Exploring the needs and opportunities for inclusive & accessible mobility.

SYSTRA

CONTENTS

- **Our Team** 3
- **Defining The Problem** 5
  - Global vs National vs Local
  - Underlying Causes
  - Consequences
- **MaaSSIVE** 23
  - Our approach to inclusive mobility
  - Key questions
- **Next Steps** 26

OUR TEAM

Our Team

A connected group of collaborators drawing on insights from around the world

SYSTRA

DEFINING THE PROBLEM

Our Problem Statement

Globally, there is an insufficient supply of accessible and inclusive transport for people with mobility-restrictions.






Who are people with mobility-restrictions?

- People with a disability
- Elderly & living in care facilities
- Elderly & living at home
- Injured, needing rehabilitation
- Adults with chronic illness
- Children with chronic illness
- Parents with infants/young children
- Unemployed (travel to find work)

SYSTRA

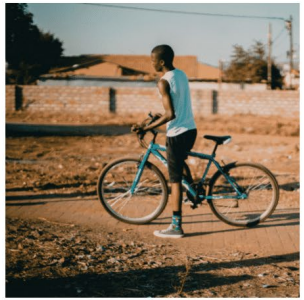
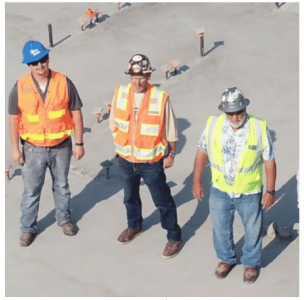
Our Problem Statement

Additionally, some locations suffer from a lack of mobility choices.

What areas typically lack mobility choices?

- Communities lacking public transport infrastructure
- Communities with ageing / unreliable public transport infrastructure
- New towns / suburbs in development where transport infrastructure is yet to be built.



SYSTRA

The Global View

15% of the world's population live with some form of disability.

190m people aged 15+ have significant disabilities that require support services.

22% of the world's population will be aged 60+ by 2050, double what it is today!!

- Over 30% of the world needs more accessible and inclusive transport.
- In Developing Nations, there is an unsustainable reliance on private transport.
- Accessible and inclusive transport is a big problem and it is getting bigger!

World Health Organization

Data source: World Health Organization, December 2020

SYSTRA

Zooming In: The Australian Story

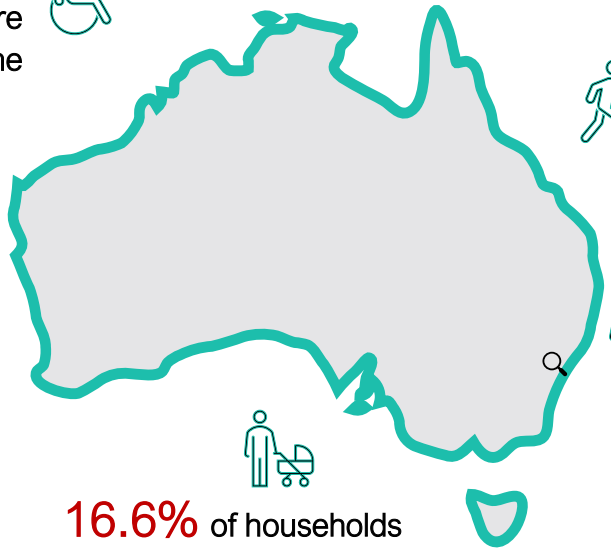
17.7% of the population have disabilities

11.4% of those with a profound or severe disability (aged 15-64 years) work full-time

4.9% Unemployment rate

94.4% of older Australians participate in social activities outside their homes

1.3 million older Australians living at home needed some assistance with everyday activities



95.3% of 65+ Australians live in households

4.6% of 65+ Australians live in cared accommodation

16.6% of households have young children

Data source: Australian Bureau Of Statistics, Census 2016

SYSTRA

Zooming To An Example: Inner West Local Government Area

Demographics

- ~182,000 people (2016 Census)
- 12% aged 65+
- 4.5% require daily help due to disability
  - In this group >80% are aged 80+
- Exceeds the National & State average for:
  - # people aged 20 -50
  - Household income
  - Having a university education
  - Households where a non English language is spoken
  - Having full-time employment
  - Travel to work by Train or Bus

