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How to cite:

Speers, Janey and Lathlean, Judith (2015). Service user involvement in giving mental health students feedback on placement: a participatory action research study. *Nurse Education Today*, 35(9) e84-e89.

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Version: Accepted Manuscript

Link(s) to article on publisher's website:

<http://dx.doi.org/doi:10.1016/j.nedt.2015.07.004>

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Viewpoint

Developing an equitable and sustainable mobility strategy for Havana



James Warren^{a,*}, Emily Morris^b, Marcus Enoch^c, Idalmis Padilla Magdaleno^d, Zunilda Parra Arias^d, Julia Guanche^e

^a Engineering & Innovation, The Open University, Milton Keynes MK7 6AA, UK

^b Institute of the Americas, University College London, 51 Gordon Square, London WC1H 0PQ, UK

^c Transport Studies Group, School of Civil and Building Engineering, Loughborough University, Leicestershire LE11 3TU, UK

^d CIMAB – Centro de Ingeniería y Manejo Ambiental de Bahías y Costas, Carretera del Asilo s/n, Finca Tiscornia, Casablanca, Havana, Cuba

^e Grupo para el Desarrollo Integral de la Ciudad (GDIC) Calle 28 #113 entre 1 y 3, Miramar, Playa, Havana, Cuba

ARTICLE INFO

Article history:

Received 29 November 2014

Received in revised form 10 February 2015

Accepted 14 February 2015

Available online 12 March 2015

Keywords:

Transport planning stakeholders

Policy community

Future scenarios

Havana

SWOT analysis

Automobility

ABSTRACT

The particular political, economic and social conditions of the state of Cuba, in the Caribbean, have created unique possibilities for the development of a sustainable transport system in its capital city, Havana. This paper reports on the outcomes of a project to identify the possibilities and priorities for a long-term strategy for equitable and sustainable mobility for Havana. This involved almost 100 participants from Cuba and the UK in the 12 months from June 2013.

Overall, the study found a high degree of agreement amongst the transport policy community as to the three key transport issues facing Havana:

- high level of unmet demand,
- lack of available financing,
- poor state of the transport system.

Perhaps more surprisingly, it also produced a near consensus amongst the participants that any future policy should seek to increase the quality of the public transport system by:

- increasing levels of investment,
- securing efficiency savings,
- working 'smarter'.

However, it also found that this unified view is challenged by a desire for the car market to be deregulated, which would engender a very different policy approach. A strategic choice is needed now, to determine whether Havana follows a North American-style trajectory of rapid growth in car use or a less car-dependent pathway.

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Introduction

Due to its political, economic and social history, Cuba is in a unique position as regards the possibilities for the development of a sustainable transport system in its capital, Havana.

This paper reports on the outcomes of a UK-Cuban project, promoted by the Cuban government and supported by the British Embassy in Havana, to identify the possibilities and priorities for a long-term strategy for equitable and sustainable mobility for the city of Havana. 'The curious case of Cuba' sets out exactly why the case of Cuba (and by extension Havana) is so special,

the self-explanatory 'Methodology', 'Findings from the workshops' and 'Discussion' follow and finally the 'Conclusion' outlines a series of recommendations for decision-makers and practitioners in Havana and beyond.

The curious case of Cuba

Table 1 presents some selected key demographic and transport indicators for Havana and Cuba.

Cuba is a curiosity because, though only 90 miles from Miami, political differences with the United States of America (USA) since the Socialist Revolution in 1959 have meant that the island's population of 11 million people has been diplomatically and economically isolated from its erstwhile dominant trading partner since

* Corresponding author.

E-mail address: James.Warren@open.ac.uk (J. Warren).

Table 1

Selected transport indicators and key demographics for Havana and Cuba, 2013 except where indicated. Sources: ONEI (2014), DPPF (2014), EIU (2014), WHO (2013).

Characteristic	Unit	Havana	Cuba
Estimated GDP	US\$ per capita	n/a	5137
Population	no.	2,117,343	11,210,064
Population density	person/km ²	2907	102
Urbanisation	%	100	77
Area	km ²	727	110,860
Paved roads	km	29,820	3330
Road density	km/km ²	0.55	4.58
Automobile ownership	no./1000 individuals	37 (est.)	28–38
Bus fleet	no.	928	23,288
Bus density	no./1000 individuals	0.4	10.9
Bus passengers	no./day (2012)	860,000	n/a
Traffic accidents	no./year	4965	11,627
Injuries	no./year	1320	8710
Fatalities	no./year	152	708

1961. Economic support was subsequently forthcoming from the Soviet Union and its allies, which by 1989 accounted for 85% of foreign trade (Díaz-Briquets & Pérez-López, 1995). However, this too ceased with the collapse of the socialist economies of Eastern Europe from late 1989 to 1993, and especially of the Soviet Union itself in December 1991. The disappearance of the Soviet trading system deprived Cuba of foreign exchange, reducing import capacity by 75% (from 8.1 billion Cuban Pesos in 1989 to 2.0 billion Cuban Pesos in 1993). Unsurprisingly, these events led to the adoption of emergency measures, with the government tightly rationing scarce resources, including oil, resulting in reductions in the supply of public utilities, scheduled blackouts, and reduced industrial production. From 1989 to 1993, fuel imports were cut by 76%, and imports of transport equipment fell by 86%; the government also began to introduce economic reforms to increase hard-currency revenues through foreign investment and restructure the Cuban economy to become more market-based.

