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Metropolitan infrastructure, planning & institutions – a comparative world view

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This paper develops inter-relationships between planning 'culture', influential institutions and on-the-ground infrastructure-related outcomes in cities. The paper begins with a discussion of general trends across planning cultures and planning rhetoric, alongside tangible drivers of change in city infrastructure. Industry cultures, and the lines of discussion they produce in various locations, are seemingly influenced by person-to-person interaction as much as actual planning *documentation* or empirical evidence. We then develop a series of 'reference cities', which are clustered and cross-analysed primarily according to population scale and growth, and transport mode shares. Further intriguing comparison begins to emerge when attributes such as rail system scale are considered. Five different categories of city are ultimately developed – based on metropolitan population scaling. The paper then re-emphasises leading influences on urban policy and infrastructure outcomes (some are well-known, but others are sometimes either hidden from discussion or treated casually). Initially this involves detailing 'cultures' of planning on a linguistic or super-regional basis. It then involves qualitative inquiry into the drivers and priorities of a selection of prominent institutional exemplars in order to allow us clearer reflection on how these influencers might facilitate progress, or otherwise, on issues like smart growth and sustainable infrastructure development. Findings emphasise the idea that planning and infrastructure policy formulation and research should emerge beyond the current tendency for ad hoc and incoherent sources of influence. It should increasingly come from a stronger empirical base – in order to improve the implementation of advanced land use/transport infrastructure concepts in cities facing a globalised world of policy challenges.

Keywords: metropolitan planning; infrastructure; rail networks; comparative planning

1. Introduction – global change and local factors

Major cities around the world face daunting challenges to continue economic and social development through the instruments of planning policy and infrastructure enhancement. Researchers in the urban disciplines likewise face a need to improve the relevance and impact of their research endeavours.

Cities tended to have been reasonably isolated from each other during much of the span of human history (Mumford 2006). This isolationist dynamic played-out through (or because of) the *diversity* of languages, cultures and systems of government at any given stage of human history. Equally, substantial differences in cities were observable due to variations in: climate; localised topography; technology and economics; and ultimately the combined impacts of these factors on the ability to sustain populations at various scales (Mumford 2006; Marshall 2009; Hall 2010). Today, we talk of a globalising influence based around: a breaking-down of distances through better transport; ever-greater international trade; an increased ability to communicate through twentieth and twenty-first-century technologies; and increased person-to-person interaction as a result of these factors, and others such as migration and tourism (see Montgomery 2007).

The spillover of these influences into systems of metropolitan governance and urban research are less clear-cut. And a growing body of critical literature queries the impact of globalisation on planning cultures, policy and investment decisions for city infrastructure (see Gleeson and Low 2000; Landry 2006; and multi-author volumes edited by Jenks and Dempsey 2005 or Leary and McCarthy 2013).

Another important body of literature has arisen to dissect the dynamic of *suburbanisation* – which is often seen as a problematic homogenising process arising

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from a mixture of globalisation and the planning, infrastructure and real estate development techniques favoured during the latter half of the twentieth century in North America, Australia and the UK to some degree (see Beauregard 2006; Fotsch 2007; and journalistic offerings such as Owen 2009 and Flint 2006). Continental European cities, in contrast to their counterparts in the Anglosphere (comprising North America, Australasia, the UK and perhaps India), have tended to adopt a more transit-centric, compact and less suburbanised planning approach. This point of difference is reflected across actual cityscapes, transport usage outcomes or infrastructure investment dynamics (see Cervero 1998; City of Munich 2005; GLA 2010) as much as it is reflected in academic literature or theory (see Knoflacher 1996).

In this paper we accept the trend for greater globalisation and its myriad influences, but focus onto the possibility of productive cross-pollination of research, policy and infrastructure thinking across different countries, cities and cultures. Recent research literature has begun to describe the 'policy learning' that planners and other stakeholders in major cities promote or engage-in (Burdett *et al.* 2011; Hansen 2011; Stead 2012; Leary and McCarthy 2013; Pojani and Stead 2013; Taylor 2013). But 'learning' is ultimately seen in this literature as a somewhat haphazard thing. What lessons are learned (in reality) … ? Why do some cities compare themselves to certain comparator locations, but not others … ? Why do certain cities possess status as important sources of 'policy leadership' while other cities do not … ?

Portland, for example, has become highly prominent as a source of 'policy ideas' in infrastructure and planning (see Taylor 2013), to a point where enthusiastic policy promoters sometimes lose track of the *rationale* for a Portland focus. Tokyo, by contrast, is highly successful on many metrics as the world's largest fully developed city – but planners or infrastructure specialists in the USA, Europe or Australia seem reluctant to draw comparison or policy learning from the Japanese capital. This may be partly sensible (due to real and tangible differences), but partly also an outcome of *cultural distance* plain and simple.

Scandinavian and Dutch cities are rightly lauded for their sustainable movement outcomes (see Cervero 1998; Stead 2012), but are often much smaller in terms of population and geographic size, when placed against the scale of cities in which their enthusiastic foreign supporters live, work and research. The stable populations of European cities also contrast jarringly with the typical Australian, US or Asian experience of ongoing population growth. Zurich, for example, has become a by-word for quality transit network integration in Australian planning cultures, due perhaps to enthusiastic and detailed proselytising by the late Paul Mees (see Mees 2010 in particular). But Zurich is ultimately much smaller and *not comparable* to Melbourne or Sydney, for example, in population terms.

Another recent strand of 'comparison' has emerged in the world of transit-oriented development and its body of planning and policy literature. But the mainstream transit oriented development (TOD) literature is highly US-centric (see Dittmar and Ohland 2004; TCRP 2004; and perhaps Cervero 1998). This creates interesting dynamics when a planning culture such as the Netherlands begins to engage with the largely well-written and accessible US body of literature and knowledge (see Stead 2012 for discussion). Dutch cities are, from the outset, usually much more sustainable, compact, dense and transit-oriented than any US comparator or locational TOD case study. Is it possible that *accessibility of literature* and knowledge is the primary driver of 'TOD' discussion by Dutch planners and infrastructure stakeholders? … even in the absence of direct comparability or obvious relevance for local policy 'improvement'. Pojani and Stead (2013) have suggested exactly this, as well identifying a Dutch predilection for comparative TOD-themed planning discussion as an end in itself.

Australian planners and planning sub-cultures have a tendency to look towards the USA for inspiration, while adopting studious agnosticism towards infrastructure or decision-making lessons from Europe ('too old') or Asia ('too dense'). But on any rational comparison, Australian cities are substantively more transit-oriented than *most* of their US equivalents – exhibiting stronger transit mode shares and larger rail networks (Mees 2010). Traditional and deep-rooted cultural ties to Europe are seemingly overlooked in favour of language advantages, and a more tenuous pop culture affinity with the USA – even though US cities sit on different urban policy and legal foundations (see Flint 2006 for elaboration). Similarities in population growth, or the dynamic of economic integration between Australian and Asian cities, would surely provide some level of relevance for Australian planners and decision-makers. Equally, Asian successes in mass transit network development (see Cervero and Murakami 2009; Hale 2013) should presumably hold interest for the Australian planning and infrastructure community. But there is currently little appetite in Australia for direct or indirect policy learning from Asia (for contextual discussion, see Hale 2014).

At the risk of over-indulging in meta-discussion of the issue, it seems quite possible that the very idea of 'policy learning' is largely a construct of *regionalised* planning and infrastructure cultures (see again Pojani and Stead 2013). A push for policy learning can also have ulterior motives, and is not necessarily based on structured appraisal and analysis arising from some independent or 'scientific' approach (Pojani and Stead 2013). This paper therefore attempts a step forward in the developing literature, research and science on comparative planning policy, by

developing *an evidence-based, if admittedly 'high level' set of comparisons – based on key social, economic and transport-related metrics on a city-to-city basis*.

Beyond these metrics, research then presumably needs to consider the differing roles, values, desires and therefore emphases of prominent actors in the policy discussion. Government tends to emphasise the communication, adoption and justification of their pre-existing policy positions and needs. The bureaucracy and the consulting sector tend to focus on supporting those positions through paid policy and technical work. Academics have a mandate to train or retrain emerging technicians, and to engage in research for the purposes of 'new knowledge' or skills development beyond the status quo (whether in technical or policy terms, or as an overlap of both). Academics occasionally undertake small work packages in a consulting capacity (usually for technical support to existing government-endorsed programs or exercises), while consultants are very occasionally drawn into the realm of 'new knowledge' research. But we recognise that they mainly focus on their primary occupations ('new knowledge' for academics, and 'technical support for existing programs' in the case of consultants). So the rate of transfer between 'new knowledge' into actual programs and policies seems likely to be always patchy and indirect. This disconnect appears clear even before any query around the overall *quality and relevance* of research endeavour on urban infrastructure and policy undertaken by universities and academics.