2016 Census QuickStats

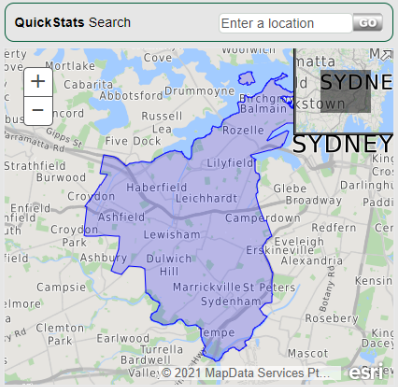
Australia | New South Wales | Local Government Areas

Inner West (A)

Code LGA14170 (LGA)

Search for a Community Profile

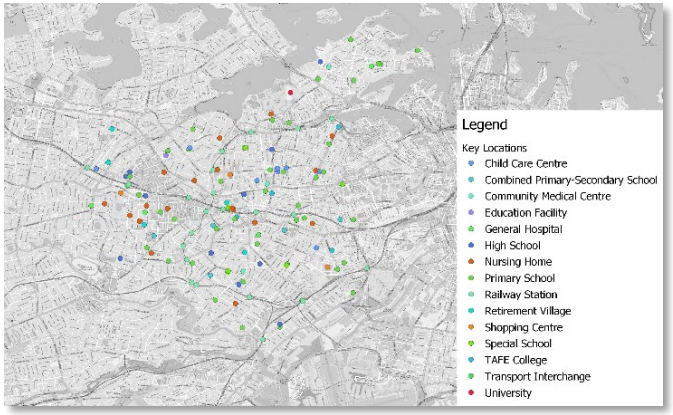
People	**182,043**
Male	48.7%
Female	51.3%
Median age	36
Families	**44,456**
Average children per family	
for families with children	1.6
for all families	0.6
All private dwellings	**80,368**
Average people per household	2.4
Median weekly household income	$2,048
Median monthly mortgage repayments	$2,600
Median weekly rent	$480
Average motor vehicles per dwelling	1.3



Zooming To An Example: Inner West Local Government Area

Geography & Amenity

- Approx. 9.5 km x 6.5 km
- Water boundaries and hilly sections
- East-West main roads limit North-South traffic flow
- Key amenities of relevance – see map
- Community Transport - at least 3 different transport operators service this area for the general public.
  - Other niche services with potential overlap include Non-Emergency Patient Transport and Residential Aged Care facility transport vehicles



SYSTRA

Zooming To An Example: Inner West Local Government Area

Existing Services

Leichhardt Local Link community bus


- Services
  - 2 x buses (21 seater, 19 seater)
  - For frail/elderly, people with a disability, children, young people or disadvantaged residents
  - A route of 57 stops throughout Leichardt
- Funded by:
  - Inner West Council

Connect: Inner West Community Transport Group

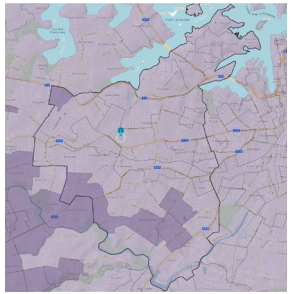

- Services
  - Medical transport, individual transport, shopping transport, jetstream shuttle, tigerider shuttle, community cabcharge.
  - For elderly, disabled and transport disadvantaged residents.
- Funded by:
  - The Commonwealth Home Support Program (CHSP)
  - The NSW Community Transport Program (CTP)

Access Sydney Community Transport


- Services
  - Medical transport, shopping transport, social transport, free shuttle services
  - For elderly, disabled and transport disadvantaged residents.
  - Spans 9 different local government areas
- Funded by:
  - Transport for NSW
  - NSW Department of Family and Community Services
  - NSW Department of Health
  - City of Sydney

Zooming To An Example: Inner West Local Government Area

Potential Challenges & Opportunities for Inclusive Transport



- East-West main roads create North-South restrictions.
- Many narrow roads negatively impacting users of wheelchairs and personal mobility devices.
- Multiple train stations with limited or no wheelchair accessibility.
- Pockets of the Inner West local government area:
  - Exceed 30min average travel time to the nearest hospital
  - Rated as ‘Moderate’ for accessibility to transport infrastructure
- Multiple community transport services potentially ‘competing’ for the same users. Under-utilized vehicle assets likely to exist in niche private transport groups.