At the same time as cutting supplies of fuel, vehicles and spare parts, and severely curtailing investments in road, rail, and marine/port infrastructure, the Cuban authorities introduced several innovative behavioural and technological solutions (Enoch, Warren, Valdés Ríos, & Henríquez Menoyo, 2004; Jaffe & Soligo, 2000; Warren & Enoch, 2006). These included:

- Promoting walking and cycling and the use of animal traction for both agriculture and local transport, especially outside Havana.
- Reorganising bus routes and bus systems in order to maximise efficiency and increase patronage (in Havana).
- Discouraging unnecessary or unwarranted journeys as well as the proactive provision of collective taxis, organised hitch-hiking and an acceptance of higher occupancy in all modes of transport along with fuel rationing.
- Encouraging employers to provide transport to and from work for their employees in the form of enterprise buses.

Fig. 1 shows the impact of the economic crisis and the effect on public transport usage in Cuba: a slight downturn in the late 1980s (as Cuba's economic relationship with the former Soviet Union began to deteriorate) was followed by a far sharper decline that continued until 1995. By 2012, the latest year for which data are available, passenger levels remained approximately half as much as the peak in 1984–85. Moreover, there is another slight drop after 2009; this may be explained by two factors: fiscal retrenchment, including curtailment of budgets for public transport, as part of a renewed drive to restructure the economy, and a move away from

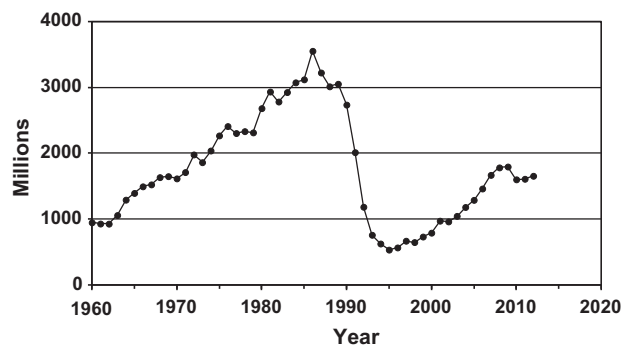


Fig. 1. Passenger transport on state-owned enterprises in Cuba (millions of passenger-km/year). Source: ONEI (2014); authors' calculations

buses to other modes, particularly taxi and *rutero* (a cheap form of taxi) – both of which have seen a marked increase in ridership over the same period (Correa, 2013). In short, the graph indicates that public transport is at a new juncture, with signs of a shift in the choice of service, arising from economic conditions and policy choices.

Transport in Havana

Havana is located on the northern coast of Cuba and is one of the island's 15 administrative provinces. In terms of urban structure, Colantonio and Potter (2006) comment that the city evolved in four stages:

1. The colonial city (1514–1898) – built by the Spanish and heavily influenced by the need to construct a defensible location.
2. The pseudo-republican city (1898–1959) – whereby rapid urban expansion was facilitated by an influx of US investment unconstrained by a land-use planning framework.
3. Revolutionary Havana (1959–1989) – government policy aimed to correct the urban–rural imbalance which saw a significant decrease in investment in the city.
4. The 'Special Period' (1990–present) – led to the government recognising that tourism could play a vital role in rekindling the vitality of the city.

Consequently, the original roads of the city still form the main thoroughfares that radially connect the eastern and western edges of the Bay of Havana to the old colonial centre and to the suburban areas towards the south, which have been supplemented by a network of orbital routes constructed more recently. Enoch et al. (2004), Winkler et al. (2007) and Gugger and Spoerl (2008) provide perhaps the most comprehensive descriptions of the transport system in Havana, albeit slightly dated, noting the demand patterns for transport and the myriad of interesting ways that it is provided there.

Administratively, the Province of the City of Havana is subdivided into 15 municipalities (Enoch et al., 2004). Within this framework, four public bodies are responsible for managing transport as follows:

- The *Ministerio del Transporte* (MITRANS) – is responsible for public transport at the national level.
- The *Departamento del Transporte* (DPT – the Havana City Transport Department) – overseeing implementation of policy and the operation of the various modes of public transport (suburban rail, bus, regional bus, educational transport, etc.).

- The *Ministerio del Interior* (the Police department) – private transport at the national level.
- The *Ministerio del Construcción* (Ministry of Construction) – sets road policy, which is delivered through the provinces, at the national level.

