

# Urban cycling plans: The state of play in local governments across Australian cities and regions

Courtney Babb<sup>1</sup>, Sam McLeod<sup>2</sup>

<sup>1</sup>School of Design and the Built Environment, Curtin University

<sup>2</sup>UWA

Email for correspondence: c.babb@curtin.edu.au

## Abstract

Local governments play a critical role in the planning and delivery of bicycle transport systems, yet there has been limited research into the status of plans in local governments and how they position urban cycling goals and actions within local and city-wide urban mobility systems. To address this gap, this paper reviews cycle plans in Australian urban local governments using a survey of local government officers and a content analysis of cycle plans. The research addresses three questions: What are the key characteristics of LG cycling plans? How are cycling plans being developed? Are there geographical variations in LG planning for cycling across Australian cities and major regional centres?

## 1. Introduction

Planning for cycling is now well-established practice within Local Governments (LGs) in Australia, and cycle plans are often a central platform that consolidates knowledge and planned actions towards achieving urban cycling goals. LG cycle plans typically seek a range of policy and strategic goals, including congestion reduction, public health and urban conviviality (Babb et al., 2022). The imperative to decarbonise the transport sector provides additional impetus for improving plan making for cycling, with the IPCC (2022) recognising that non-motorised modes of transport will be essential to the task of reducing emissions in line with UN targets. However, participation in cycling for everyday transport is low in Australia compared to cities globally. Australian cities share key characteristics with other car-centric cities in the U.S., Canada and New Zealand (Chen et al., 2022), including highly auto-centric built environments, prioritisation of planning, policies and resources towards the mobility of motorised private vehicles, assumptions that cyclists are a form of vehicle, fit to mingle in (or very close to) motorised traffic, and consequently low levels of participation in cycling.

The research evidence is well-established regarding the elements that support higher levels of participation and diversity in urban, everyday cycling. Planning for a diverse range of cycling trips is important to improve local and regional accessibility (McLeod et al., 2020), including: everyday commuting; trips to school or higher education; first and last mile trips to Public Transport (PT); retail trips; moving household goods; access to social and community activities; and for enjoyment. People's perceived barriers to cycling are often related to the safety of cycling environments and the provision and quality of infrastructure (Pearson et al., 2023b). Accordingly, Geller's typology of potential cyclists has been proposed to segment the population into groups by their relative interest in cycling. There is evidence of a large proportion of "interested but cautious" in the general population (Pearson et al., 2023a), suggesting that there is latent demand for cycling as a mode of transportation. The provision of low-speed environments, separate infrastructure on busy roads and safe crossing can contribute to both real and perceived safer cycling environments, and thus increase

participation in the large “interested but concerned” segment of the population (Forsyth and Krizek, 2010). Accordingly, the provision of safe and low-stress environments for cycling is critical (Nello-Deakin, 2020). Although cycling participation may be low in transport statistics, cycling is often poorly measured, and data collection methods may disproportionately capture “strong and fearless” cyclists who will cycle irrespective of the hostility of the cycling environment.

Planning for cycling in LGs is part of a broader governance framework. At the national level support for cycling is largely restricted to providing grant funding; setting aspirational policy; and coordinating national guidance material (Leung et al., 2019). The planning and provision of cycling mobility systems at a regional or citywide scale is the primary responsibility of the State governments. State governments also provide grants and funding, and can influence cycling at the LG level through education, training, setting standards and a variety of other state government led programs. LGs are generally responsible for many of the critical policies and plans for cycling, including the development of local streets and infrastructure, coordinating zoning and specific development controls, and supporting cycling through community-level initiatives. Apart from cycling facilities constructed as part of major State-led transport projects, Australian LGs commonly deliver or coordinate all other cycling infrastructure— including connecting paths, most on-street facilities, improvement schemes, and parking and end-of-trip facilities. LG areas vary widely in size and scale, meaning that there is likely a variety of the range of opportunities and constraints LGs experience.

This research seeks to further knowledge of this area by addressing some key questions in the Australian context: What are the key characteristics of LG cycling plans? How are cycling plans being developed? Are there geographical variations in LG planning for cycling across Australian cities and major regional centres? The paper begins with an outline of the role cycling plans play in the urban transport planning task. The research approach drawing on a survey of Australian LG officers and content analysis of LG cycling plans is then described. The findings are presented as a series of key questions regarding the key content of plans and how plans are developed and used. Finally, the research findings are discussed to address the overarching research questions.

## 2. Urban cycling plans

Cycling plans are public documents formally endorsed by an institution that set out its vision, objectives, rationales, and actions relating to cycling. Plans for urban cycling can influence urban environments for cycling and cycling participation in several ways. They can set out a broad strategic vision and principles that inform ongoing practice and implementation of plans. They can set out actions to improve network connectivity, accessibility, pricing, and capacity of different people to access places and resources, through setting objectives and priorities, guiding decision-making, and signalling to the public and other stakeholders. Plans also set out relationships with other policies and can set out policy linkages (Macbeth et al., 2005). Cycle plans can support transparency, making public the principles, objectives, and planned actions of the LG regarding cycling and setting out monitoring processes and performance criteria.