This Local Government Area is just one example – in Australia alone there are over 500 LGAs.
Significant room for improvement in mobility inclusiveness and accessibility.
Various forms of community transport exist => opportunity exists to modernise, optimise and expand their reach.

A Different Perspective: Inclusive Mobility in Indonesia

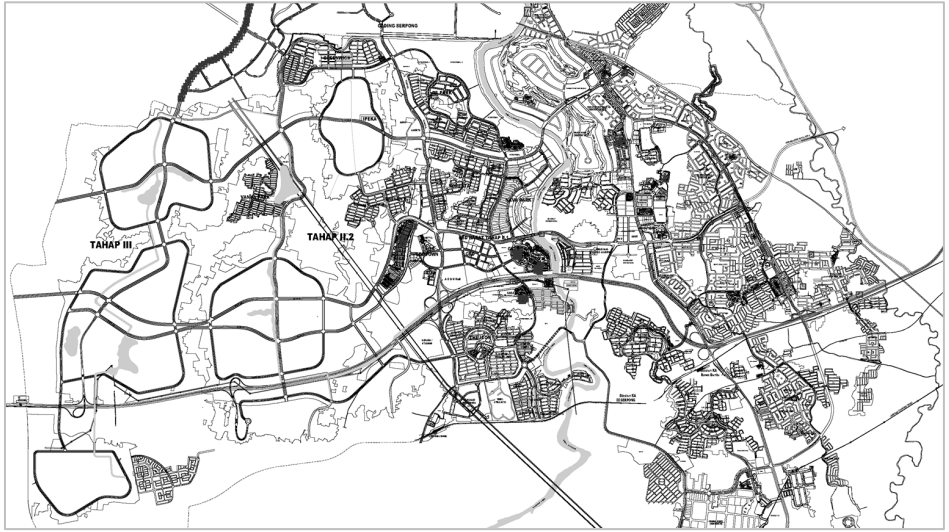
- A Case Study of Bumi Serpong Damai Township, Greater Jakarta Indonesia
- A Case Study of Pondok Kapuk Indah 2 (PIK2), Greater Jakarta, Indonesia
- A Case Study of Kota Damai Indah, Greater Jakarta, Indonesia
- Disability in Indonesia

A Case Study of Bumi Serpong Damai Township, Greater Jakarta Indonesia

Background and Characteristics

- ~480,000 people (2015 Census)
- Further expansion planned in the next 20-30 years to ~1 million people

- Township characteristics:
  - Older areas (Kampong=villages) include traditional lower-middle income areas
  - Newer areas on the west and central parts are middle to higher income
  - No detailed information on demographics, but newer areas would be dominated by younger profiles
  - Attraction of employment and educational institutes, there is a Green Office Park (GOP) at the centre of the township.
  - Heavy dependency on private transport (cars and motorcycles)