As for the rest of Cuba, transport policy for Havana is delivered in accordance with strategic principles established at the highest level by the *Partido Comunista de Cuba* (PCC, Cuban Communist Party). The current policy framework is set out in a widely circulated document, *Lineamientos de la Política Económica y Social del Partido y la Revolución* (Guidelines for Economic and Social Policy of the Party and the Revolution, widely referred to as the *lineamientos*), approved by the sixth PCC Congress in April 2011. The document lists 313 separate, numbered, *lineamientos* under 12 headings. Of these 269–86 (PCC, 2011a, pp. 34–5) fall into section X *Política para el Transporte* ‘Transport Policy’, but others relevant to transport are contained in Sections III on Economic Policy, V on Science and Technology, VI on Social Policy and VIII on Industrial and Energy Policy. A draft document was circulated in November 2010, and incorporates many amendments suggested during the course of thousands of meetings, at PCC branches, workplaces and community centres throughout the country in preparation for final submission to the April 2011 PCC Congress. An account of the outcome of public debates (PCC, 2011b) was published alongside the final document.

Criticisms have been made of the usefulness of the *lineamientos*, on the grounds that there is a “lack of a time dimension and a depiction of how the various changes will be implemented... [and] no clear priorities among the innumerable guidelines, no sequences of actions, and no apparent coordination of the guidelines from the standpoint of their implementation” (tr. from Ritter, 2011, p. 3). However, Morris (2014) suggests that such criticisms overlook a possible advantage of the Cuban approach, as the lack of a strict blueprint or timetable allows for an ongoing process of investigation, review and revision that might have benefits given the complexity of the transformation envisaged.

Table 2 presents those *lineamientos* that relate to urban passenger transport. Specifically, it shows the section, translated guideline, the main and subsidiary policy objective, the mechanism for achieving the guideline, and the sector most appropriately linked to the guideline. This summary highlights the wide range of objectives and policy mechanisms that relate to transport policy; the interpretation and implementation of these will determine the future of transport in Havana.

The future of transport in Havana

A number of studies that have looked at the future of transport in Havana, or in Cuba more generally, such as Warren and Enoch (2006), noted that the Cuban mobility profile followed that of other Latin American countries until the early 1990s, and speculated that this would have continued had the economic collapse not occurred. In other words, the car ownership level today might therefore be closer to those of the nearby Dominican Republic, which is 96 vehicles per thousand people (IRF, 2012) (up from 70 in 2003). Given that the rate of motorisation in Cuba has not changed over the same period (remaining at around 20–35 per thousand), such a development would obviously have had significant implications on mobility patterns, especially in Havana. Enoch et al. (2004) note the crucial role of US sanctions in determining the direction of transport policy, and suggests that things would only change significantly if this were reduced or lifted. In this event, it notes two possible pathways: one whereby car ownership was accepted or even encouraged, and one where government maintained tight controls on automobility. Interestingly, the

expectation at that time (2004), was that “the current position is not likely to last for long, and as the Cuban economy grows the issue of suppressed demand will become increasingly problematic” (p. 76). Yet at the time of writing the position in this regard remains broadly as it was. Gugger and Spoerl (2008) proposed seven key principles for transport planners in Havana to follow: keep the streets as living room for citizens, favour pedestrians, enhance public transport, minimise the effects of private traffic, channel heavy traffic onto suitable streets, promote cycling, be prepared for parking problems.

However, since the publication of the 2011 *lineamientos*, no study has really taken on board the views of a broad cross-section of local (Cuban) experts on how the future of Havana should evolve, or considered the impact of the current process of ‘updating’ the economy; it is this lack that this study sought to address.

Methodology

The data collection element comprised two workshops.

1. The first aimed to assess the current status of the transport system in Havana, and to identify its strengths and weaknesses. It was done in two phases:
 - a. A preliminary workshop in London from 20–21 June 2013 drew together 23 UK- and Latin American-based experts on transport and/or Latin America issues from universities (15), consultants (7), and non-governmental organisations (1).
 - b. A study visit by three researchers from of the Cuban Ministry of Transport to London from 1–11 November 2013, who undertook a series of meetings with experts from universities (9), consultancies (2), UK local authorities (1) and the Cuban Embassy in London (1).
2. The second looked at the present challenges of, and the future possibilities for, transport in Havana. In other words, it focused more on the opportunities and threats. It took place from 17 to 21 February 2014 in Havana and involved 60 attendees (55 from Cuba and 5 from the UK), from 19 institutions, mainly governmental and academic, including the Cuban Ministry of Transport and the British Embassy in Havana. The data from the documents collected, the presentations and the round table discussions (the findings of which were summarised on wall charts developed by mixed groups of 15–20 people into key themes during the workshops) were initially surveyed in a relatively coarse form of ‘thematic analysis’, whereby themes were developed by both direct observation of the information and lessons learnt in this research (Boyatzis, 1998).

The data analysis was then done by the authors of this study. The data were first arranged in the form of a SWOT matrix (strengths, weaknesses, opportunities and threats) (see Mintzberg, Ahlstrand, & Lampel, 1998 for an explanation of this approach); then the themes from the workshops and the current official Cuban policy as set out in the *lineamientos* were compared.