Plans may exist along with other plans including more technical guides for the design and construction of cycling infrastructure and policy and strategic spatial plans that encompass other modes of transportation, land use and social and physical infrastructure. Table 1 identifies different types of plans that are relevant to urban cycling. In this research paper, we focus on cycling plans.

**Table 1: Types of plans relevant to urban cycling**

Type of Plan	Purpose	Typical Level of Govt.
Cycling Plan	Increase or support cycling within a defined area	Local, State may have broader/metropolitan plan
Metropolitan Strategic Transport Plan	Determine transport policy and major infrastructure investment across all modes	State
Local subdivision and street design	Define the specific design of a neighbourhood or area	Local, usually under State guidelines
Development controls	Specify requirements for new development (e.g. bicycle parking/end-of-trip facility requirements)	Local, usually under State guidelines

Although there are multiple 'templates' available for cycle plans, there is a common range of features that are often found in cycling plans. Cycling plans can draw on a standard set of methods, methodologies, sources of knowledge and participation from a range of stakeholders. It is now broadly recognised that cycling plans need to extend beyond a purely engineering approach, to consider a wide range of policy areas, apply a broad range of methods, and draw on a wide knowledge base (Bell and Ferretti, 2015). Vigar (2017) suggests that plans need to reflect different types of knowledge to be able to effectively order and shape complex policy ecosystems. A range of stakeholders, not limited to road traffic, land use planning, facilities management, community and social and education sectors, may be involved in the development of cycle plans. The timing and timeframe setting of plans is also important to consider. Urban transport systems can be subject to rapid changes, as seen in the uptake of e-bikes, shared bike schemes and micromobility has changed the mobility landscape for cycling. Plans that have long time horizons may not be adaptive to changes, whereas plans with shorter time frames may not inspire long term visions.

The existence of a bicycle plan is not the only indicator of a LG's institutional capacity to positively shape cycling environments and achieve greater participation and diversity in cycling. Adam et al., (2020), identify three characteristics of effective policies and plans to support cycling: the response to the local context, the mix of interventions, and political and community support. The emergence of well-known cycling cities, in the Netherlands and Denmark for example, was largely established through grassroots actions and resistance to mainstream transport planning (Pucher and Buehler, 2008). Although transport planning in the U.S., U.K. and Australasia remains auto-centric, cycling planning and plans have similarly been institutionalised through political action and the policy focus on sustainability in the 1990s (Johnson and Bonham, 2015). However, disappointingly low rates of cycling participation across most parts of Australia demonstrate that having cycle plans in place is no guarantee of substantial improvements in cycling in many auto-focused cities (Pucher et al., 2011).

### 3. Research approach

Given their central place in planning for cycling, there is a notable absence of research literature focused on plans for cycling as opposed to the broader task of planning and policy development for cycling (see Nello-Deakin, 2020). The research seeks to inform this gap reviewing the formal LG bicycle plans to assess the current state of planning for cycling of LGs in Australia. A multi-method approach was used to capture aspects relating to the status, development, use and content of Australian urban LGs. First, a survey of LG officers involved in cycle planning across Australia was conducted. The survey captured a wide range of information about the practices of LG officers relating to the development and use of local cycle plans. LG officers' reflections on critical barriers to implementing cycle plans were also identified and these results

have been published elsewhere (see Babb et al., 2022), with the full survey dataset is available at Babb, et al. (2021) (see <https://data.mendeley.com/datasets/scbbbv2b8d/1>).

The survey was distributed via email to all LGs identified as urban according to the 2015 Local Government National Report by the Federal Government Department of Infrastructure and Regional Development (DIRD, 2017). The email contained a request for the survey to be forwarded to any LG officers responsible for cycling. Table 2 identifies the number of survey respondents across Australian states and territories, illustrating that response rates were close to and generally above 50%. The findings of the survey regarding officers' reported practices and attitudes to planning for cycling have been published by Babb et al (2002). This research focuses on information about cycle plans from each LG. Multiple responses were recorded from thirteen LGs. These responses were combined into single responses for each LG and where there were multiple responses (for methods used in developing a plan, for example), these were combined into one response per LG. Table 3 also profiles the distribution of survey respondents by the geographic context and size of Australian LGs.

**Table 2: Survey sample across Australian states**

State	LGs Contacted	LGs Identified in Results	Identified Response Rate
NSW	71	35	49%
VIC	55	31	56%
QLD	31	15	48%
WA	37	24	65%
SA	30	16	53%
TAS	10	5	50%
NT	4	3	75%
Total	238	129	54%

**Table 3: Survey sample by LG classification**

Urban type	Size	Population	Code	# in survey
Capital City			UCC	6 (4.7%)
Metropolitan Developed >90% of LG population is urban	Small	Up to 30,000	UDS	8 (6.2%)
	Medium	30,001-70,000	UDM	11 (8.5%)
	Large	70,001-120,000	UDL	14 (10.9%)
	Very Large	>120,000	UDV	17 (13.2%)
Fringe >90% of LG population is urban	Small	Up to 30,000	UFS	3 (2.3%)
	Medium	30,001-70,000	UFM	12 (9.3%)
	Large	70,001-120,000	UFL	2 (1.6%)
	Very Large	>120,000	UFV	10 (7.8%)
Regional Town/City	Small	Up to 30,000	URS	16 (12.4%)
	Medium	30,001-70,000	URM	15 (11.6%)
	Large	70,001-120,000	URL	6 (4.7%)
	Very Large	>120,000	URV	9 (7%)