A Case Study of Bumi Serpong Damai Township Greater Jakarta, Indonesia

Transport Services

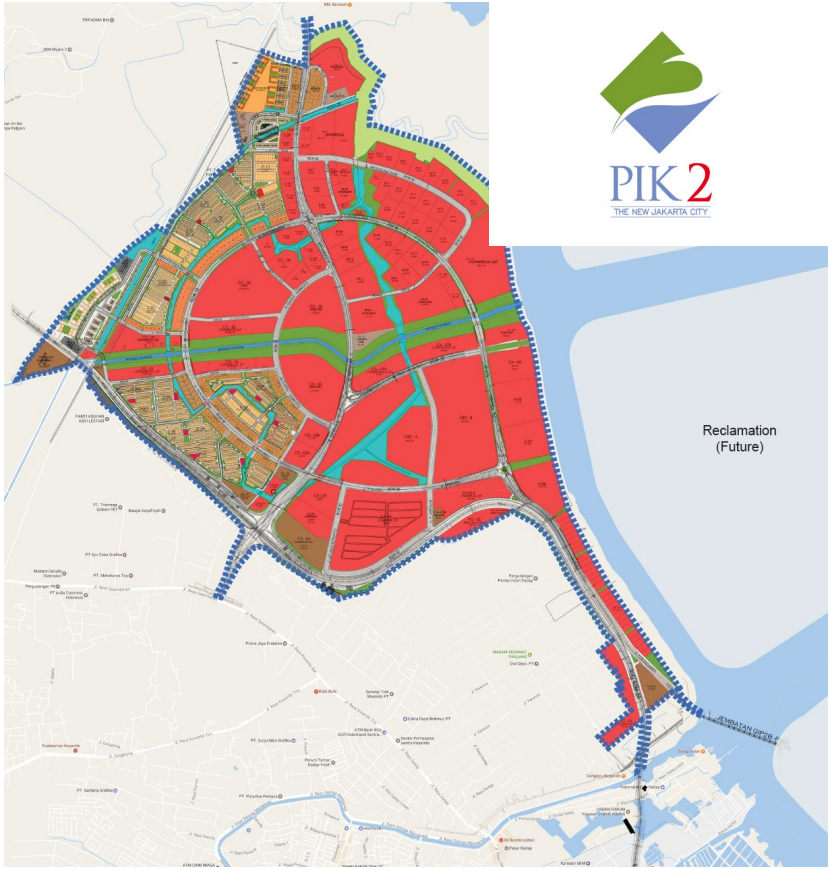
- Public transport services
  - Rail link linking to Jakarta is popular with commuters but very crowded especially at peak times
  - Local transport is in the form of Angkots (minibuses) and private operator services
  - It is thought the public transport mode share is <10%
- Shared mobility
  - Grab, Gojek and taxi services are prevalent
  - Some of the large employers (eg. Unilever) may run dedicated shuttle buses for employees
- Lack of integration of services
  - No common app or integration
  - A super-app for public transport services is however being rolled in Jakarta

SYSTRA

A Case Study of Pondok Kapuk Indah 2 (PIK2) Greater Jakarta, Indonesia

Background, Characteristics & Transport Services

- New township of an initial 1000ha expanding to around 4,000ha close to the main airport in Jakarta.
- Projected population of several hundred thousand residents plus commercial areas.
- Township characteristics:
  - New areas being planned with a future Light Rail System and BRT system.
  - Resident mix likely to be middle to higher income
  - No detailed information on demographics, but likely to be dominated by younger working adults and their families.
  - Despite public transport plans, these are longer term. In the short-medium term, expected heavy dependency on private transport (cars and motorcycles)

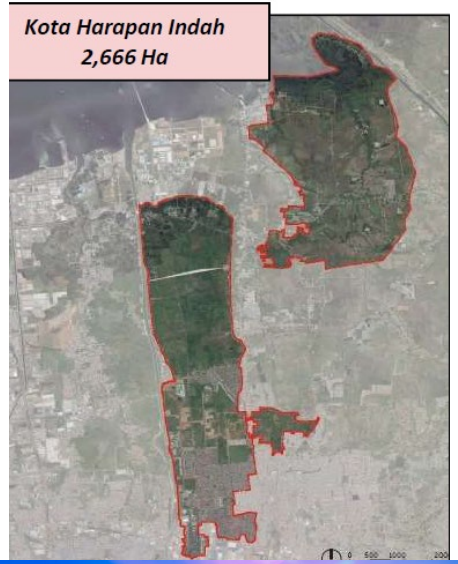


A Case Study of Kota Damai Indah Greater Jakarta, Indonesia

Background, Characteristics & Transport Services

- Existing township east of Jakarta with a planned ultimate development size of nearly 2,700ha
- Projected population of several hundred thousand residents plus commercial areas.