1.1. Summary of research intent and process

In the spirit of 'new knowledge enquiry' and policy relevance, this paper therefore attempts a move beyond the status quo – by accessing, mobilising and comparing infrastructure, economic and demographic contexts on a transnational, multi-city basis. We attempt to establish these comparisons on a firmer quantitative and qualitative footing (as per earlier efforts such as Burdett *et al*. 2011). From that base we then further develop discussion and dissection of localised planning *cultures*. We then mobilise a further round of qualitative analysis and discussion according to the influence and motivations of *prominent institutional exemplars*. The influences and biases of these institutions could potentially become problematic if their nature and motivations remained submerged or un-revealed (Hansen 2011). But through open observation and 'recognising them for what they are' – the currents of influence can hopefully be better understood and managed.

Section 2 adopts an 'infrastructure outcomes' focus, by developing and clarifying key metrics at a metropolitan scale, and mobilising those through cross-comparison of target locations. The comparative element hopefully offers further opportunity for reflection and inter-cultural learning. Section 3 further develops the 'planning cultures' concept (as initially developed by other researchers) and extends this through introducing some categorisation of 'transport posture', and mass transit business approach, alongside basics such as language. Section 4 develops an appraisal of the role of institutions, supporting further reflection on the manner in which the two key elements discussed above (infrastructure outcomes and planning culture) are influenced. This is undertaken through a documentary review, then a researcher's appraisal based around structured identification of organisational 'type', the roles of these major organisations and the nature of their influence.

Our findings suggest a new opportunity for research that elevates and refines the role of 'international urban policy learning' towards supporting the sustainable growth and development of major cities into the twenty-first century. This will likely unfold initially through a refinement of the selection of policy reference cases – for greater relevance and impact in knowledge transfer situations and the search for up-to-date infrastructure and planning ideas.

2. Comparing metropolitan infrastructure across cities

Population is a first and obvious point of comparison, if we are looking to conduct research across the policy approaches and the successes or failures, relative to task, of *different* cities internationally. But within this, we face a choice between counting only urban populations or looking at a regional definition. There is also a clear need to engage with population *change*. From an econo-demographic perspective, natural interest lies in economic performance by gross regional product (GRP). Beyond that, we should presumably engage with basic metrics concerning transport usage and performance – particularly the market penetration of mass transit, but also a sense of existing transit infrastructure stock. This is a very basic and limited set of metrics, but it allows first-cut comparisons to be made, and opens-up opportunities for qualitative nuance and meaningful discussion in a 'policy learning' research scenario. In the infographics listed here under Section 2, this research is developed with a selection of major world cities, broken into groupings based initially on metropolitan population scale. We can then use these as base to reflect on the degree to which transit usage or perhaps economic conditions render these clusters either comparable or non-comparable. These tabulations may also assist policy professionals in orienting themselves to appropriate sources of reference information for policy discussion. Is Portland a worthy reference point for Melbourne's infrastructure planners … ? Or does it better suit a smaller city or region such as Southeast Queensland? Can the Randstad compare itself to a radically different

location like Hong Kong on any realistic basis … ? And how (or where) does a developing mega-city such as Delhi orient its policy learning initiatives?

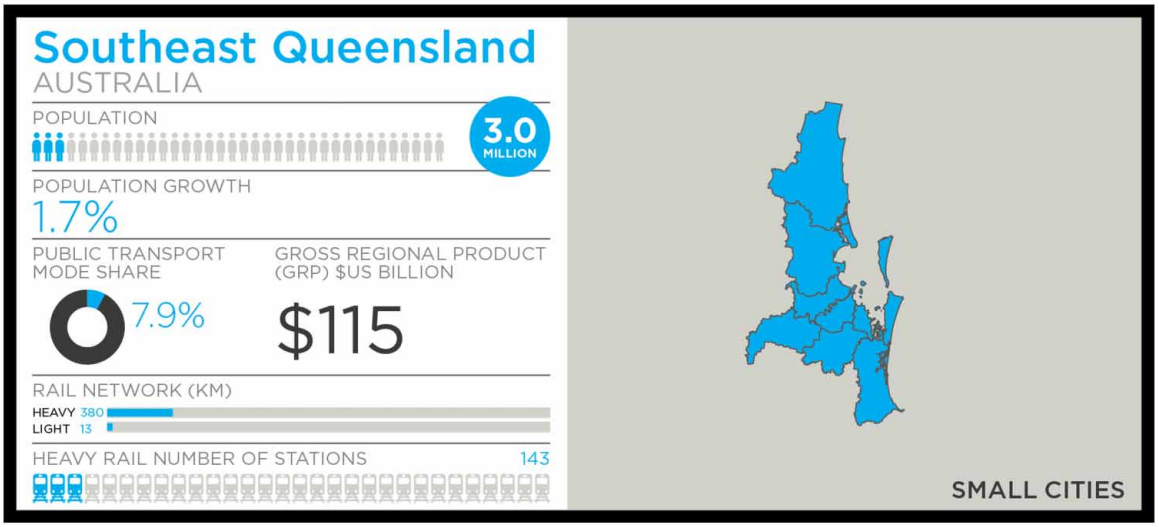
Figures presented in the infographics that follow are essentially researcher's best estimates based on a variety of cross-checked data sources. Every effort has been made to maintain definitional consistency in geography and population – but complexities are inevitable. Readers should treat the figures as broadly indicative, but for illustrative purposes only.