The second method applied was a content analysis of LG cycling plans. Content analysis is the “systematic, objective, quantitative analysis of message characteristics” (Neuendorf, 2017). Krippendorff (2019) explains that content analysis allows us to understand texts by “what they mean to people, what they enable or prevent, and what the information conveyed by them does”. A content analysis of LG bike plans can identify common, uncommon and absent

features across texts and compare texts across a range of contexts. We analysed a set of LG bike plans to identify the basic characteristics of bike plans, as well as the framing and expression of the content of each plan. A sample of thirty-three LGs with cycle plans was selected from the group of LGs identified in the survey. To achieve a representation of all urban area types, three plans were identified from each urban area type, however, the sample therefore is not proportional. Given this and the small sample size, there are limitations to the extent plans can be compared across different states and urban areas in the analysis.

To develop our criteria for content analysis, we drew upon academic sources (cited in sections 2 and 4), standard elements of rational plan-making, and elements of practical guidance documents (e.g. Austroads guides). A protocol was developed to carry out a systematic approach to the content analysis. The variety of plan formats across the sample, created a risk that some content might be missed in the protocol, potentially contained in a non-standard section. Additionally, a crossover between some criteria, such as safety and infrastructure improvement, was identified as a potential validity issue by the coders. These issues were minimised through using two coders, identifying areas for developing consensus and using random detailed checks of a subsample of plans.

## 4. Findings

### 4.1 What is the currency of cycle plans in Australian LGs?

The existence of a cycling plan is considered to be an indicator of minimum standards of planning for cycling (McLeod et al., 2020). From the 129 LGs in the sample, 56.6% of respondents reported that their LG had a current or draft cycling plan, while 18.6% reported that their LG had an outdated plan; 9.3% of LGs were in the process of preparing one; and 13.9% of respondents reported their LG did not have a current or draft plan or did not know if their LG had a plan. The characteristics of current cycling plans reported are summarized in Table 4, which illustrates significant variance by state.

**Table 4: Existence and currency of LG cycling plans by Australian states (survey sample)**

State	Current or draft plan	No plan/ Don't know	Outdated plan	Average Year Developing	Average Year of Plan	Latest State Plan
NSW (n = 35)	68.6	8.8%	14.3%	8.6%	2012	2019
VIC (n=31)	64.5%	9.7%	25.8%	0%	2016.5	2017
QLD (n=15)	40%	13.3%	13.3%	33.3%	2016.3	2020
WA (n=24)	66.7%	12.5%	12.5%	8.3%	2016.3	2017
SA (n=16)	37.5%	37.6%	18.8%	6.3%	2013.6	2006
TAS (n=5)	20%	20%	40%	20%	2008*	2010
NT (n=3)	0%	66.7%	33.3%	0%	2015	None
TOTAL (n=129)	56.6%	13.9%	18.6%	9.3%	-	-

*\*Note: Tasmania has one outlier cycling plan from the 1990s.*

Table 5 (overleaf) illustrates the status of cycling plans according to the size of LGs and their regional context.

Table 5: Status of cycling plans by LG size and type of regional context (survey sample)

	# LGs in sample	Current or draft cycling plan	No cycle plan/ I don't know	Outdated plan	Developing
Very large LGs	36	69.4%	11.1%	16.7%	5.6%
Large LGs	22	59.1%	4.5%	18.2%	18.2%
Medium LGs	38	55.3%	13.2%	26.3%	5.3%
Small LGs	27	40.7%	40.7%	7.4%	11.1%
Central City	6	50.0%	0.0%	33.3%	16.7%
Metro Developed	50	68.0%	8.0%	20.0%	4.0%
Metro Fringe	27	40.7%	33.3%	22.2%	3.7%
Regional Town/City	46	54.3%	15.2%	13.0%	17.4%

The content analysis offered more detailed insight into a sub-sample of thirty-three published transport plans. Out of the plans analysed, the shortest plan was 17 pages, whilst the longest plan had 131 pages, with a sample mean of 66 pages. Noting that these plans were selected from survey respondents who noted they had an active cycling plan, the earliest plan was published in 2008, and the most recent in 2022. The scope of the plans ranged from 3 years to 20 years. Over half of the plans (58%) were for five or fewer years. Ten of the 33 plans were active travel plans, that incorporate cycling and walking together in the plan.

## 4.2 Who produces bike plans?

The survey included questions regarding who wrote and managed the production of cycle plans – and who was consulted and who was omitted from the development of plans.

