪ Retail sales for region ▪ Number of summer Byron visitors ▪ % of retail activity during night ▪ % of visits within the community attributed to regular workers	▪ Use linked retail/ banking data to determine customer demographic segment ▪ Use point of interest data sourced from DoP&E or publicly to determine location of facilities ▪ Use location data to determine usage of	▪ Granularity and linkage of location data to broader Quantium ecosystem



Retail market measures can inform a community's economic prosperity

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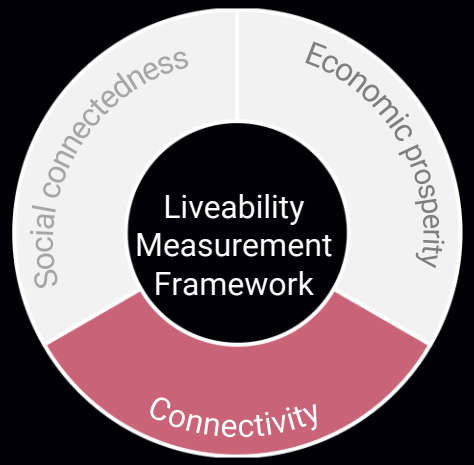
Measuring connectivity

Proposed metrics / dimensions of interest	Example metrics	Proposed data source and methodology	Potential limitations
▪ Length of travel by demographic segment ▪ Purpose of journey based on point of interest (eg school, work, grocery shopping) ▪ Mode of travel based on time and location of journeys	▪ % of daily trips > 30 minutes in Parramatta ▪ % of families in Liverpool who travel by train at least once a week ▪ Avg travel time for favourite destination ▪ % of individuals who use cars as their main mode of transport	▪ Use linked retail/ banking data to determine customer demographic segment ▪ Convert location data pings to journeys ▪ Use time stamp and location of journey inform modes of transport ▪ Use data on petrol spend to inform usage of private cars	▪ Availability of point of interest data ▪ Granularity and linkage of location data to broader Quantium ecosystem ▪ Granularity of location data for conversion into travel patterns



Measurement of travel pattern and purpose of journey by population segments can inform citizen ease of travel within the local community

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02

Introduction to Quantium

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Quantium was founded in 2002 in Australia, we have built a global team with a breadth of capability

700+
Quantium people

9 Offices worldwide, headquartered in Sydney

A diverse team:

- Actuaries
- Statisticians
- Data Scientists
- Product Leaders
- Strategy Consultants
- Software Engineers
- Delivery Managers
- Industry Experts
- Designers
- Futurists

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Our 16 year history assures best practice in privacy, security and ethical use of data

Privacy

- We have built our business based on privacy by design principles for the past 16 years
- Quantium has strict protocols around the receipt and storage of personal information
- All information is de-identified using an irreversible tokenisation process with no ability to re-identify individuals
- We are GDPR compliant

Security

- We use 'bank grade' security to store and process our data
- Comply with 200+ security requirements from NAB, Woolworths and other data partners
- All partner data is held in separate restricted environments
- All access to partner data is limited to essential staff only
- Security environment and processes regularly audited by our data partners

Ethical use of data

- Applies to all facets of our work, from the initiatives we take on, the information we use and how our solutions impact individuals, organisations and society
- Ensure strict adherence to anti-discrimination principles
- Test all our algorithms to ensure the outcomes are necessary and proportional
- Test all our algorithms to ensure no residual bias.

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We are trusted partners in Government

- Quantium believes in using data for progress with great care and responsibility
- We are the trusted analytics partners of government departments, hospital providers, non-profits, and major corporates.