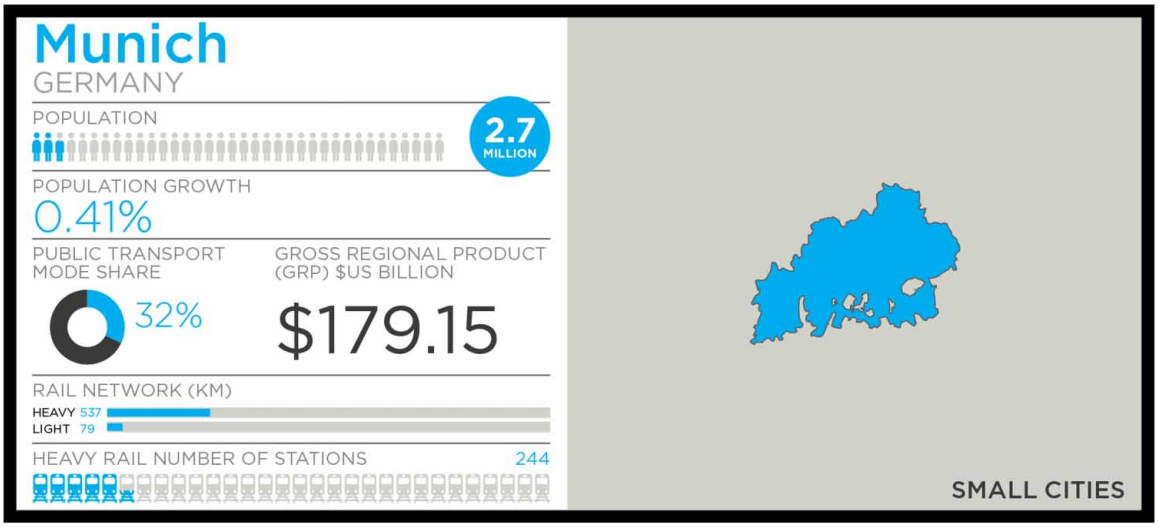
2.1. *Small-to-mid-sized cities*

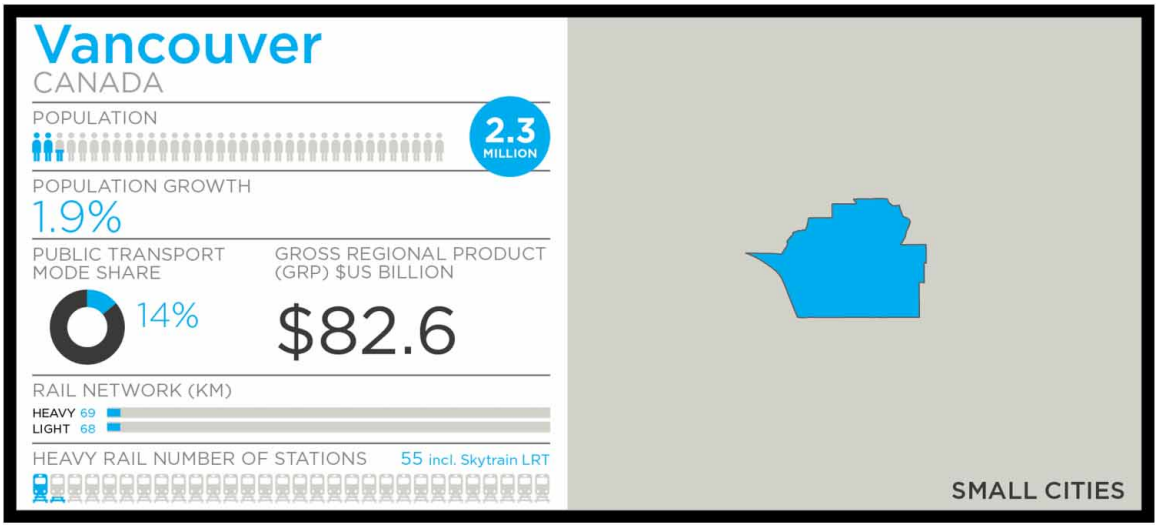
The first grouping below develops a listing of metropolitan areas in a (roughly) one to three million 'small-to-mid-sized' city category. Among this category, we encounter, firstly, a reasonably diverse spread of recent population growth. This presumably affects the relevance of 'policy learning' somewhat, between a group of cities that is otherwise comparable in absolute population numbers. Regional economic indicators tend to underpin the general comparability of this selection of cities. More dramatic angles of comparison emerge between the respective public transport mode share figures. Perth and Southeast Queensland presumably find 'learning' relevance in the higher level of transport attainment secured in European or even the North American exemplars. Whilst the North American cities are presumably interested in learning about transit performance from their European counterparts. The emerging planning literature on 'comparative policy' has tended to emphasise social, economic, cultural, legal and practice-based attributes, but has so far possibly come short of including built infrastructure attributes (such as transit network length) in that discussion (see Taylor 2013). The role of rail capital stock is therefore a focus of this analysis. But Southeast Queensland immediately introduces problems of logic and expectation in this line of enquiry – given the low level of transit usage generated from its reasonably expansive rail network. What do we make of this? What can other cities learn from this outcome? Rail capital stock emerges here as a somewhat unreliable causal indicator of actual transit usage (let alone planning culture). Stepping back though, a certain logic does seem to emerge – and this particular grouping of cities may be able to engage in a meaningful and useful process of learning from each other's strengths, weaknesses and policy ideas.

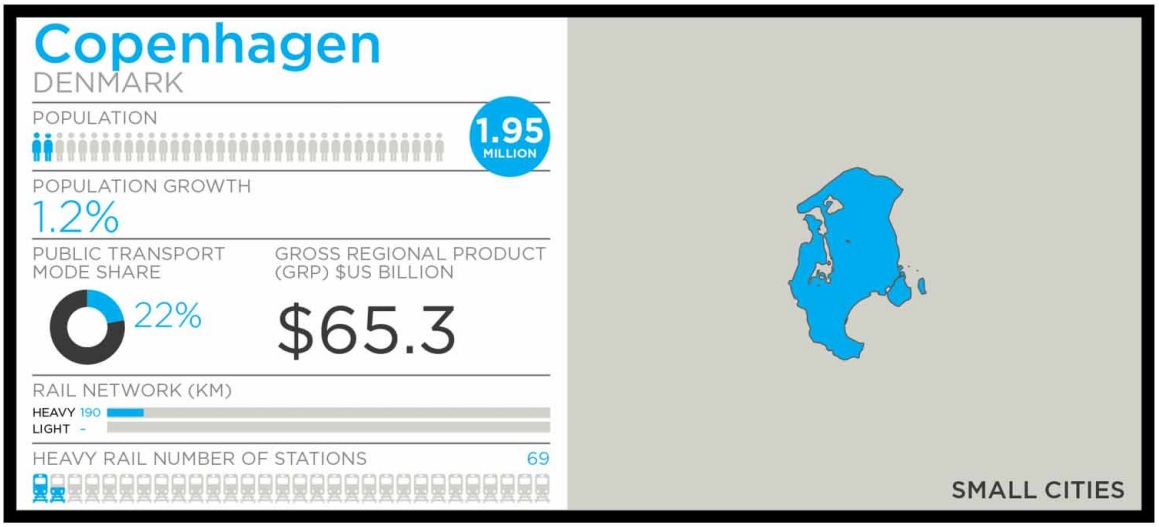
2.2. *Mid-sized cities*

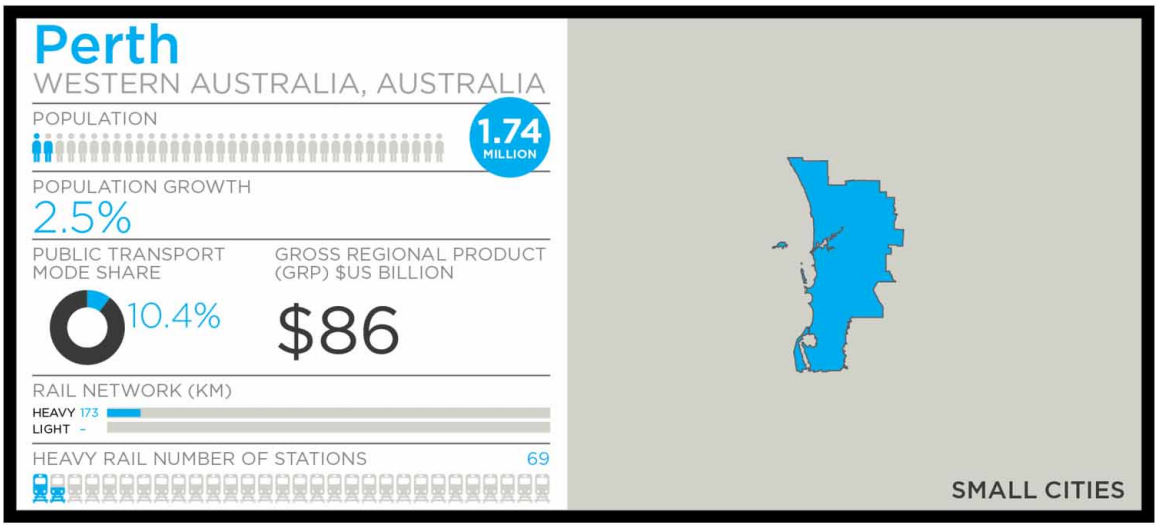
Group two develops a listing of determinedly 'mid-sized' cities at metropolitan populations of roughly three to six million. Singapore faces comparability issues here because of its very high rate of population growth relative to the others, while Hamburg's low growth makes it unique among this set. Economic clout is roughly comparable for the most part across the chosen cities. Sydney and Melbourne again prove that rail capital stock by network length is no reliable indicator of actual transit usage. They may be well placed in considering the strategies involved in what appears at face value to be better 'asset utilisation' from a smaller network scale in certain of the comparator cities listed in this same selection. Again, this grouping of cities seems on the face of it to be eminently workable as a 'knowledge cluster' between whom info, policy ideas and research could be constructively shared for mutual benefit. Some of these cities may also look to the next category of cities in group three because of the lessons available where population has already reached a similar level to future projections based on current rates of growth.