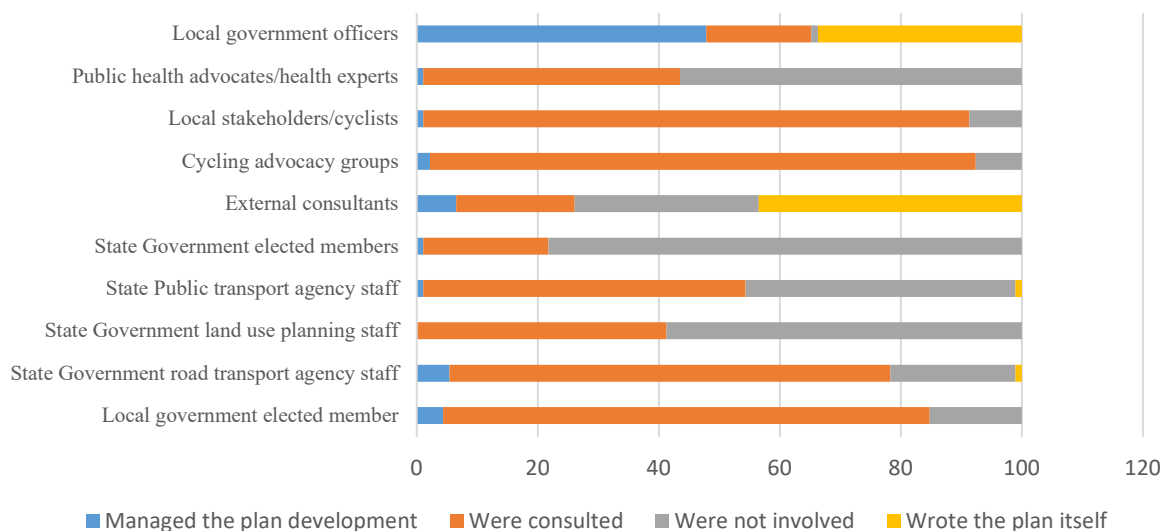


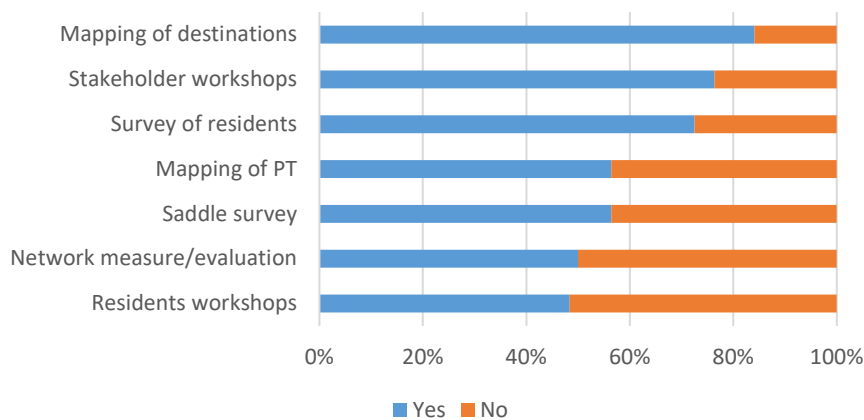
Figure 1: Groups' involvement in cycle plan (survey results, reporting % of LGs with a cycle plan, n=92)

LGs (81.5%) and consultants (50%) were primarily involved in the development and writing of plans. These results are similar to Macbeth et al. (2005), though we find greater use of consultants in our sample. Many other groups appear to be widely consulted (Figure 1,

overleaf). Interestingly, State/Regional government entities appear to be among the least involved groups, even though State/Regional level planning coordination, statutory approvals, and funding mechanisms are important enablers in supporting the development of cycling infrastructure and facilities.

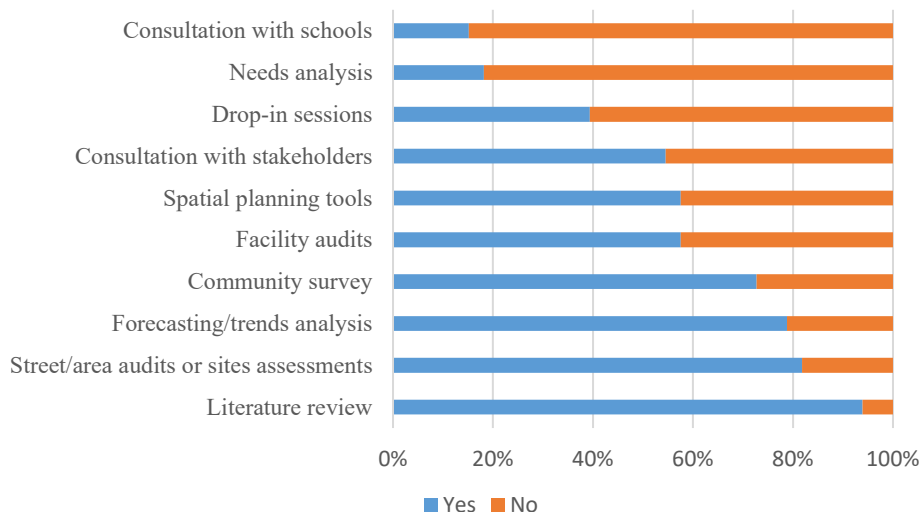
### 4.3 How are bike plans produced?