Australian Government Department of Health

Australian Government Department of the Environment and Energy

NSW Government Family & Community Services

NSW Government Department of Industry

NSW Government Premier & Cabinet

NSW Government Health

WorkSafe Victoria

Victoria State Government Health and Human Services

VAHI Victorian Agency for Health Information

Queensland Government Queensland Health

The George Institute for Global Health

Monash University

UNSW Sydney

We curate data from our partners to provide an unrivalled picture of the behaviours of over 80% of Australian households and individuals

Our data partners

Woolworths

Supermarket loyalty members Purchase data

NAB

Bank transaction data

CoreLogic

Household property data

Our media partners

Woolworths

WOW media exposure

Foxtel

Pay TV viewing data

Facebook / Instagram

Social media exposure

Yahoo!7

Digital media exposure

MCN

Digital media exposure

News Corp, Daily Mail, Quantcast, BAUER

Digital media exposure

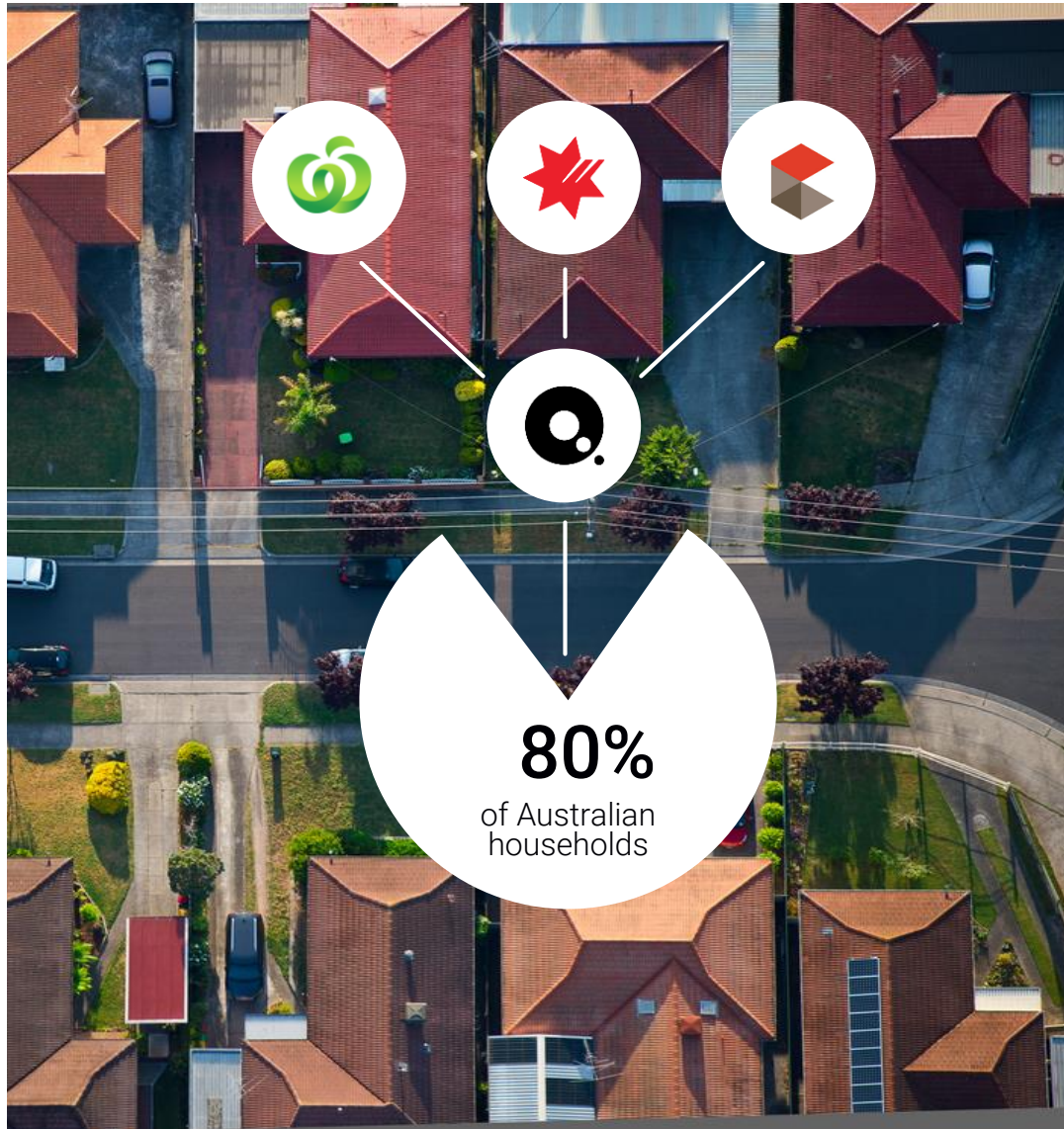
oOh!