- Township characteristics:
  - The existing phases of development are dominated by private transport , with very limited use of public transport
  - Mixture of income levels, the current profile is lower middle to middle income.
  - Future plans for LRT to serve the township, but first-mile / last-mile will be a challenge



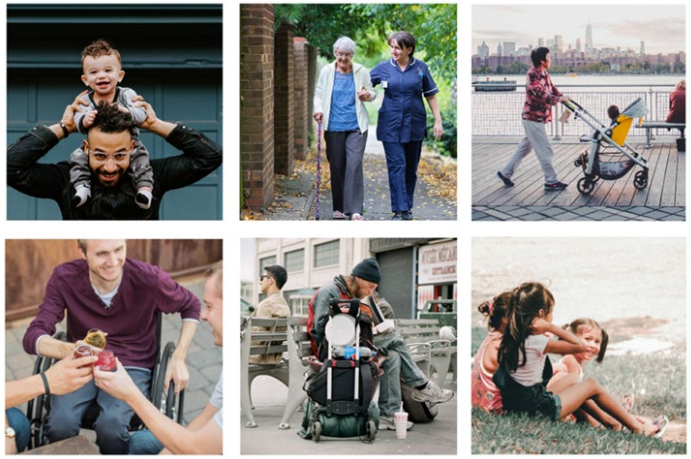
Disability in Indonesia

- Data is hard to come by and not typically made publicly available for specific locations.
- However, a Disability study by Monash University# in 2017 financed under an Australia-Indonesia cooperation agreement included the following findings:
  - In a national population of around 270 million, an estimated 4.3% are said to suffer from disabilities
  - More than 13% of households are estimated to include at least one person with a disability
  - Lower access to education, employment and mobility is noted for this section of the population
- One of the key recommendations of the study was to make transport more accessible and inclusive so as improve the economic opportunities for this group.

https://www.monash.edu/__data/assets/pdf_file/0003/1107138/Disability-in-Indonesia.pdf

Problem Statement ⇨ Causes

Globally, there is an insufficient supply of accessible and inclusive transport options for people with mobility-restrictions.



What might be the underlying causes?

- Lack of transport services (new outer fringe suburbs)
- Lack of DDA-compliant vehicles and transport stops
- Planned/unplanned network disruptions
- Fixed Route / Fixed Schedule = may be hard to access; need Right Place @ Right Time
- Geographical constraints for network accessibility
- Existing providers typically a small scale operation
  - ⇒ Small customer base
  - ⇒ High overheads as % of revenue
  - ⇒ Hard to reach and engage customers
  - ⇒ Boutique solutions unaffordable
  - ⇒ Operating in silos – not integrated
  - ⇒ Usually low-tech ops

SYSTRA

Problem Statement ⇨ Causes ⇨ **Consequences**

1.45 million people in the UK over 65 find it difficult to travel to a hospital

3.6 million people in the US do not receive medical care due to poor mobility

£216m cost to the NHS England for missed GP appointments each year

Every $1 spent on non-emergency medical transportation saves $11 in healthcare costs

Poor accessibility reinforces social exclusion

29% of Australian Government survey participants find poor mobility to be a barrier to their day-to-day lives

Social isolation accounts for approximately 70% of cases of depression amongst older adults

SYSTRA

Problem Statement ⇨ Causes ⇨ **Consequences**

Poor mobility causes **exclusion** from schools and education opportunities

Going to school outside their neighborhoods can mean leaving behind social support and connections to other neighborhood children

Poor mobility is associated with **marginalization**, **disempowerment** and a poor capacity to generate **income**

Inaccessibility to jobs explained **30%** and **40%** of the difference in employment rates among black and white teenagers, from a study in Los Angeles

SYSTRA

MaaSSIVE

Our Approach to Inclusive Mobility

Aggregate demand across similar segments of need to **achieve sufficient scale** for feasible operations.

Leverage new technology (e.g. MaaS & DRT) to more **efficiently & effectively** engage customers with **existing or new** transport services.