The methods that are used to develop knowledge to inform bike plans are key factors in their success (Bell and Ferretti, 2015; Vigar, 2017). Both the survey and the content analysis focused on the methods used to develop LG bike plans. In the survey, participants were asked whether they had used any of a set of methods (see Figure 2). The most common means of determining networks was through location mapping. Fifty-six per cent of LGs integrated PT access in their network planning and the same percentage used network measurement tools utilising GIS. Half of the LGs that had cycle plans used saddle surveys:-



**Figure 2: Survey responses of methods used in producing LG cycle plans (reported % of LGs with a cycle plan n=92)**

The content analysis also captured methods used in the development of bike plans (Figure 3).



**Figure 3: Content analysis of methods used in producing LG cycle plans (reported % of LGs cycle plans from content analysis n=33)**

All bike plans analysed outlined the methods that were used to develop the plan. Literature reviews were the most common method used, with forecasting and trends analysis and street

or area audits as the next most common. Less common methods include need analyses, although several community surveys were conducted to address needs. Only a third of the plans had a specific focus on schools, and consultation with schools was identified only as a method by a small number of plans (18%).

#### 4.4 What type of cycling do bike plans support?

The typologies and categorisation of cycling represented in cycle plans are important in framing proposed actions and providing an overall rationale for planning. The categorisation of cycling and cyclists were captured in the analysis in two ways.

Firstly, an analysis of the dominant framing of cycling and cyclist types in each plan was carried out. Often, plans contain a background or explanatory section that positions the plan relative to different urban cycling frames. Over half (58%) of the plans categorised cycling according to trip purpose. Geller's typology of cyclists – strong and confident; interested but concerned; and no way, no how - was used in just under a third (30%) of LG cycle plans to frame types of cyclists. About a fifth (21%) of plans used a combination of trip purpose and Geller's typology. Just under a third of plans (28%) did not present any categorisation of cycling.

Secondly, the objectives of each plan were evaluated against a set of key elements relating to cycling systems, drawing on a maturity model of planning for cycling developed by McLeod, Barlow and Babb (2020). These elements are: network; land use and transport integration; integration with PT; traffic safety; health promotion; infrastructure; competitiveness with private vehicles; and leadership type. Competitiveness with the private vehicle was indicated by statements supporting cycling as the preferred mode choice over travel by private car. Leadership type reflected the capacity for the LG to be a leader and the recognition of supportive organisational dynamics to achieve cycling goals. Each of these criteria was evaluated as to whether they were a key objective (3 points), a sub-objective (2 points) or not included in the planned objectives (1 point). Table 6 illustrates the scores against the criteria, indicating the average score across all plans.

**Table 6: Coverage of criteria in bike plan objectives x urban region and LG size reported in percentages (a). Network; b) Integrated land use development; c) Integrated with PT; d) Safety; e) Health promotion; f) Infrastructure design; g) Competitiveness with the private vehicle; h) Diversity; i) Types of leadership.)**

	a	b	c	d	e	f	g	h	i
Very large LGs (n=9)	100	78	56	89	63	93	63	67	70
Large LGs (n=7)	100	71	57	86	67	81	57	57	57
Medium LGs (n=8)	100	79	58	88	75	83	63	67	71
Small LGs (n=6)	100	75	56	83	76	87	56	62	65
Central City (n=3)	100	89	67	89	56	78	56	89	89
Metro Developed (n=12)	100	83	53	86	78	89	61	56	64
Metro Fringe (n=7)	100	67	67	90	57	90	48	76	71
Regional Town/City (n=11)	100	73	52	79	76	88	61	64	67

Several fundamental aspects of effective cycling plans were reflected across the sample. Objectives relating to the network were common to all plans and were featured mainly as primary objectives. Similarly, objectives relating to safety and infrastructure design were a feature of most plans. Safety was reflected in sub-objectives and actions such as advocating for



lower speeds and separating cycling in high-traffic road environments. Infrastructure improvements related to paths, separated lanes, shared paths and the facilities that support these, including lighting, signage and parking/end-of-trip facilities. Integrated land use and transport was also featured in many objectives and sub-objectives, with fewer LGs on the fringe and in regional centres supporting integrated land use and transport in their objectives.

The health benefits of cycling were mentioned in many plans as background but were not prominent in the objectives or sub-objectives of the plans. The reflection of diversity in objectives was patchy across the LGs of different regions and sizes. For example, achieving greater diversity of cycling was commonly reflected in plan objectives in Central City LGs, but poorly in other regions. The definitions of diversity differed - sometimes reflecting diverse population groups and other times reflecting the diversity of the Geller typology of cyclists. Aspirations related to diversity were also identified in plan objectives that sought to promote inclusive ongoing community engagement through plan implementation.

The types of leadership assessed in the content analysis refer to the development of institutional capacity to be able to deliver change. Such objectives go beyond basic aims to promote cycling, and to identify the development of leadership or advocacy within the organisation. There was variation in the approach of leadership aspects in the plans. For example, one plan had increased council staff participation in cycling as an objective of the plan.