Outdoor media exposure

ten

TV viewing data

Bespoke partners: Access on a case by case basis: Airline • Telco • Publisher



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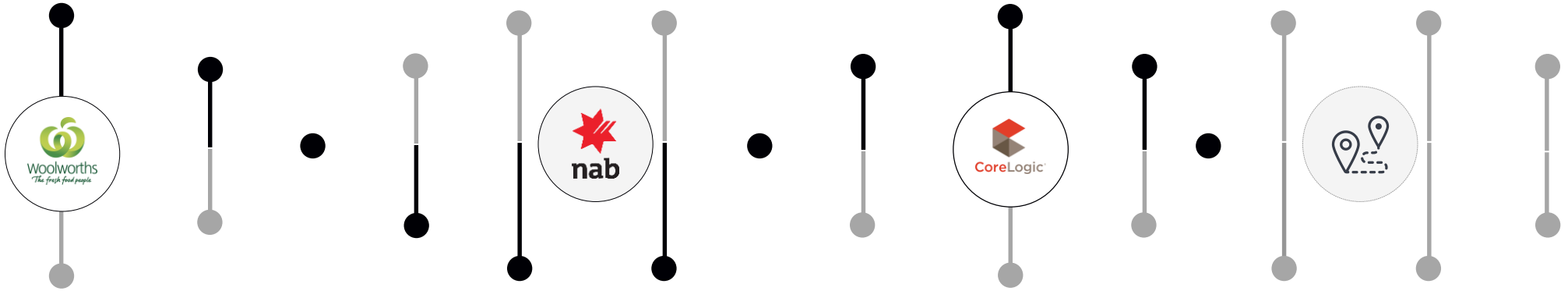
Quantium has unique data that provides insights on the expenditure of over 80% of Australian households



Description	• Grocery purchasing • 15.8m customers • 20m transactions / week	• NAB card, bank, and BillPay transactions • 3m customers • 12m transactions / week	• Household information (value, size, etc.) • 97% coverage of residential households	• 5 million devices • 941 million pings per month
Use	• Better understand customer segments and behaviours • Predict triggers and life events that assist with customer engagement • Understand changes in purchasing behaviours and implications for home ownership and investment	• Understand the size and composition of markets • Estimate the total opportunity size and identify the segments providing the largest opportunity for growth • Identify potential geographies have population that can benefit from support programs • Detailed profiling of individuals within a location and their lifestyle and behaviour	• Market and property intelligence • Understand the renting vs ownership decision for key communities or geographies of interest • Understand house values for key communities of interest	• Understanding travel patterns by customer segment • Combined with other data assets, allows an understanding of motivation for travel

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Quantium is looking to onboard a rich location dataset with over 5 million devices creating hundreds of millions of data points each month

- **Extensive coverage**
  With 5.5 million devices in Australia per month (11.4m over a year)
- **High granularity**
  There are over 941 million “pings” (“location events”) within a single month, enabling detailed location-based insights
- **Longitudinal analysis**
  With 2 years of historical data and monthly data refreshes, analysis over time is possible
- **International visitors**
  Data is available for international devices which ping in Australia and New Zealand, and includes data from over 194 countries
- **Data ecosystem**
  A solution is available to connect to other datasets, which provides an ability to better traveler profiles and trip purpose