From these analyses, the study outlines conclusions concerning the match between SWOT analysis and current policy guidelines, and highlights the implications of these findings for strategic policy planning.

Findings from the workshops

This section reports the findings of the workshops in terms of the current performance of transport in Havana, and in terms of the future social challenges it faces. It then presents a series of possible actions that emerged as a result.

Table 2
Selected policy guidelines pertinent to sustainable transport and development.

Section	Guideline (tr.)	Policy objective		Mechanism	Sector
		Main	Subsidiary		
X Transport Policy	269. Continue recovery, modernization and reorganization of land and sea transport, increasing the efficiency and quality of transport services for freight and passengers, from the more rational use of resources	Economic	Cost-effectiveness	Institutional reform	Generic
	271. The investments will be repaid from earnings or, in the case of rail and port infrastructure and equipment, by savings in energy consumption and other costs	Economic	Cost-effectiveness	Revenue generation	Generic
	272. Promote the recovery programme and development of railways... according to plan and real possibilities	Economic	Cost-effectiveness	Delivery analysis	Rail
	278. Encourage the design of new state and non-state organizational forms in the transportation of passengers and cargo... in line with the characteristics of each territory	Economic	Resource efficiency	Institutional reform	Generic
	279. Organise and prioritize the attention and quality given to the technical services for the maintenance and technical availability of transportation including (vehicles) in the non-state sector	Economic	Resource efficiency	Delivery analysis	Urban passenger transport
	283. Give priority attention to the transportation of passengers... achieving stability and quality of services, ensuring sustainability and gradually increasing demand satisfaction, in line with the country's possibilities	Social	Improve user experience	Delivery analysis	Generic – passenger
	284. Implement new ways of charging for urban passenger transport to minimise evasion and diversion of revenues	Economic	Cost-effectiveness	Revenue generation	Urban passenger transport
	285. Ensure compliance with the required quality of the programme for repair and maintenance of road infrastructure... according to the real possibilities of the country	Economic	Stimulating growth	Regulation and investment	Road transport
	286. Establish a private market for buying and selling motor vehicles	Economic	Stimulating growth	Deregulation	General public
VIII Industrial and Energy Policy	251. Pay special attention to energy efficiency in the transport sector	Environmental	Resource efficiency	Regulation	Road sector
	254. Directing the educational system and the mass media to deepen the quality and comprehensiveness of the policy aimed at saving and efficient and sustainable use of energy	Environmental	Resource conservation	Social marketing	General population
V Science and Technology	133. Sustain and develop comprehensive research to protect, conserve and rehabilitate the environment and adapt environmental policy to new projections of economic and social environment. Prioritise studies aimed at tackling climate change and, in general, the country's sustainable development. Emphasise the conservation and rational use of natural resources such as soil, water, beaches, atmosphere, forests and biodiversity, and promote environmental education	Environmental	Resource conservation	Research	Natural resources
	135. Define a technological policy that contributes to reorient industrial development, and builds on existing technologies; to promote systematic modernization regarding energy efficiency, productive efficiency and environmental impact, and help to raise the technological sovereignty in strategic branches. Consider, when importing technologies, the country's ability to assimilate and meet the services required, including the production of spare parts, hurricane preparedness and standardization	Environmental	Resource conservation	Institutional reform	Industrial
VI Social Policy	159. Strengthen health promotion and prevention activities to improve lifestyle, contributing to improved population health, with inter-sectoral and community participation	Social	Quality of life	Social marketing	General population
	161. Prioritise the development and promotion of physical culture and sport in all its forms as a means to improve the quality of life, education and integrated training of citizens, by focusing attention on the mass practice of sport and physical activity	Social	Quality of life	Social marketing	General population
III Economic Policy	88. Importers of machinery and equipment to work systematically to identify national manufacturing capacities... and on that basis to promote mutually beneficial agreements between Cuban mechanical industry and foreign manufacturers... in order to promote the gradual substitution of imports, especially of spare parts by means of technology transfer, technical assistance and other facilities	Economic	Self-sufficiency	Delivery analysis	Industrial
	97. When attracting foreign investment, ensure that objectives are met, such as: access to advanced technologies, management methods..., import substitution,... and the development of new sources of employment	Economic	Stimulating growth	Delivery analysis	Industrial
	112. Promote collaboration via multilateral institutions, especially the United Nations system, to [Cuba] to channel financial resources and technology, in accordance with national development priorities	Economic	Stimulating growth	Research, collaboration	Industrial

System-specific current characteristics: strengths and weaknesses

(d) policy implementation.

The transport system of Havana was felt to be strong in terms of:

However, it was also deemed weak in terms of:

- (a) level of motorisation,
- (b) pattern of urban development,
- (c) policy coherence/framework,

- (e) level of mobility,
- (f) availability of financing,
- (g) quality of transport infrastructure,
- (h) the condition of the vehicle fleet.