The integration of cycling with public transport was poorly reflected in plan objectives. This may be because rail, which is more commonly associated with multi-modal cycling trips, is not common to all LGs. However, this result might indicate a gap in consideration of the regional accessibility potential of cycling multimodal trips (e.g. Pucher and Buehler, 2008). Competitiveness with the private vehicle was also poorly reflected in cycle plans – indicating a lack of will to apply travel demand management measures to “push” people towards cycling (Adam et al., 2020; McLeod et al., 2020, p. 6). The plans were also analysed for how they represented new modes of mobility: micromobility, e-bikes, cargo bikes and bike share. Very few plans included a focus on micromobility or e-scooters. One plan identified scooters (not e-scooters) as the preferred mode of travel for students in a school survey, but the plan did not include any mention of scooters outside of this. Another plan did the same with cargo bikes. Cargo bikes were mentioned in the community consultation, but not included in the planning document.

## 4.5 How are bike plans monitored and evaluated?

The means of monitoring the plan’s progress and evaluating its performance were captured in the content analysis. This information provides both an overview of the main monitoring and evaluation methods and indicates the commitment of the organisation to achieving the objectives set out in the plan. Table 7 shows the percentage of plans that contained a reference to key methods of monitoring and evaluation.

**Table 7: Coverage of plan evaluation methods by urban region reported in percentages (a) Mode share targets; b) Bicycle counts; c) Survey – satisfaction; d) Audit of facilities; e) Level of Service measures; f) Network assessments; g) Crash statistics; h) Project completions.)**

	a	b	c	d	e	f	g	h
City Centre (n=3)	33	100	100	67	33	67	67	67
Urban developed (n=12)	8	58	25	25	0	8	8	42

Urban fringe (n=7)	14	43	43	14	0	14	43	43
Urban regional (n=11)	27	36	27	18	0	36	27	27

Outside of the City Center, LG bicycle plans made limited use of monitoring or evaluation in their plans. Bicycle counts, project completions and satisfaction surveys were the most commonly included evaluation methods, although with the exception of the City Center, under half of plans analysed across the three regions had used these monitoring and evaluation tools. Very few bicycle plans had clear mode share targets. One plan suggested the exclusion of targets from their plan was due to the lack of reliable data about participation in cycling. Some mode share targets in consultant led plans were presented as recommendations to the LG, but were not expressed as intended targets, leading to ambiguity about whether they were agreed targets or not. Level of Service measures was the least utilised tool, with only 2 out of 33 plans containing this method of evaluation, both LGs located in the City Centres and likely using LOS measures to monitor more congested inner-city bikeways. Overall, the three City Centre plans had the broadest coverage of methods. The City of Sydney's plan exemplified a more sophisticated use of targets compared to the rest of the sample, capturing indications of ridership, diversity, and business, government and advocacy capacity to support cycling.

#### 4.6 How are bike plans used?

Survey participants who worked at an LG with a bike plan were asked how actively they used their bike plans. Only 2.3% (2) LGs responded that they did not refer to the plan at all in transport planning matters. 36.4% (32) LGs used the plan to inform all planning relevant to cycling in the LG, while 38.6% (34) responded that it was used in most (more than 50%) and 22.7% (22) responded it was used in some (less than 50%).

### 5. Discussion

Cycle plans are a central platform within many LGs' institutional response to addressing goals relating to cycling. Two thirds of LGs in our survey sample had current, draft or were developing cycle plans. The remaining LGs did not have cycle plans, or had outdated plans – and many only used their plans only infrequently, or not at all. These results suggest a lack of overall capacity to plan for cycling and uneven distribution of LGs with cycle plans.

International experience in exemplar cycling cities guides, and research profiling them, provides a decent benchmark to assess the current state of bike plans. Our content analysis showed that fundamental elements of high-quality urban cycling environments were presented as key objectives of most plans. This includes network, infrastructure, and safety (see Table 6). However, most plans fall short of promoting the competitiveness of cycling over vehicular traffic, planning for strong integration with PT, or setting ambitious mode share targets towards normalising cycling as a mode of transport. The content analysis indicated significant implementation gaps in planning for the integration of cycling in a broader system of sustainable transport. Evidence shows that both “push” and “pull” transport policies are likely to have the most success in achieving behaviour change or culture shift in cycling (Adam et al., 2020). Generally, plans did not include objectives that positioned cycling as competitive mode of transport to the car. Plans were also limited in planning for cycling as a part of public transport (PT). About half of plans lacked the input of state PT agencies (see Figure 1) or network mapping concerning PT (Figure 2), and many plans lacked objectives towards the integration of cycling and PT (Table 7).