Quantify the economic, health, social & environmental factors to justify the change. Explore cost/revenue sharing to fund the change.

OUR VISION: To enable local governments, transport agencies, transport operators and land developers to deploy accessible and inclusive mobility services.

Key Questions

- ✓ … address unmet needs for inclusive mobility, incl. impacts of non-compliant infrastructure?
- ✓ … match accessible mobility supply with demand in a local government area?
- ✓ … leverage under-utilised transport assets across different operators (public and private)?
- ✓ … increase scale by aggregating multiple demand profiles?
- ✓ … reduce OPEX for community transport and/or niche private services?
- ✓ … enable inclusive countermeasures during network disruptions?
- ✓ … leverage the benefits of MaaS or Demand-Response technologies to achieve these goals?
- ✓ … define an optimal fleet composition (vehicle quantities, sizing, service area)
- ✓ … intelligently pre-position the fleet based on predicted demand?
- ✓ .. identify innovative funding models (e.g. inter-agency / cross-provider)

Asking the right question is as important as getting the right answer.
These are just a few of the questions we may seek to answer.

NEXT STEPS

FOR MORE INFORMATION

To learn more about the custom methodology we've developed to quickly and efficiently investigate inclusive mobility, or to explore how we might help, please get in contact, we're always happy to chat further:

Michael Gregorevic

Principal Consultant, Advisory - Innovation & New Mobility Services

mgregorevic@systra.com

REFERENCES & FURTHER READING

- Urban Institute, 2021. *Student Transportation and Educational Access*. Read it HERE
- Cervero, Sandoval & Landis, 2021. *The Transition from Welfare-to-Work: Policies to Stimulate Employment and Reduce Welfare Dependency*. Read it HERE
- Department of Social Services, 2021. *SHUT OUT: The Experience of People with Disabilities and their Families in Australia*. Read it HERE
- SourceFuse, 2021. *Major Impact of a Missed Non Emergency Medical Appointment*. Read it HERE
- BBC News, 2021. *Missed GP appointments 'cost NHS England £216m'*. Read it HERE
- Disabled People's Organisations Australia, 2018. *Third Review of the Disability Standards for Accessible Public Transport 2002*. Read it HERE
- Ullah et al, 2018. *Why do Patients Miss their Appointments at Primary Care Clinics?* Read it HERE
- The Atlantic, 2015. *The Transportation Barrier*. Read it HERE
- American Hospital Association, 2017. *Transportation and the Role of Hospitals*. Read it HERE
- Pantelaki, Maggi & Crotti, 2020. Mobility impact and well-being in later life: A multidisciplinary systematic review. Read it HERE
- Institute of Medicine (US) Committee on Disability in America; Field Jette, 2007. *Transportation Patterns and Problems of People with Disabilities*. Read it HERE
- Smart & Klein, 2015. *A longitudinal analysis of cars, transit, and employment outcomes*. Read it HERE

Photo credits: Umberto Shtanzman (shutterstock.com); kelly-sikkema-hS_eGxLjozs (unsplash.com); cristina-seri-dRu3zxFb6uE (unsplash.com); nathalia-segato-H2loiV7kFPI (unsplash.com); elevate-vofmJUVScDE (unsplash.com); benjamin-disinger-2xzEIQFzw0g (unsplash.com); charlein-gracia-06f9TZI3fQY (unsplash.com); jacek-dylag-PMxT0XtQ--A (unsplash.com); zohre-nemati-T3a2nznD-kg (unsplash.com); shiprachel-martin-Xck4XTO4tIQ (unsplash.com); scott-blake-z_p0-CnnpCw (unsplash.com); guilherme-franca-LNK2oEu8UpE (unsplash.com); nathan-dumlao-RQ-bB76WYeY (unsplash.com); Connect Inner West (connectinnerwest.org.au); Access Sydney Community Transport (accesssydney.org.au); Inner West Council (InnerWest.nsw.ov.au)

SYSTRA

SYSTRA

CONFIDENCE MOVES THE WORLD