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Location insights would enable a granular understand popular travel and lifestyle behaviour

Better understand customers' underlying transport needs

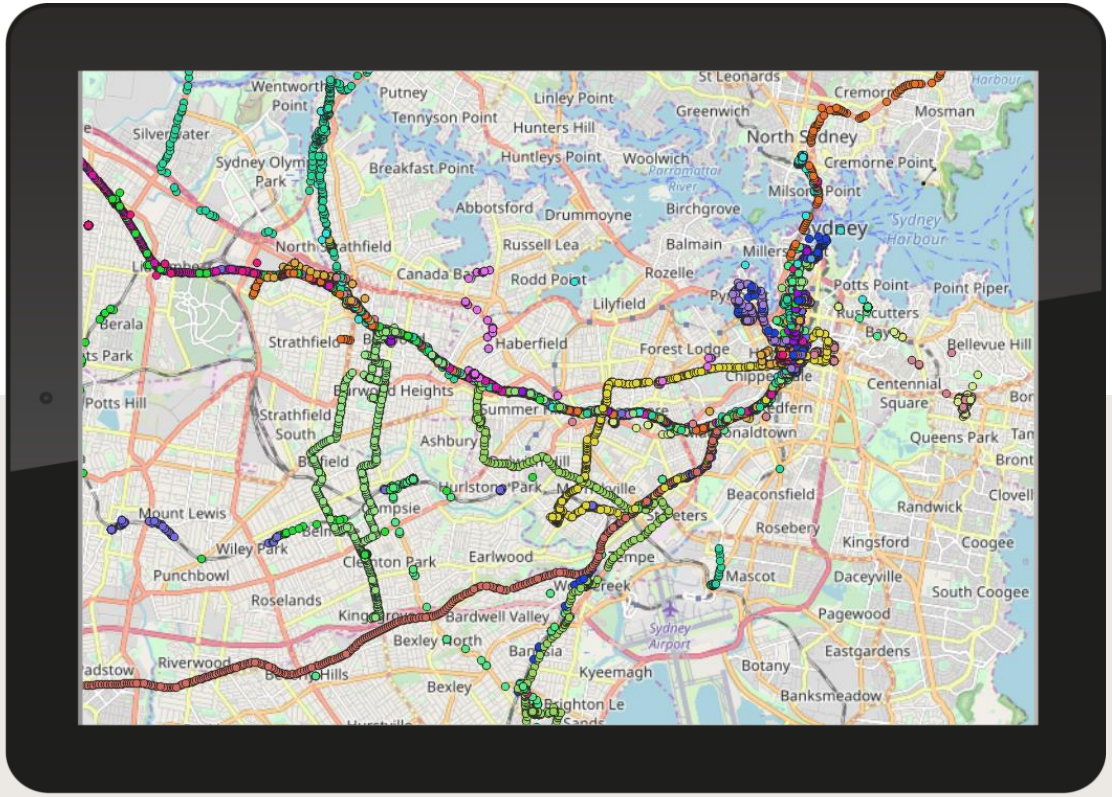

Illustration: Travel routes of people who have visited central station (top devices by number of location signals)

- **Latent demand**
  E.g. for users that are travelling predominately by car, where are they travelling to and from
- **New routes**
  E.g. what is the impact of this new route on traffic and the broader retail economy
- **First-mile / last-mile**
  E.g. identifying clusters of travellers driving cars to a train station to help improve connectivity
- **Potential users**
  E.g. who is likely to use new transport services and what form of communication do they prefer