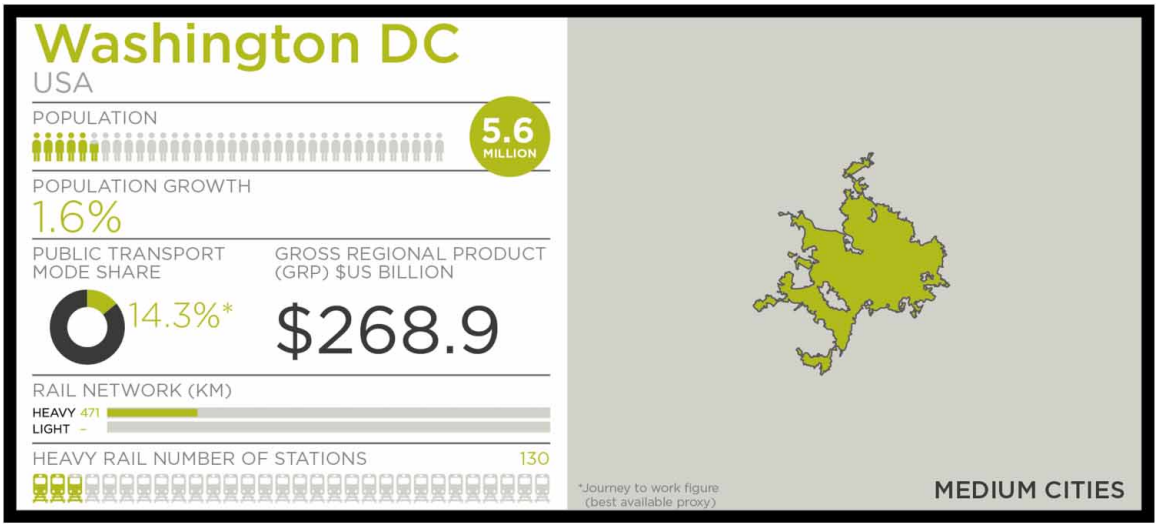


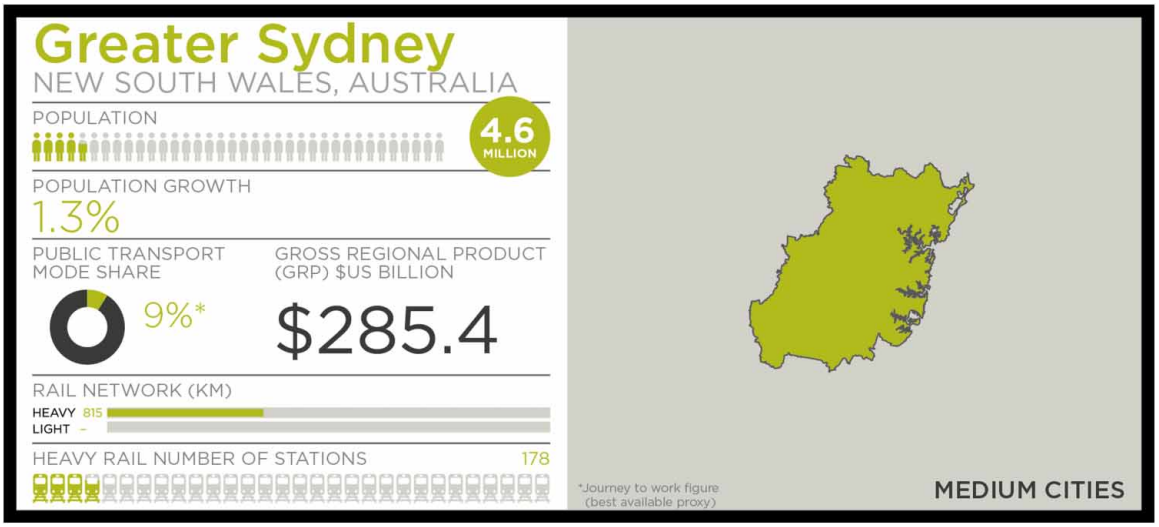


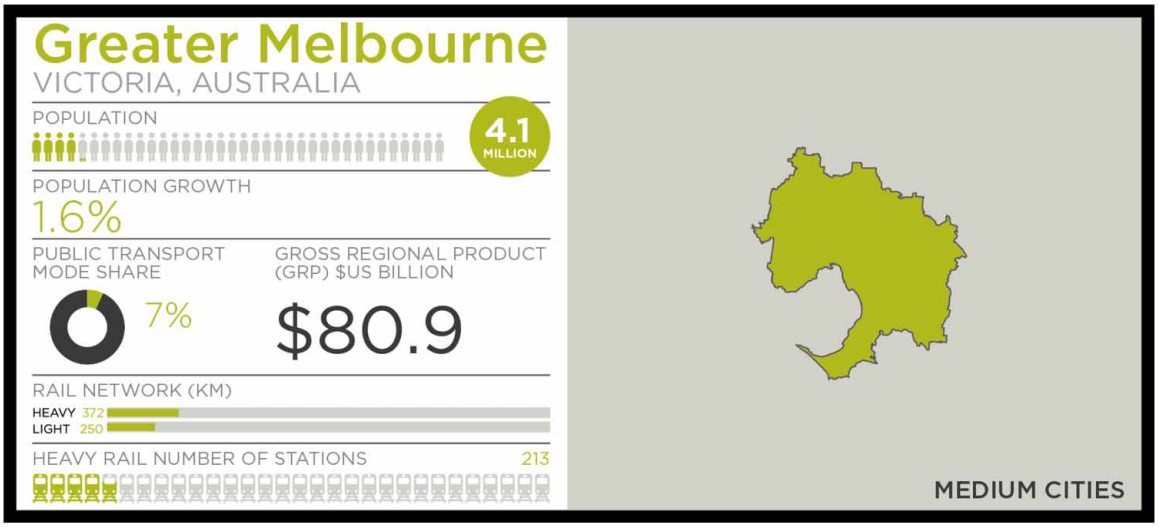










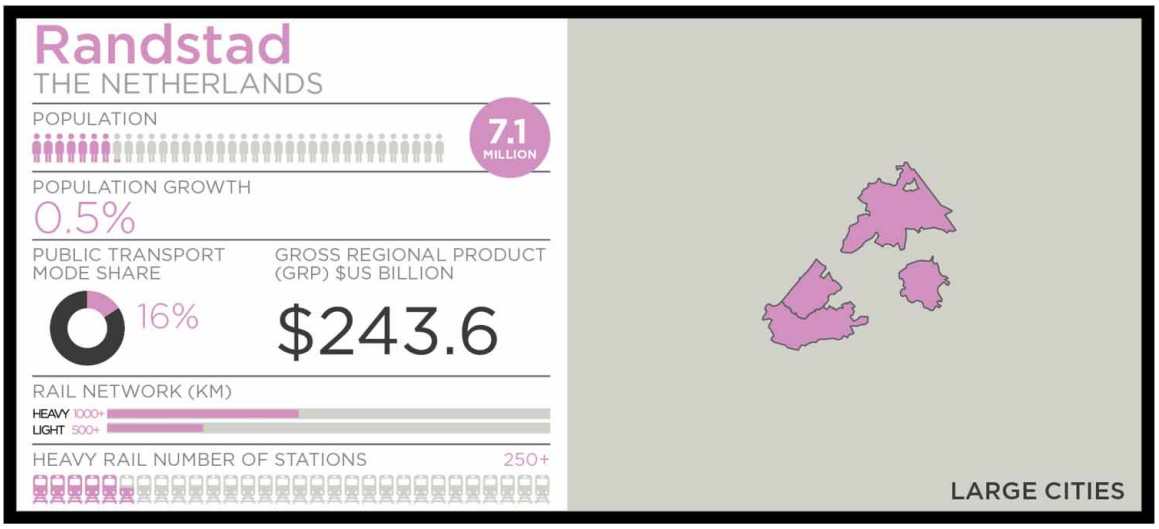


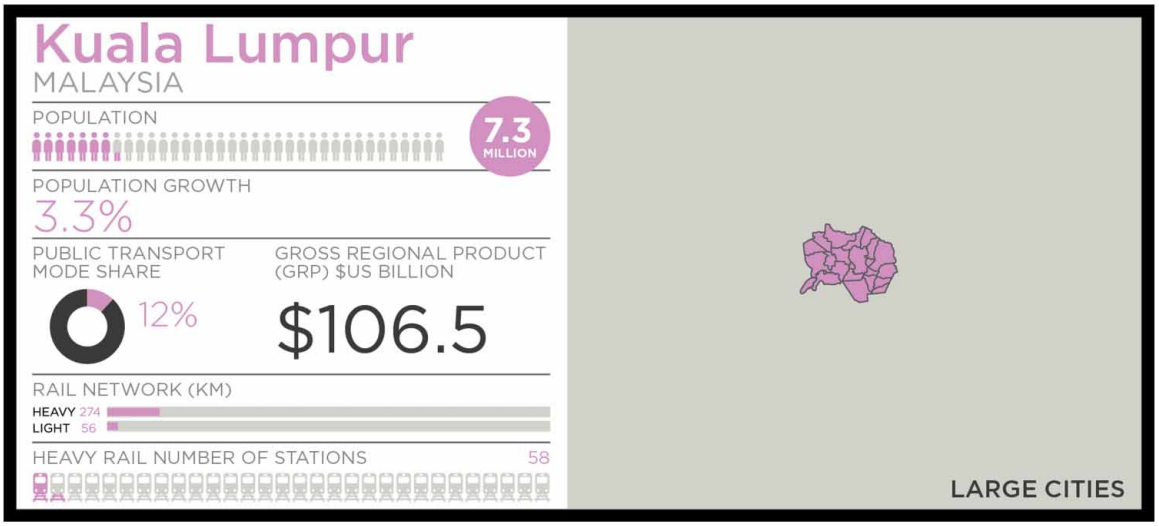
2.3. Large cities

Group three looks at a cluster of what might be termed 'large' cities at a metropolitan population of between 6 and 10 million. Kuala Lumpur would struggle to find colleagues in this same grouping who could understand their current population growth trajectory – although Hong Kong and the San Francisco (SF) Bay Area may have recent experience of high growth to communicate. London and the SF Bay Area stand out on economic development grounds – significantly surpassing the performance of these otherwise reasonably wealthy peer cities. This points to the potential for useful policy learning among the peer groupings according to success in economic development, transformation and diversification. London leads the way for many other cities in terms of public transport sustainability (via transit mode share), but even London can learn (presumably) from the outlier performance of Hong Kong (HK) on this metric. HK and London also potentially explain to other cities the importance and opportunity of an *intensive* usage of the mass transit capital base – with neither city exhibiting a particularly large rail network given their population or ridership successes.