Looking first at the strengths, Havana has an exceptionally low level of motorisation compared to other cities with similar populations and income levels, due to the relatively small number of private cars and high proportion of trips by public transport, as described (Enoch et al., 2004) This is recognised as a strength in terms of Havana's relative levels of congestion, pollution, road safety, and the public use of urban space.

Moreover, the city has developed slowly; low population growth rates combined with low levels of motorisation have contributed to a pattern of use of urban space that is not reliant on cars. This applies across the various types of urban development that constitute the city: the historical centre, the other municipalities in the central zone, the inner and outer suburbs. In the historical centre of the city, *La Habana Vieja*, road space is constrained and urban development is subject to strict management determined by a land-use plan. This aims to promote the use of non-motorised modes, while deliberately limiting car use to create space for pedestrians, including tourists.

As described earlier, in Cuba and particularly Havana, different authorities at both national and local levels are responsible for the various aspects of mobility planning; nevertheless the overall Cuban system of central planning provides a framework for the development of a coherent strategy for sustainable mobility.

Finally, although problems of coordination do sometimes occur and there are uncertainties concerning the interpretation and application of the *lineamientos*, the existence of an established set of principles provides at least a potential framework for maintaining consistency and coherency in implementation.

In terms of weaknesses, there is little doubt that mobility in Havana is insufficient. Given the history of emphasis on collective, rather than private, modes of urban transport, it was perhaps unsurprising that the focus of participants in the discussion was on the lack of public transport. This lack of supply is inevitably linked directly to the lack of financing from domestic sources (due to fiscal constraints and the need to keep bus fares affordable) as well as Cuba's unique disadvantages in terms of access to external funding sources; US sanctions have historically prevented multilateral development aid and financing institutions from operating in Cuba. However, in December 2014, Barack Obama and Raul Castro simultaneously announced that relations will be normalised with the establishment of embassies, and potentially the lifting of the economic blockade (BBC, 2014). In turn these issues are connected to poor quality infrastructure, manifested in inadequate bus stops, poorly maintained roadways and a lack of safe pedestrian crossings and signage. This underinvestment, coupled with an ageing and dilapidated fleet, has led to a worsening of externalities such as congestion, air quality and road safety.

Society-wide future influences: opportunities and threats

Looking to the future, the dominant influences in terms of opportunities were thought to be via:

- (i) learning from international experience,
- (j) new funding streams,
- (k) local dynamism,
- (l) emerging technologies.

Offsetting these, the threats facing the transport system were likely to be:

- (m) economic shock/slowdown,
- (n) unfettered economic growth,
- (o) breakdown in the policy process,
- (p) challenging demographic trends.

Despite the potential severity of some of the strong weaknesses identified, many participants remained positive in their overall outlook for Havana. Specifically, they recognised the importance of learning from other cities, with respect to dealing with future potential growth in levels of car ownership. The group was also well-informed about the possibility of harnessing new mechanisms to procure capital funding for transport, including those linked to international agreements on climate change, such as the Clean Fund Development Mechanism. It seems that the US will not have the power to block Cuba's access to these funds as they have done for the Washington institutions (e.g. the World Bank and Inter-American Development Bank) and other potential sources of finance.

Cuba's history of extensive public participation, including the formulation of the *lineamientos*, bodes well for using local focus groups to refine neighbourhood needs and desires with respect to transport. Less clear was how new technologies might be used to provide transport-related information to users now or reduce trip demand in the future. However, examples such as establishing shared bicycle schemes using smart cards, were cited as possible pilot projects for Havana.

Within the workshops, threats were the least discussed of the SWOT elements; however, there was clear awareness of the potential negative effects any sudden macroeconomic deceleration or acceleration. A downturn would clearly be a severe threat to any possibility for much-needed investment in the transport system. Given the Cubans' long experience of economic hardship and restricted financing, it is perhaps not surprising that they had not hitherto been focused on threats that might arise if growth were to take off, causing car ownership to rise so quickly that many of the strengths noted previously would be eroded.

The participants in the workshop were quick to recognise that externalities would quite likely increase significantly and that existing policy priorities and processes could be undermined by the population pressing for changes to the existing political and institutional framework, resulting in a less strategic and more fragmented approach to policy-making.

Havana also faces a number of interesting demographic challenges including Cuba's ageing population due to its exceptionally low birth and death rates. The age profile has been changing, particularly in the capital; many younger citizens have taken the opportunities that have arisen from US and Cuban regulatory changes, tourism and greater cultural mixing, to move abroad. There is also some movement within Havana from the central city zones outwards towards the east and south, in search of more space in which to live.

Proposed interventions by strategy type

In pulling the strands of SWOT analysis together, Mintzberg et al. (1998) propose that four strategies should be employed: actively confront (where strengths meet threats); avoid exposure (weaknesses meet threats); maximise potential (strengths meet opportunities); improve to meet potential (weaknesses meet opportunities). In Fig. 2 these strategies are set out in a matrix, together with the actions (numbered A1 to A21) that emerged from the workshop discussions. For each, the SWOT element (i–p) which it addresses is included. Selected actions are elaborated in detail below, but for brevity those which are more self-evident are not elaborated further.