We found significant variation in the degree to which different stakeholders are involved or consulted in the development of plans (see Figure 1). We found a heavy reliance on external consultants in writing plans, likely reflecting resource constraints within LGs. When considered against the survey evidence, planning for cycling in LGs competes for scarce resources and faces barriers associated with limited organizational capacity. It is therefore unsurprising that many bike plans lack ambitious ex-post evaluation criteria (see Table 7). There was considerable variability in the style, length, and format of plans. Some plans were large documents and presented in a highly technical style, which may reduce their effectiveness in communicating to the public clear and specific policy goals relating to cycling. Other plans were more amenable to a general audience, tending to have a higher quality visual organisation and presentation, but with most of these plans still managing to contain the key components of a bicycle plan. Some plans produced by consultants framed key elements of the plan, including targets and actions, as recommendations for the LG to take up, obscuring the actual level of commitment held by the LG towards the plan's objectives.

What the focus of these plans does not capture is the implementation gap, where the ambitions and aspirations of plans are not translated into concrete changes to the cities (Bell and Ferretti, 2015). Further evidence of this gap is highlighted in the survey, including that limited funding, conflicting priorities, competition for street space, and political difficulties are the most substantial barriers to delivering cycling facilities (see Babb et al., 2021, p. 260). These implementation gaps also hint at the potential of improving capacity and coordination within LGs to embed institutions and practices that continually deliver measures to support participation in cycling. While LGs commonly have organisational structures dedicated to the coordinated delivery and maintenance of roads to serve vehicular traffic, the survey evidence indicates that cycling is very fragmented across different functional areas within LGs.

There were some indications of variance across regions and scale of LGs amongst the small sample of plans. Small LGs and LGs on the urban fringe were less likely to have cycle plans. More regional LGs were developing plans than in city centre, developed or fringe areas, indicating increased activity to support cycling in regional LGs. Plans from the city centres seemed to perform the best against the objectives criteria overall. However, there was little other variance notable across the LGs.

This research reflects only a subset of Australian LGs, and any patterns of geographical variance across the LGs identified in the content analysis need careful interpretation given the limitations of the sampling strategy. We also caution against broader assumptions, including that the lack of a cycling plan implies a LG is not delivering other measures to provide for cycling. While cycling plans do have value in coordinating measures, the absence of a plan may not preclude individual projects, policies, or initiatives to increase participation in cycling.

By exploring key aspects of cycle plans, grounded in survey data, this research focuses on a narrow area within a broader institutional context for planning for cycling. In doing so, we identify further research areas and questions relating to transport plans for consideration. Firstly, our results indicate that there are barriers to achieving specific policy changes or fulfilling cycling advocacy aims, such as lobbying to reduce speed limits. Plans varied significantly in the degree to which they considered a diversity of cycling, and how different trip purposes, user groups, or micromobility cycles are specifically provided for. For instance, not-work based forms of cycling, such as cycling to school, may depend on the coordination of specific policy actors and settings to address any the barriers that different groups may face

when considering cycling. In our analysis, most plans did not consider or respond to these specific needs, or the policy coordination required to meet them.

Secondly, it is pertinent to consider the role of plans in developing institutional capacity to support cycling. More detailed case study research on LGs that have achieved an institutional culture towards planning for cycling may improve our understanding of the role of plans in processes of organisational change. Further research examining how LGs may internally coordinate planning, funding, and delivery of cycling infrastructure likely yields valuable insight into how the development of plans may be reoriented to achieve much greater and broader cycling participation.

Thirdly, further research could identify how the development of plans might interact with the practical process of delivering new cycling facilities and infrastructure. The relatively modest goals of cycling plans, and persistently low participation in cycling within most Australian LGs might hint at a risk that “strategic” planning through bike plans may produce successive documents at the expense of the delivery of material cycling infrastructure. If State or Federal grant funding or political support is made contingent on the existence of a contemporary bike plan, there may be a trap of cycle planning – in which repeated planning stymies action.

Lastly, while there is an established presumption about the importance of a current cycling plan, there is limited direct evidence to demonstrate the effectiveness of plans in increasing participation in cycling. Case study evidence, and longitudinal research to assess attributes of cycling plans against observed rates of cycling participation, are likely to shed new light on the potential role of bike plans in achieving effective results.

## 6. Conclusion

This paper has presented a survey of the current state of cycle plans in the LG, drawing on surveys of professionals working in the sector, and content analysis of a national sample of cycling plans. While survey evidence indicates that just over half of LGs in Australia have a current or draft cycling plan, there is immense variation in how plans are developed, the scope and objectives of plans, and the degree to which plans seek to influence practical processes and decision-making. Several findings hint at gaps between bike plans and implementation: a heavy reliance on external consultants to lead or write plans (Figure 1); substantial variation in the categories of stakeholders consulted (Figure 1) and the methods of consultation and engagement (Figures 2 and 3); a notable proportion of plans (28%) lacking difference to diversity in types or purposes of cycling; a lack of objectives related to making cycling competitive with the private vehicle (Table 6); limited reference to the integration of cycling with PT; absent or unambitious evaluation metrics (Table 7); and variation in the degree that plans are used in everyday planning.

Accordingly, further research on how LGs may build institutional capacity for planning for cycling is likely to yield the greatest benefit in improving practices of planning to materially achieve greater participation in cycling. In particular, case study research on exemplary LGs within otherwise car-centric contexts might improve broader understandings of effective cycle planning - while also providing specific insight into how measures to elevate the convenience of cycling over car travel might be more commonly incorporated into bike plans. Such institutional and organisational research would then enable a specific analysis of the roles that bike plans can play in the processes of policy change, and further inform how cycling plans can be developed to achieve the greatest possible effect on public participation in cycling.