2.4. Super cities

Group four looks at a cluster of what might be termed 'super' cities with between 10 million and 20 million residents. Other than Los Angeles, they are for the most part currently stable in terms of population growth (perhaps thankfully). Levels of economic development seem roughly comparable. Most, other than Los Angeles, are heavily oriented to public transport usage. Most also

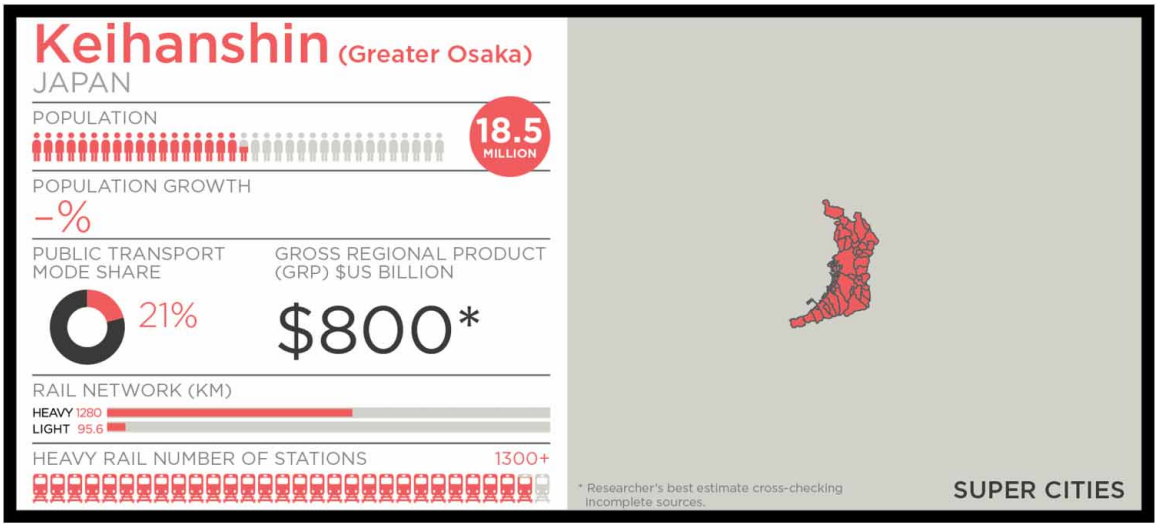


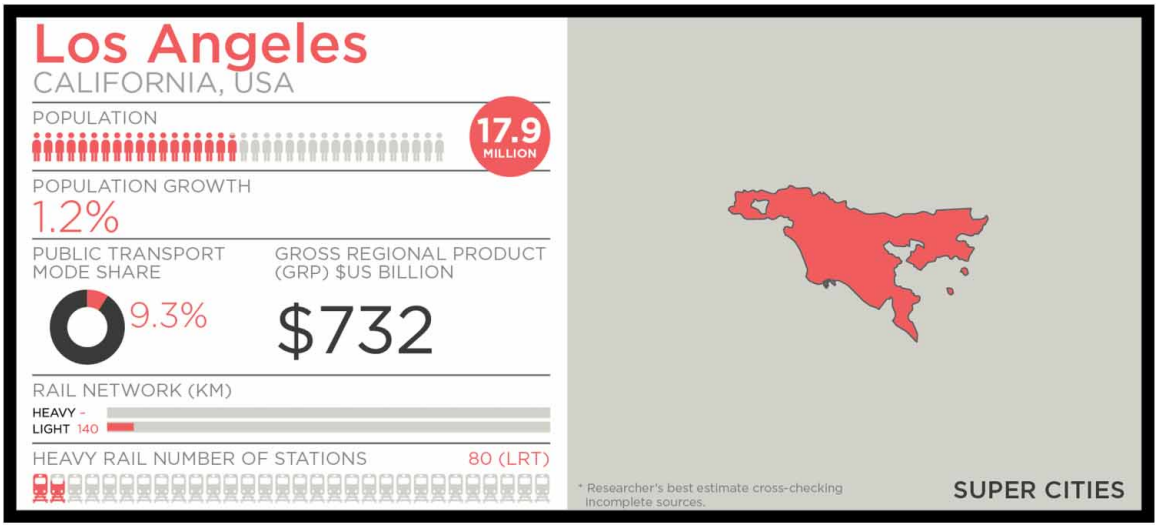


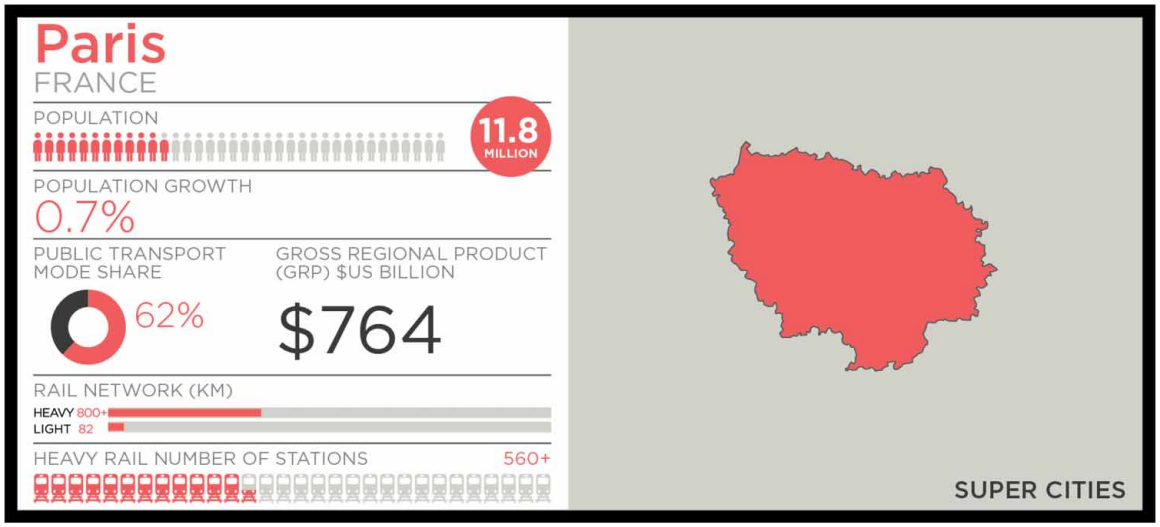
have a strong existing capital stock for mass transit, although variations are seen in the emphasis between heavy and light rail. Los Angeles can presumably learn from the *mixture* of light and heavy rail seen in the Rhein-Ruhr, given LA's current light rail transit (LRT) oriented focus in infrastructure development while the other cities can presumably compare notes on moving large numbers of people with highly developed heavy rail transit. These cities may also perhaps look to compare notes on challenging issues such as social infrastructure, public open space, urban greening and parkland assets.