Actively confront

Within the 'strengths–threats' quadrant the actions linked to c,m ('incorporate flexibility into policy programmes') and c,o

	Threats (m) economic shock/slowdown (n) unfettered economic growth (o) policy process breaks down (p) Challenging demographic trends	Opportunities (i) learning from international experience (j) new funding streams (k) local dynamism (l) emerging technologies
Strengths (a) level of motorisation (b) pattern of urban development (c) policy coherence/framework (d) policy implementation	Actively confront A1 Control level of car ownership (a, n) A2 Enforce land-use control (b, d, o) A3 Develop cross-sector collaboration (c, o) A4 Incorporate flexibility into policy programmes (c, m) A5 Design schemes facilitating access (b, p)	Maximise potential A13 Consider traffic control measures in specific neighbourhoods (a, i, j) A14 Plan transport systems in consultation with local communities (b, k) A15 Benchmark institutional approaches to delivering outcomes (c, d, i) A16 Embrace informal modes (c, i, j, l)
Weaknesses (e) level of mobility (f) availability of financing (g) quality of transport infrastructure (h) condition of vehicle fleet	Avoid exposure A6 Limit private car use (e, n) A7 Improve fuel efficiency (f, n) A8 Reduce fuel shrinkage (f, n) A9 Prioritise (human) green modes (e, g, n) A10 Enhance, protect and manage assets (e, f, g, h, m) A11 Instigate activities to reduce work-related trips (e, f, g, h, n) A12 Expand production of small-scale walk and cycle schemes (f, o)	Improve to meet potential A17 Explore pollution control for all motorised systems (h, i) A19 Implement transport systems accessible for all citizens (e, g, k) A20 Identify novel funding streams (f, j) Investigate potential of digital solutions (e, f, g, l) A21 Consider new approaches to infrastructure and vehicle maintenance (f, g, l)

Fig. 2. SWOT grid analysis of the transport situation in Havana. Source: adapted from The Open University (1995).

(‘develop cross-sector collaboration’) emerge as key elements of a potential strategy; these ensure that the policy priorities are safeguarded by enhancing channels of communication with all parties working towards a common goal. The stakeholders would need to be flexible in their policies and actions, as there would inevitably be changes in conditions (through economic shocks, for example) during the process of implementation. This analysis also highlights the need for Havana to continue to have strong land-use controls, build on existing policies that serve to keep vehicle ownership relatively low, and continue to have transport systems designed with an emphasis on raising access levels.

Avoid exposure

The ‘weaknesses–threats’ quadrant identifies actions to reduce the impact of both negative indicators. Three of the actions proposed at the workshop (A6, A7 and A8) target issues of automobilicity: by limiting cars and raising fuel-use efficiency, whilst two more (A9 and A12) seek to increase mobility through the support of ‘greener’ modes. It is important to note that a large portion of trips by Havana’s citizens are for travelling to and from work, and thus if there are ways to reduce those journeys without reducing economic growth then these should be investigated. In a similar vein to reducing fuel consumption, the enhancement and management of (vehicular and infrastructural) assets are critical to mobility. Lessons learned during the ‘Special Period’, when fuel shortages forced policymakers to find new ways to facilitate non-motorised mobility may need to be revisited, although conditions are now (2014) very different.

Maximise potential

The ‘strength–opportunities’ quadrant indicates ways in which existing strengths could be harnessed. Two of the actions are

specifically focussed on local communities/neighbourhoods. Here, existing mechanisms for local participation can be used as a means of involving local stakeholders in both the process of coming up with solutions (A13) and then implementing them with operational measures, such as speed controls and one-way systems (A14). In A16, the existing private sector/informal modes (*rutero*, *bicitaxi*, hitch-hiking) could be exploited further by digital technologies. One intervention (A15) considers the use of benchmarking internal capabilities to ensure that the policies, and how they are enacted, meet the desired outcomes.

Improve to meet potential

The ‘weaknesses–opportunities’ quadrant includes proposed actions that attempt to reduce externalities (A17) and increase access (A18), partly through accessing additional finance (A19). Meanwhile the use of digital technologies (A20) could include gathering and disseminating information for trip generation, trip distribution, mode choice and route choice. The findings could result in better services for passengers through improved information, trip reduction, and trip substitution. Some future digital hardware, route and vehicle tracking with real-time fuel use, may result in ways of working that raise overall vehicle lifetimes and result in higher operating efficiencies (as noted in A21).

Discussion

Pulling together the existing studies, findings from the workshops, and review of the *lineamientos*, it is possible to determine if any gap exists between the desired and actual direction of urban transport policy in Havana. On the basis of this analysis, we can then speculate as to how the future of transport policy might evolve in the city, depending on how each of the various society-

wide influences play out, and on the responses of the decision-makers in charge.