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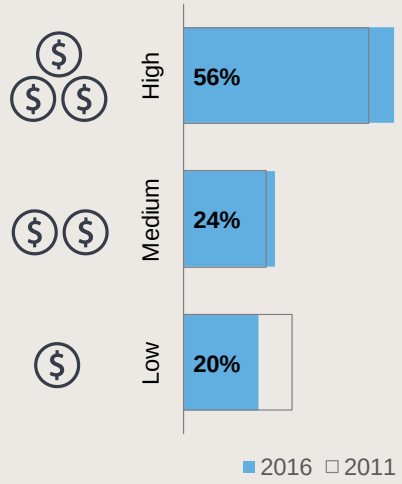
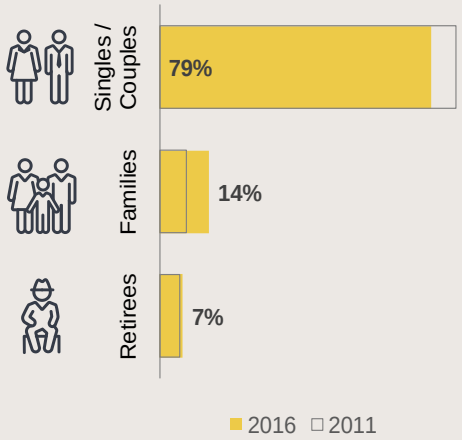
Case study: Quantium assisted the Department of Planning NSW to understand the impact of the Green Square urban renewal

How did the affluence profile of residents change?



Where did low affluence individuals move?

How did the lifestage mix of residents change?



Context

Green Square is one of NSW Government's priority development precincts. The aim of the Green Square urban renewal was to transform a series of inner Sydney industrial suburbs into a vibrant living community. Post initial redevelopment, NSW Government was challenged by the lack of timely data available to measure the impact of the urban renewal and Quantium was engaged to assist.

Approach

Using banking transaction data, Quantium was able to study the shift in the mix of Green Square's population by affluence and lifestyle in a timely manner.

Outcome

This project has received positive feedback from the Department, with key insights demonstrating that the Green Square renewal shifted the population towards higher affluence and families.

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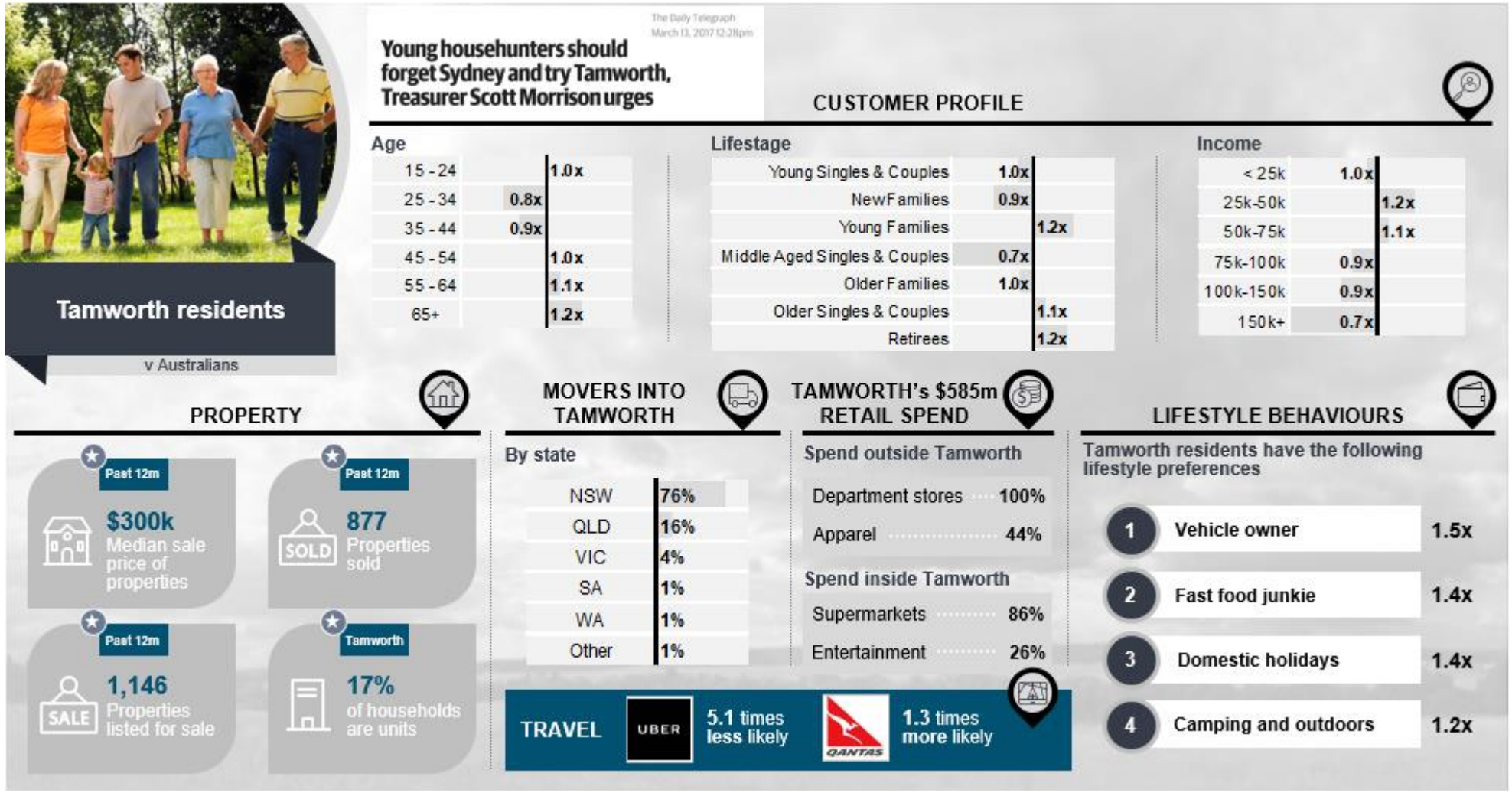
Banking transaction data can provide granular insights into local economies
Case study: Tamworth economy