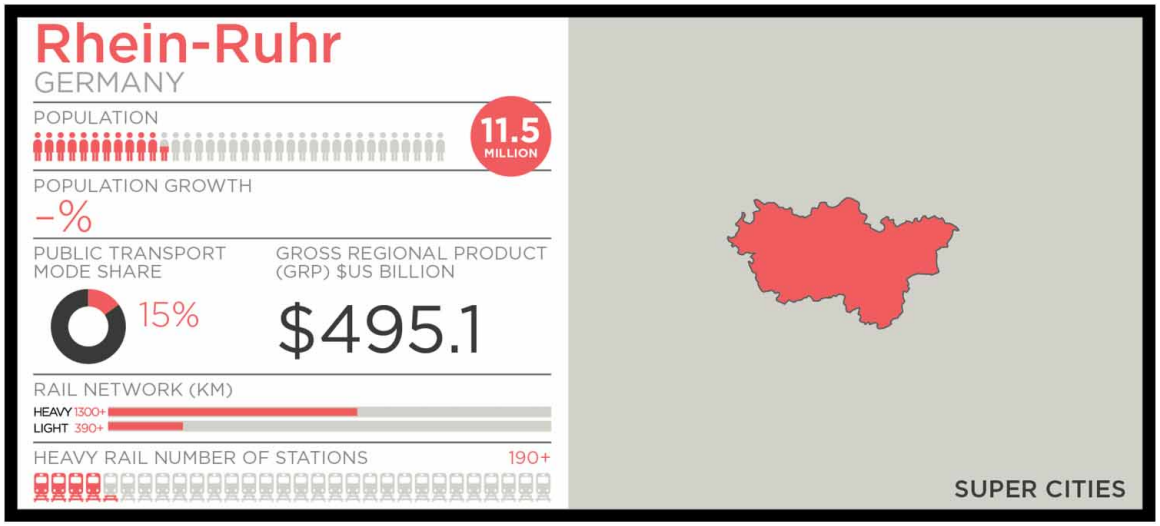
2.5. Mega cities

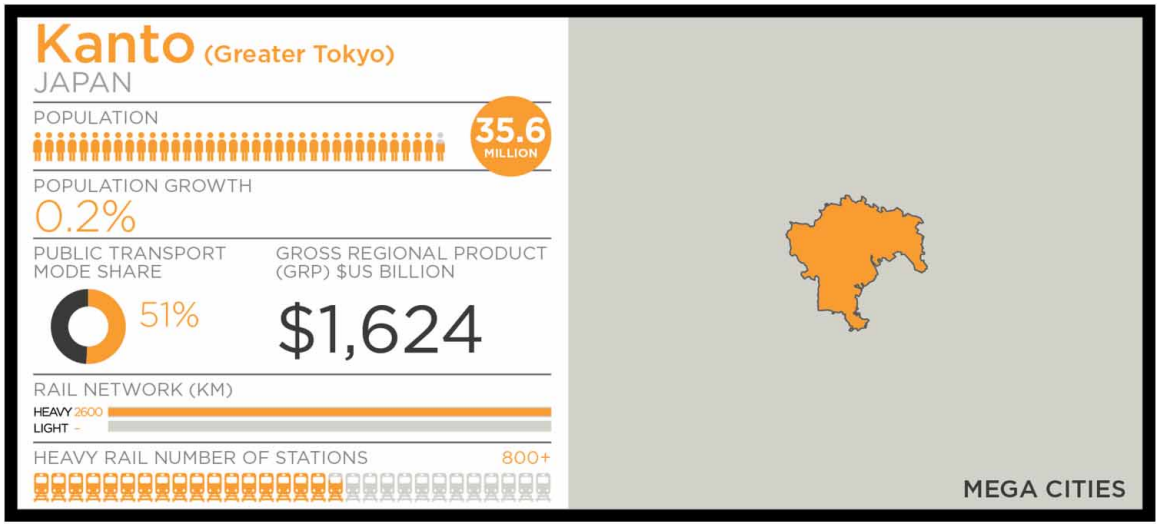
The final cluster looks at 'mega' cities with populations in excess of 20 million. These cities, undoubtedly, face a uniquely challenging task. Although Delhi and Mumbai are faced with major population growth challenges, the other cities in the listing have dealt with that same challenge in times recently passed. The very experience of population *growth stabilisation* may form an interesting discussion point among this cluster. Tokyo (Kanto) and New York demonstrate the importance of high levels of economic development when large populations are served. But equally, there could be cause for meaningful policy discussion among all of this group on questions of economic inequality and access to opportunity (and perhaps the role that infrastructure decisions play in this). This set of cities also undoubtedly has interesting discussion opportunities around handling huge daily mass transit flows and the ongoing renewal and maintenance of a very large rail capital stock. Polycentric

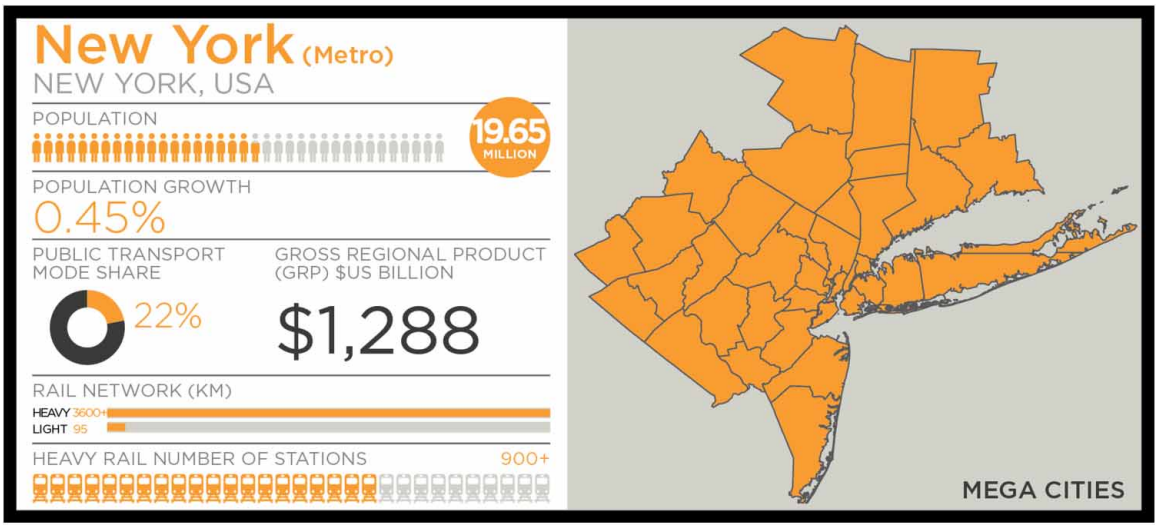


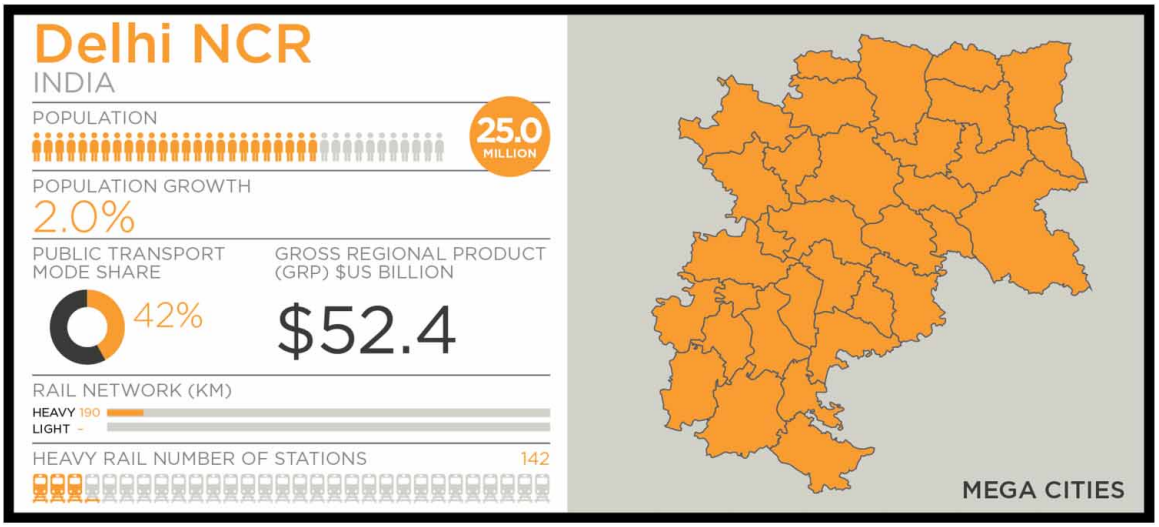


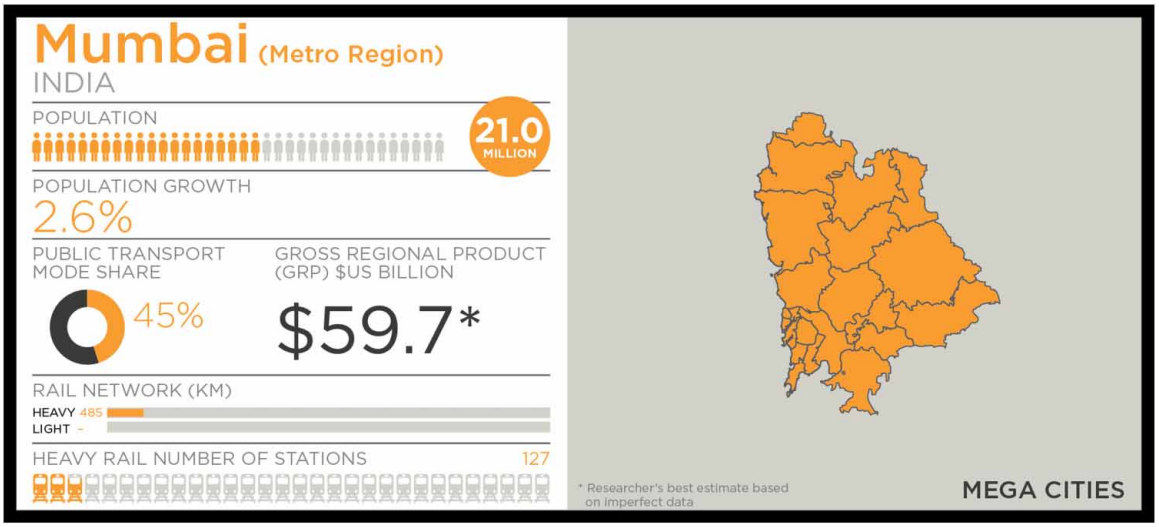












planning is presumably another topic of interest among all member cities of this grouping.

3. International planning and policy 'sub-cultures'

Having reviewed and developed some infrastructure-related metrics and comparisons, the research focus now shifts towards 'inputs'. A growing body of literature engages with planning 'sub-cultures' based on linguistic, cultural, economic, legal and geographic attributes (see Stead 2012; Taylor 2013). Even within Europe, Taylor paraphrases the idea of distinct ' … British, Napoleonic, Germanic, Nordic and East European … ' planning cultures (Taylor 2013, 686). This starting point is adapted from and elaborated below, with the addition of an 'East Asian' category – encompassing the somewhat similar integrated rail/property infrastructure and city planning approach pursued in Japan, Singapore and Hong Kong (see Cervero and Murakami 2009). The discussion and analytical themes provided by these 2–3 key sources, plus Cervero (1998) and Mees (2010), has then been synthesised into the tabular format shown in Table 1, which allows a researcher's appraisal (based on around eight years of intensive fieldwork in these super-regions) across five major issues (transport posture, the role of government in planning, transit business approach, language and academic literature, plus some broader comments with a land use planning flavour). It is suggested that Table 1 and this discussion more broadly are positioned to be deliberately provocative, as an early step in a longer term process of research and discussion among interested parties.