## 7. Acknowledgements

We would like to acknowledge the School of Design and the Built Environment at Curtin University for seed funding for this research. Thanks to Corey Cullen for assisting with the data collection and desktop research. We also extend our thanks to colleagues from the transport planning profession for reviewing our survey instruments.

## 8. References

- Adam, L., Jones, T., te Brömmelstroet, M., 2020. Planning for cycling in the dispersed city: establishing a hierarchy of effectiveness of municipal cycling policies. *Transportation*. <https://doi.org/10.1007/s11116-018-9878-3>
- Babb, C., McLeod, S., Noone, C., 2022. Planning for cycling in local government: Insights from national surveys in Australia and New Zealand. *Journal of Transport and Land Use* 15, 249–270. <https://doi.org/10.5198/jtlu.2022.1970>
- Babb, C., McLeod, S., Noone, C., 2021. Surveys of Local Government Employees in Australia and New Zealand - Planning for Cycling/Bicycling within Local Governments. <https://doi.org/10.17632/SCBBBV2B8D.1>
- Bell, W., Ferretti, D., 2015. What Should Planners Know about Cycling?, in: Bonhom, J., Johnson, M. (Eds.), *Cycling Futures*. University of Adelaide Press, Adelaide, pp. 321–356.
- Chen, W., Carstensen, T.A., Wang, R., Derrible, S., Rueda, D.R., Nieuwenhuijsen, M.J., Liu, G., 2022. Historical patterns and sustainability implications of worldwide bicycle ownership and use. *Commun Earth Environ* 3, 171. <https://doi.org/10.1038/s43247-022-00497-4>
- DIRD. 2017. Local government national report 2014–15. Canberra, Australia: Department of Infrastructure and Regional Development.
- Forsyth, A., Krizek, K.J., 2010. Promoting Walking and Bicycling: Assessing the Evidence to Assist Planners. *Built Environment* 36, 429–446. <https://doi.org/10.2148/benv.36.4.429>
- IPCC, 2022. *Climate Change 2022: Mitigation of Climate Change*. Working Group III Contribution to the IPCC Sixth Assessment Report. Cambridge University Press, Cambridge.
- Johnson, M., Bonham, J., 2015. *Cycling futures*. University of Adelaide Press, Adelaide.
- Krippendorff, K., 2019. *Content Analysis: An Introduction to Its Methodology*. SAGE Publications, Inc., 2455 Teller Road, Thousand Oaks California 91320. <https://doi.org/10.4135/9781071878781>
- Leung, A., Burke, M., James, B., Brotherton, A., 2019. *Innovative Cycling Infrastructure Funding Models and their potential in Queensland*. Cities Research Institute, Griffith University, Brisbane.
- Macbeth, A.G., Boulter, R., Ryan, P.S., Land Transport NZ, 2005. *New Zealand walking and cycling strategies: best practice*. Land Transport New Zealand, Wellington, N.Z.
- McLeod, S., Babb, C., Barlow, S., 2020. How to ‘do’ a bike plan: Collating best practices to synthesise a Maturity Model of planning for cycling. *Transportation Research Interdisciplinary Perspectives* 5, 100130. <https://doi.org/10.1016/j.trip.2020.100130>
- Nello-Deakin, S., 2020. Environmental determinants of cycling: Not seeing the forest for the trees? *Journal of Transport Geography* 85, 102704. <https://doi.org/10.1016/j.jtrangeo.2020.102704>

- Neuendorf, K.A., 2017. *The Content Analysis Guidebook*. SAGE Publications, Inc, 2455 Teller Road, Thousand Oaks California 91320. <https://doi.org/10.4135/9781071802878>
- Pearson, L., Berkovic, D., Reeder, S., Gabbe, B., Beck, B., 2023a. Adults' self-reported barriers and enablers to riding a bike for transport: a systematic review. *Transport Reviews* 43, 356–384. <https://doi.org/10.1080/01441647.2022.2113570>
- Pearson, L., Gabbe, B., Reeder, S., Beck, B., 2023b. Barriers and enablers of bike riding for transport and recreational purposes in Australia. *Journal of Transport & Health* 28, 101538. <https://doi.org/10.1016/j.jth.2022.101538>
- Pucher, J., Buehler, R., 2008. Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany. *Transport Reviews* 28, 495–528. <https://doi.org/10.1080/01441640701806612>
- Pucher, J., Garrard, J., Greaves, S., 2011. Cycling down under: a comparative analysis of bicycling trends and policies in Sydney and Melbourne. *Journal of Transport Geography* 19, 332–345. <https://doi.org/10.1016/j.jtrangeo.2010.02.007>
- Vigar, G., 2017. The four knowledges of transport planning: Enacting a more communicative, trans-disciplinary policy and decision-making. *Transport Policy* 58, 39–45. <https://doi.org/10.1016/j.tranpol.2017.04.013>