Desired and actual urban transport policy

Table 3 maps the actions described in the SWOT grid (Fig. 2) against the urban-transport-related *lineamientos* (Table 2); it can be seen that all of the topics covered by the *lineamientos* are addressed by the proposed actions. However, two of the actions (A13 and A20) go beyond policies suggested by the *lineamientos*; thus, the workshops identified significant omissions in the coverage of the current policy framework. Next, it is clear that of the 53 urban transport-related *lineamientos*–action intersections that we identified, the ‘textual alignment’ of workshop actions and intended goals of the *lineamientos* were explicit in only 10. Overall, 35 were positively aligned, and 15 were very positively aligned. The remaining 3 (i.e. those that were negatively aligned) all stem from *lineamiento* 286, which calls for the establishment of a private market for buying and selling motor vehicles. It is interesting to note that this *lineamiento* was not in the original draft document but was one of the 36 added in response to opinions expressed during the public debates about the *lineamientos*. According to the report on those nationwide debates (PCC, 2011b, p. 43), number 286 was inserted in response to 13,816 opinions: one of only nine *lineamientos* that received more than 10,000 opinions. The explanatory note inserted by the coordinators qualifies the guideline, however, stating that “this does not include, at this stage, an increase in sales by the state”, and “the improvement of public transport remains the priority”; and indeed another transport guideline added at the consultation stage (no. 183), which calls for priority to be given to improving all forms

of public transport, was introduced in response 16,875 opinions. The strength of opinion shows clearly that automobile ownership is an emotive topic.

In summary, there appears to be a remarkably unified view as to both the key transport-related issues facing the city and the future solutions amongst the Cuban transport policy fraternity. Not only that, but this singularity of view also largely extends to the contributors to the process that delivers the policy goals in the form of the *lineamientos*. However, the one exception to this level of agreement on policy priorities, the public demand for deregulation of the car market, and the policy commitment that has been made in response to this demand. This tension between public aspirations and the priorities of policy is potentially the most disruptive factor and difficult challenge for the pursuit of a sustainable transport policy in the coming years.

Future pathways

The implications of how this tension between a planned, public transport-oriented future and a less regulated, more car-centric society are profound – a point that was well-recognised amongst the workshop participants. Fig. 3 presents a schematic diagram of how car ownership levels might rise in Cuba as a whole, from the current 28–38 vehicles per 1000 head of population (WHO, 2013). It draws on ideas presented in a presentation by Professor Peter Jones at the first workshop session on 20 June 2013 (Jones, 2013).

In Fig. 3, Plot A shows what might happen were a free market in cars established and the broader economy was allowed to grow. This could see Cuba follow a North-American model of rapid growth in car ownership in Period 1, followed by saturation at a

Table 3
A summary table of various actions showing to the relationship with national policy guidelines.

SWOT Strategy	Action	Lineamientos										Industry		Science		Social		Economic		
		269	271	272	278	279	283	284	285	286	251	254	133	135	159	161	88	97	112	
Actively confront	1 Control level of car ownership									xx										
	2 Enforce land-use control												✓							
	3 Develop cross-sector collaboration				✓															
	4 Incorporate flexibility into policy programmes				✓															
	5 Design schemes facilitating access							✓									✓			
Avoid exposure	6 Limit private car use	✓								xx			✓							
	7 Improve fuel efficiency										✓	✓		✓						
	8 Reduce fuel shrinkage	✓									✓	✓								
	9 Prioritise (human) green modes	✓						✓				✓								
	10 Enhance, protect and manage assets	✓	✓	✓		✓				✓										
	11 Instigate activities to reduce work-related trips				✓									✓	✓					
	12 Expand production of small-scale walk and cycle schemes				✓					✓	xx		✓	✓	✓	✓				
Maximise potential	13 Consider traffic control measures in specific neighbourhoods	(Cross-hatched area)																		
	14 Plan transport systems in consultation with local communities							✓								✓				
	15 Benchmark institutional approaches to delivering outcomes																		✓	✓
	16 Embrace informal modes	✓			✓															
Improve to meet potential	17 Explore pollution control for all motorised systems												✓					✓	✓	
	18 Implement transport systems accessible for all citizens	✓	✓		✓		✓		✓											
	19 Identify novel funding streams		✓						✓										✓	✓
	20 Investigate potential of digital solutions																			
	21 Consider new approached to infrastructure and vehicle maintenance regime	✓					✓			✓				✓					✓	✓

Key: cross-hatched: omissions in current policy framework; greyed-out: ‘actions and *lineamientos* explicitly aligned; ✓: actions and *lineamientos* positively aligned; ✓✓: actions and *lineamientos* very positively aligned; xx = actions and *lineamientos* very negatively aligned.