The planning and infrastructure cultures of the UK, North America, Australia and even India have been grouped into a crude 'post-Anglo' category, which is bound to rouse controversy in each of those locations, prior to a dousing of the passions through recognition of certain inherent similarities across language, legal tradition (to some degree), strong social or status-based preferences for the car, and consistently mediocre outcomes in rail system development and integrated planning across *the late twentieth century particularly* when compared to East Asian or European exemplars. The UK is contended to be equally 'post-colonial' in having *lost* dominion over the former colonies listed in this 'planning culture category', and through being influenced in turn by the cultures and peoples of these former colonies. India no doubt deserves its own category of planning and infrastructure culture – but as suggested elsewhere in this paper and in the literature it is inspired by, it is believed that the very act of making comparisons between locations and jurisdictions is healthy and useful of itself (in complete recognition that there are at least as many differences as similarities among any comparator set). The intrigue in comparison between the planning cultures and infrastructure trajectories of India and its fellow post-Anglo societies lies precisely in this inter-play between similarity and difference. Equally, from personal experience the lead author is a sceptic of the 'South-South' exchanges which form a major component of current infrastructure learning and exchange in India and elsewhere in the developing world. It is felt that successful East Asian planning cultures (for example) took place in a developing world context only a generation or so ago – but that the focus of policy and infrastructure practice in Japan, Singapore and elsewhere was essentially a surpassing of 'Western' ideas and outcomes.

This author finds the distinction between 'germanic' and 'nordic' planning cultures (as proposed in Taylor 2013) somewhat arbitrary and unclear, although

Table 1. Trans-national planning and infrastructure cultures a qualitative review.

Tradition	Transport posture	Role of government in planning	Mass transit economics	Language of planning ideas	Comments and land-use issues
Post-Anglo	Rail-agnostic, pro-car	'Political'/populist. Stakeholder engagement undertaken immaturely. Consultant-centric. Legalistic	Anti-commercial. Subsidy-focused. Transit as social service	Defines academic literature. Largely English only. India – English second	Set the post-WWII pro-car trend. Sprawl popular. Land use/ transport integration seen as 'non-mainstream' or 'new'. Remnants of garden city ideas returning to currency
East Asian	Pro-rail, car-agnostic	Paternal/proto-democratic. Government decides	Totally commercial	English second. Some integration into world academic literature	Perhaps setting the twenty-first century trend at higher population scales. Very successful transport systems. Urban design weaknesses perhaps
Germanic	'Balanced' approach. Rail important	Paternal/ rationalist	State-owned enterprises. Small subsidy. Focus on ridership development	English second. Some integration into world academic literature	Very successful at land use integration, infrastructure development and design. Another twenty-first century trend-setter
Nordic	'Balanced'	Paternal, communitarian consensus, increasingly populist(?)	Largely commercially agnostic. Moderate subsidy.	English second. Well-integrated with world academic literature	Largely successful. Decent design approaches. Cities mostly smaller – pop growth moderate at most
Napoleonic	'Balanced', but rail as state intervention opportunity	Paternal, corporatist	Partially commercialised – emphasis on state-owned enterprises	French only. Largely separate literature and planning/infra culture. 'Corporate colonialism' through international state-owned infra enterprises	Regional variations & diversity converging. Increasing deployment of rail-centric integrated planning in Paris and beyond as statist tool. Mostly strong outcomes. Paris, Strasbourg, Lyon, etc, as twenty-first century showpieces

differences in commercial focus are identifiable and the distinction is maintained in Table 1. Which of these two categories the Netherlands rightly belongs to is left to reader's judgement. The concept of a 'Napoleonic' approach to infrastructure and cities seems decidedly coherent – having played itself out in historic exercises like the nineteenth-century planning of Paris, as well as in statist infrastructure programs for second-tier French cities, through inter-city high-speed connections, and indeed in the world-roving posture of French state-owned infrastructure services conglomerates.

These various planning cultures also inherently embody varied notions of resource availability and scarcity across aspects such as land, intensity of settlement, housing type, private and public wealth, transport, water resources, public open space and other aspects.

Overall, the prevailing literature on comparative planning and cross-cultural learning has struggled to

incorporate *hard infrastructure* into its list of key issues under 'planning culture' – preferring instead to focus on economics/law/culture and spatial approaches respectively (see Taylor 2013). This can perhaps be partially remedied through integrating the discussion in Section 2 of this paper. The act of categorisation in Table 1 seems to provide useful initial perspective to the distinct planning approaches and core issues in each culture – and further detail can now be engaged through the institutional review offered in Section 4.

4. Representative institutions and their influence

> What is clear … is that policy transfer is complex and certainly not merely a matter of copying or emulation: policy transfer also involves processes of learning and adaptation. (Stead 2012, 23)

The idea that institutions play a highly influential, perhaps a decisive role in planning and infrastructure trajectories, has been outlined initially by Stead (2012). Taylor (2013, 689) arrived at the formulation that 'culture' is ultimately sometimes too vague to be useful, whereas a focus on *institutions* delivers real explanatory power, as they are the place where ' … norms and traditions are embedded'. Taylor suggests that institutions provide better insight into the core question of 'stability and change' with respect to planning.

> … institutions are seen as causal variables that structure the opportunities and constraints faced by individual and collective actors and therefore favour some outcomes or patterns of activity over others. (Taylor 2013, 684)

With this in mind, Table 2 provides a structured qualitative review of some major institutional exemplars drawn from across Europe, the USA, Asia and Australia. Table 2 was compiled from a review of publically available institutional information (see Section 6), and a researcher's appraisal of organisational dynamics based on long-term observation. It would appear genuinely useful to mobilise both Tables 1 and 2, and suggest (for example) that planning and infrastructure outcomes in German cities like Hamburg and the Rhein-Ruhr arises out of a specific ('Germanic') planning culture, in combination with the actions and outcomes delivered by a key institutional actor such as Deutsche Bahn (perhaps the biggest single institutional infrastructure player in Germany). It would be difficult to argue against such logic. French cities such as Paris are then presumably a combination of historic patterns, contemporary planning culture, and the infrastructure and service paradigms of major institutions (such as SNCF, Keolis, Transdev or perhaps RATP). Moreover, and perhaps more intriguingly, the Napoleonic culture of the French infrastructure service providers is now influencing planning and infrastructure outcomes in far-flung places like Melbourne (through tram and bus franchises). The service delivery of French multi-national infrastructure firms, essentially state-owned, has been noted as problematic at times in Australia and elsewhere (see Bakker 2007; Lazanas and Stone 2010). It would be a controversial, but not insupportable argument to suggest these firms are primarily imperialistic (Napoleonic) in their attitude towards host economies or cities – with the benefits and rationale of their business activities being focused on French economic interests, and their major stakeholder in the French Government. Indeed, it is simply a statement of the obvious to suggest their prime allegiance is to their shareholder, rather than to the given 'market' in which they ply their trade (see Lazanas and Stone 2010). In this sense, globalisation offers opportunities for the spread of planning ideas and processes – but that could mean a flow of *corporate* influence and interests, independent of local concerns, for better or worse. It would appear churlish to hone in on the French conglomerates as providing 'indifferent' outcomes, but equally it would be difficult to suggest the spread of French infrastructure firms has resulted in better cities or demonstrably *better transport infrastructure services* in host markets like Melbourne (see Mees 2005; Low and Astle 2009; Lazanas and Stone 2010; VAGO 2012; Hale 2013). The USA is also a strong source of planning influence and infrastructure ideas both 'culturally' and in terms of institutions. A sort of positive, if genuinely 'soft' and non-descript 'cultural power' is exerted by US academics and NGOs through the voluminous literature on TOD and 'smart growth'.

A more direct influence seems to be exerted in an ongoing fashion institutionally through US-based infrastructure planning and engineering services corporations. These companies rightly have their own motives and influencing directions – based again quite obviously on profitability and value to shareholders. Without attempting a comprehensive critique of US multi-national, multi-disciplinary conglomerates, it does appear legitimate to appraise the basic reality that they will offer 'smart growth' services where such are demanded by clients. But they are ultimately unlikely to discriminate against 'not-so-smart-growth' projects where those projects are profitable, readily available and favoured by client governments. Engineering/planning conglomerates exist for commercial purposes pure and simple. If they provide the overwhelming bulk of infrastructure-related contracting in a particular city market, they play a large role in defining progress or otherwise towards smart growth in those markets. Outcomes across Australian cities in Section 2 could be read against this backdrop. Advanced planning and infrastructure ideas and concepts such as smart growth, sustainability, better design or

Table 2. Urban infrastructure giants – A qualitative review of prominent institutional exemplars.