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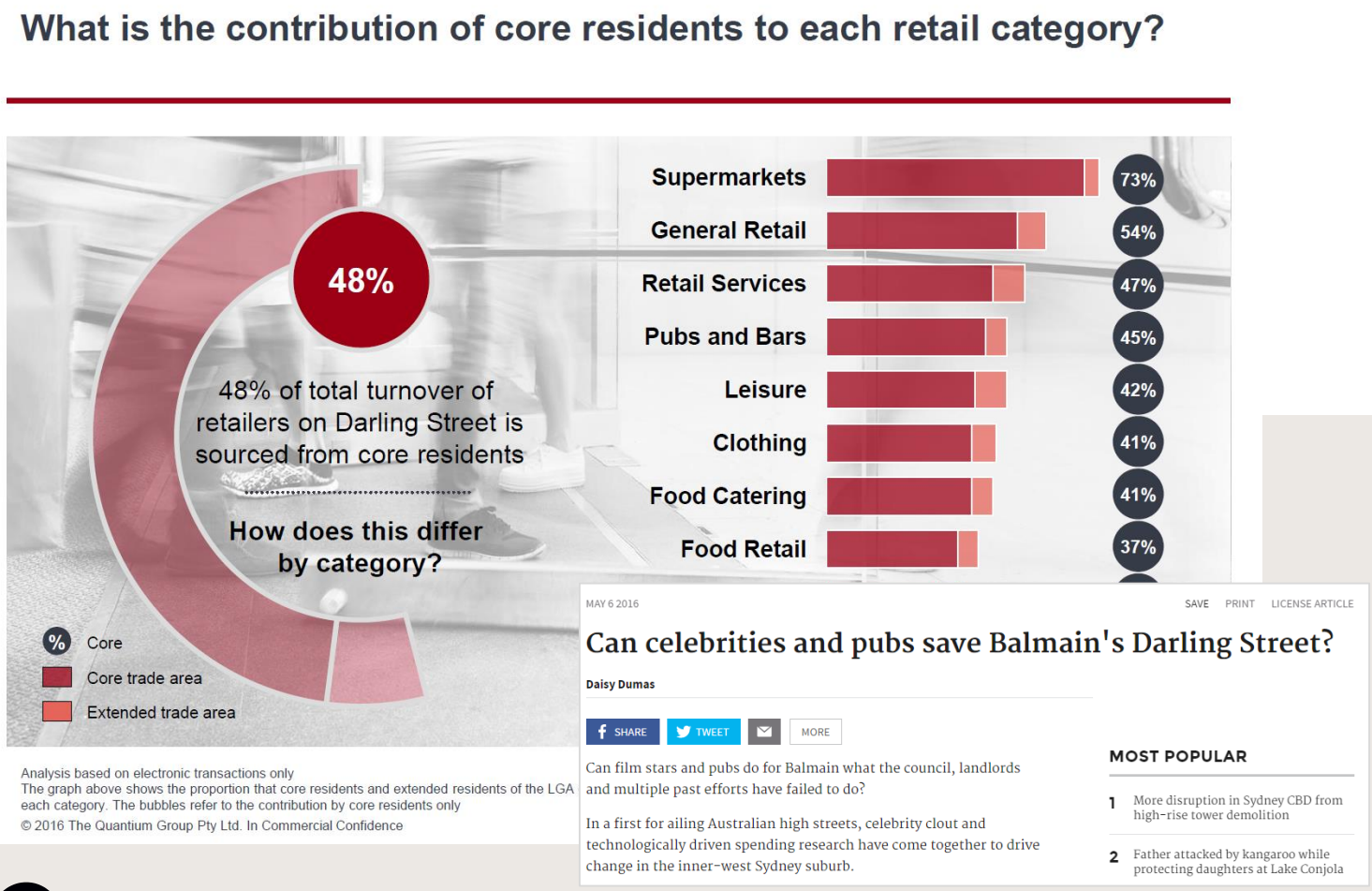
Case study: Quantium delivered in-depth and real time to local council on Balmain Sydney