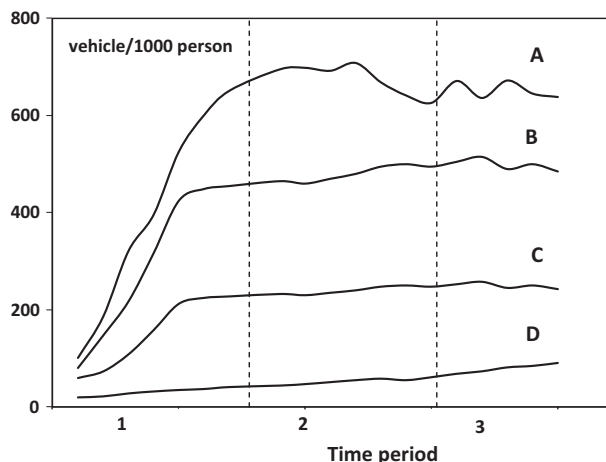


Fig. 3. Stylised trends of motorisation rate as a function of time and economic development. Source: after Jones (2013).

level of 650–800 vehicles per 1000 head of population in Periods 2 and 3. Here, support would have grown for new roads and parking, which are also seen as being a positive sign of a developing society, among existing and aspiring car owners. Others (Hidalgo & Huizenga, 2013) have observed similar trends for wealthy cities, such as Perth, Atlanta, Vancouver and Tel Aviv, which have high modal shares of private motorised mobility.

Plot D, on the other hand, assumes that controls on car ownership continue unchanged with steady growth, ending at a level of around 100 cars per 1000 head of population. This could be considered to be a 'sustainable' model. In this case, the current emphasis on liveable cities and public transport would be maintained as is (largely) assumed by the transport policy community and through the *lineamientos*. City examples with this pattern include Tokyo, Amsterdam, Hong Kong and Madrid (Hidalgo & Huizenga, 2013). To some extent Singapore could also be considered as having an efficient pattern of development and mobility.

Plots B and C represent intermediate trends of 200–400 cars per 1000 head of population. Rapid growth in Period 1 levels off in Periods 2 and 3 as circumstances revert back to a situation where perhaps the consequences of an increased reliance on cars become apparent and persuade the Cuban Government to intervene either through car restraints and/or significant investment in alternative modes. Many European cities can be characterised as fitting this pattern, although car ownership may be higher, and in some cases continues to rise over time. Havana's unique city character is based partly around the long-term, slow-growing 'autopia' which has co-existed for at least the last thirty years with many other forms of mobility.

Conclusion

The case of Havana is far from being typical. Instead it is an outlier – a city that has developed in a way that has seen the amount of motorised travel massively suppressed by severe shortages in fuel and equipment on the one hand, and restrictions on car ownership and use to those with sufficient private means on the other. As a result, the pattern of mobility and urban growth is unique, and there is strong consensus that public transport should be prioritised. These conditions give the city the potential to build on its strengths to bypass the car-dependent model and develop directly towards a world-leading, sustainable transport model.

Our project, which draws on Cuban data, research literature, and exchange of information and views in two workshops (and supplementary activities) conducted with a relatively

representative cross-section of Cuban transport practitioners and decision-makers in a way that has not been done before, provides new insights into the policy process and strategic possibilities for equitable and sustainable mobility for the city of Havana. From this, the following key points emerge:

- There is a high degree of agreement as to the transport strengths, weaknesses, threats and opportunities facing Havana. Specifically, the strengths are seen as being the low rate of motorisation, the sustainable pattern of development, the strong degree of policy coherence and the effectiveness of policy implementation, whilst the weaknesses relate to the high level of unmet demand, the lack of available financing, and the poor state of the fixed and mobile elements of the transport system. The threats are deemed to relate to any economic shocks (recession and/or sustained rapid growth), a breakdown in the system of policy making, and to challenging demographic trends. The opportunities are expected to be derived through international learning, new funding streams, local dynamism and emerging technologies.
- Perhaps more surprisingly, there is an almost unanimous view as to the 'right' policy solutions for the transport sector, whereby it is widely agreed that transport policy should seek to increase the quality of the public transport system for its citizens through increasing levels of investment, securing efficiency savings and by working 'smarter'.
- The exception to this unified view – i.e. that the car market should be deregulated – comes not from the deliberations of transport specialists or those responsible for transport policy, but from public aspirations. This urge to solve mobility problems through private car ownership is understandable, given the frustrations caused by the lack of transport – and the absence, as yet, of serious consequences (congestion, pollution, etc.) – but it is potentially the most disruptive to policy coherence and a difficult challenge for policymakers to counter. And of course, this has significant implications for how the city develops in future. In particular, it will determine whether it follows the rapid growth, North-American 'Type A' trajectory, or whether a less car-dependent model (Type B, C or even D) could be followed over a suitable period of time.

Overall, transport policy in Havana, currently sits at a critical juncture in its development, which could see it veer either way. It remains to be seen which route it ultimately follows.

Acknowledgements

Thanks are due to the British Embassy, Havana which provided seed funding through the Bilateral Partnership Fund; University College London (through the UCL Grand Challenges for Sustainable Cities; the Research Unit of the Cuban Ministry of Transport (CIMAB); to those who attended and contributed to the workshops; Sophia Braybrooke for editorial support.

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