Organisation	Type	Role	Comments
Brisbane City Council	Large local government (1 m residents) with bus operations	Planning, infrastructure, regulatory and bus operations roles. Bus services heavily subsidy-dependent	Has not provided synergies from mutually-supportive roles and activities. Very heavily politicised decision-making for a local govt
Metro Trains Melbourne	Franchise passenger rail operator, part-owned by HK MTR	Heavily subsidised metropolitan train movements and infrastructure maintenance	Has not converted ongoing ridership growth into economies of scale. No transfer of 'rail + property' model yet
Planning Institute of Australia (PIA)	Professional institute with accreditation role. Focus on statutory planning, land use, and/or development assessment practitioners	A key role in advancing or hindering policy or practice change – due to large professional membership, and potential for advocacy	Rhetorically normative, although ultimately supportive of path dependent practices. Tends to advocate 'planning activity' rather than better planning. Struggles to support mature member's knowledge and accreditation needs into infrastructure, economics, transport, design, major projects. Weak on educational standards
Federal Transit Administration	National-level government transit department – USA	Grants and programs	Coherent competitive grants model. Influential down to city level from constrained resources. World-leading national organisational exemplar … ?
PB, AECOM, Arup, Jacobs	Technical consulting services. US-based multi-nationals	Prototypical 'one-stop shop' consultants. First port-of-call for govt-related infrastructure consultancy	Highly prominent in decades-long TOD planning efforts – US and elsewhere. Cost-for-outcome track records in integrated planning & design could be viewed as problematic. Technically proficient in *engineering*
Reconnecting America, C-TOD	NGOs	Pro-TOD advocacy and soft services groups. Informational	Tendency toward the aspirational and qualitative. Technical and policy capacity not entirely demonstrated. Inputs rather than outcomes
Deutsche Bahn	Stock market listed, majority govt-owned rail conglomerate	Main rail investor, owner, operator in lightly subsidised German markets. Some international activity	Behemoth. Good at sticking to timetables. Reasonable operational efficiency – but struggling to move into full commercialism. Late twentieth century institutional leader
NS & Prorail (Netherlands)	Govt-owned passenger rail operator & infra owner respectively	Straddles national/regional/ metropolitan rail roles. Current station renewal program very comprehensive	Reasonable exemplar of late twentieth century practice. Seems to be evolving gradually.
SNCF	Nationally owned inter-city rail conglomerate	French govt infrastructure developer and operator	Highly technically proficient. 'Rail imperialism' in France and beyond. Financing arrangements opaque. Resources provided by French govt ensure success …

(*Continued*)

Table 2. Continued.

Organisation	Type	Role	Comments
Keolis, Transdev	State-owned 'private' transport services conglomerates. Paris-based multi-nationals.	Contract service provider in controlled/subsidised transit markets. Unusual ownership models	Aggressively expansionist. Subject to recurring governance controversies. Yet to demonstrate track record of clear success in chosen markets
HK MTR	Stock market listed rail company (privatised)	Integrated rail + property model. Operates profitably in both real estate and transit. Growing international services provider	Dominates Hong Kong passenger transport movement. Technically proficient. Beneficiary of extensive policy supports (rather than cash subsidy). twenty-first century exemplar
JR companies	Stock market listed rail conglomerates (privatised)	Integrated rail + property model. Operate & build profitably (or near to) in diverse national/ regional/metro rail markets	Leading twenty-first century exemplar. Technically proficient. Beneficiary of extensive policy supports (rather than cash subsidy). Reputation for being debt-laden

Source: For research sources, see Section 6.

transit orientation cannot arise simply because a prevailing planning culture says these things are 'good'. Institutional players, inside and outside of government, would need to proactively preference and balance the market in those particular directions (see also discussion in Stead 2012, 24–26).

Dramatic contrast then becomes observable when we turn our attention to the outcomes achieved in the East Asian city infrastructure exemplars (as seen through aspects such as mode share in Section 2). Almost regardless of local 'planning culture', organisations such as the JR companies and MTR of Hong Kong are hard-wired for profitability – *based on ongoing delivery of an integrated rail/property business model*. One way or the other, they will deliver land use and transport integration outcomes, purely as a result of their business model. Issues of culture could be seen as secondary. These leading institutions in East Asian markets give life and momentum to public sector dreams of integrated city infrastructure development and sustainable transport performance. Australian cities are today largely shaped by either infrastructure services privatisation (in Melbourne) (see Mees 2005; Lazanas and Stone 2010) or the ideas it embodies in Sydney and Brisbane via a second-hand trend for 'corporatisation', and a related trend for government to 'outsource' infrastructure planning activity and policy. In this context, the aforementioned international service providers are major shapers of both policy and outcomes. This has not necessarily been to the benefit of commuters and householders in an otherwise wealthy and well-resourced society. Australian infrastructure participants generally receive contemporary 'knowledge' in a passive and second-hand fashion through avenues such as the online offerings of American think tanks. Where major institutional actors have every resource at their disposal (as with Brisbane City Council) it is noteworthy that planning and infrastructure path dependency perpetuates (refer to metrics in Section 2) – presumably due to the internal institutional dynamics of Brisbane City, in conjunction with contextualising institutions and cultures (the global planning-engineering firms, the reliance on second-hand ideas from American think tanks, and the influence of professional organisations like Planning Institute of Australia (PIA) or Engineers Australia). In Australia, key institutions such as the PIA seem to have narrowed-down their world view in recent times. PIA is struggling to project a professional development and accreditation role that sits comfortably with the need for transition to smart growth and the integration of transport with land use. A traditional Australian definition of 'planning' (the processing of development applications) prevails. PIA tends to be highly supportive and non-critical of every government plan produced. Mature professional's career needs in economics, urban design, transport and project implementation are not core foci of the institute. So PIA presumably plays a major institutionalised role in progress or otherwise towards smart growth delivery in Australia.

5. Discussion and recommendations – understanding cities, understanding future pathways

This paper engaged initially with an emerging body of academic analysis around the nature of policy 'learning' and knowledge exchange for cities and infrastructure planning professionals. In line with this emerging

literature, we suggest that learning and exchange of information is often ad hoc, following no particular logic or rationale other than a sense that learning and knowledge exchange are good things of themselves. Beyond that observation though, we suggest there may be substantial opportunities available if policy learning between cities and planning sub-cultures became more structured, relevant and measured.

To this end, the authors then clustered a series of major world cities according to some sense of comparability and relevance based on population scale. Within each cluster we felt a well-chosen but short list of metrics might provide researchers and professionals with a greater sense of comparability, for the purpose of effective policy learning and knowledge transfer between cities. On this basis, we included (and investigated) data for: population growth; economic development (by GRP); transport mode share; and a sense of the extent of existing transit infrastructure via the number of rail stations and the length of heavy and light rail networks (these latter metrics proving very difficult to source reliable figures for). The selection of cities for our clusters was at least partly motivated by on-the-ground familiarity of the lead author, but other less familiar locations were included where they demonstrated some level of prominence within the 'planning culture' they represent (an idea that was elaborated in greater detail in Section 3 of the paper). Overall, we recommend that the mobilisation of a small number of carefully selected metrics substantially improves productivity when compiling relevant case studies for cross-comparison and inter-city 'learning' around planning and infrastructure policy.

The analysis then looked into the idea of planning cultures, on a linguistic, regional or cultural basis. This is also in line with an emerging body of literature – reflecting a growing recognition that various cultures 'plan differently' according to a range of background factors. Again, we recommend that the basic effort expended to review the cultural tradition in which a particular city sits throws substantial light on its relevance or points-of-difference in a comparative policy learning context. Spotlighting planning cultural dynamics seems to provide a useful reminder that there are a range of motivations and drivers at play within the investment decisions and planning practices adopted or maintained in different locations.

Finally, we undertook a brief qualitative review in Section 4 of the role of major 'institutional' actors in planning and infrastructure outcomes across a selection of our comparator cities. This seems to prove worthwhile in shedding light on the practices, motivations, drivers and tendencies that sit behind different planning and infrastructure trajectories (beyond culture, population scale or infrastructure stock) (as per Pojani and Stead 2013).

On the basis of the empirical and qualitative investigation undertaken in this paper, we recommend that cities and infrastructure professionals continue developing inter-city learning, research and policy exchange. This is seen as a fruitful path towards better city infrastructure outcomes and the development of practitioner skills. Such endeavours might be better placed, however, if comparator locations are selected carefully on the basis of important reference metrics around their scale, growth dynamics, economies, transport performance and transport infrastructure base.

6. Information sources for Table 2

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www.arup.com
www.bahn.com
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www.jreast.co.jp
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www.metrotrains.com.au
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