Context

Following anecdotes of major decline in sales for Darling Street, one of Sydney's prime retail, the Inner West Council of Sydney commissioned an economic research project to study the spending habits of local shoppers.

Approach

Quantium measured the performance of the Darling Street precinct across a number of shopping categories using banking transaction data.

Outcome

The study showed that Darling Street had reasonable performance against other benchmark precincts, contrary to what anecdotes suggested. In addition, a number of opportunities to improve Darling Street was revealed by the study which local council acted on.

https://www.innerwest.nsw.gov.au/about/news/media-releases/2016-media-releases/shopping-study-shows-opportunities-for-darling-street

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Bios of senior team members to support

Neil Soderlund

CEO, Quantium Health and Government

Neil is CEO of Quantium Health Outcomes and has over 25 years of experience in analytic management consulting, including leadership roles as the head of the Sydney office of the Boston Consulting Group (BCG) and head of BCG's Asia Pacific Big Data and Analytics practice.

Tarah Barzanji

Executive Manager, Government

Tarah has over a decade of experience in government or consulting for public sector clients. Most recently, Tarah was a Principal at AlphaBeta, an economics consulting firm. Tarah has also worked as an Adviser to Prime Minister Rudd and in the Department of Prime Minister and Cabinet.

David Gifford

Executive Manager, Government

David has over 20 years experience in government, including experience within the public sector and consulting. David was a Director at pwc and prior to joining Quantium, David was the Chief Strategy and Risk Officer at the Victorian Transport Accident Commission

Becca Duane

Lead Consultant, Government

Becca has over 10 years experience in consulting across a number of different industries including insurance, retail and government. Becca is a qualified Actuary and has experience in delivering large client engagements.

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