

Submission to the Planetizen website

The unedited article below was submitted as an op-ed piece to the Planetizen website, the best-known world website patronised by planners favouring high-density. The edited version that was run can be seen on <http://www.planetizen.com/node/42927>.

Resisting Dickensian Gloom

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There has been a tremendous response to my introduction to the [Demographia Survey](#). Many have asked me to expand upon the arguments and provide documentation (such as [Dudley](#) in this space), which was not possible in a preface. This I am pleased to do.

Greenhouse gas emissions. Advocates of high-density policies (often termed “Smart Growth” but also under other descriptions and euphemisms such as “urban consolidation”, “compact development”, “growth management” and “urban renewal”) maintain these policies save energy and reduce greenhouse gas emissions.

A comprehensive study of per capita emissions based on household consumption of all products and services appears in the Australian Conservation Foundation’s *Consumption Atlas*. Unexpectedly this analysis shows that greenhouse gas emissions of those living in high-density areas are greater than for those living in low-density areas. An analysis of the data¹ shows that the average carbon dioxide equivalent emission of the high-density core areas of Australian cities is 27.9 tonnes per person whereas that for the low-density outer areas is 17.5 tonnes per person.

As mentioned in the Demographia Survey introduction, food and goods purchased account for most of the emissions and this amounts to more for wealthier inner-city dwellers.

Surprisingly, transport emissions amount to very little (only 10.5%), household electricity and heating fuel being about twice as much at 20.0%². It should also be noted that the emissions from household dwelling construction and renovations at 11.8% are greater than emissions for transport. It is clear that transport, so heavily emphasised by Smart Growth advocates, is responsible for only a small fraction of household emissions.

Interestingly, using regression analysis to attempt to isolate variables influencing household emissions, the paper on which the data is based³ finds that density, as an isolated variable, has practically no effect on total energy requirements. The paper also finds that density has little effect on the per person energy requirement for mobility and automotive fuel consumption.

Another study which solely measures direct household energy consumption⁴ (thus excluding the effect of purchases) found that annual greenhouse emissions from this source in high-rise equated to 5.4 tonnes CO₂ per person per year whereas that for detached housing was only 2.9 tonnes. So even when excluding purchases associated with wealth, high-rise still comes out worst.

Yet another study, also not incorporating factors directly associated with wealth⁵ finds that the total of transport, building operational and building embodied annual greenhouse gas emissions per person for city apartments is 10 tonnes whereas that for outer suburban dwellers is 7.3 tonnes – once again more for apartments.

The explanation for these findings probably partly arises from lower occupancy rates in high-rise compared to single-residential (as revealed in the above-mentioned studies) and the use of elevators, clothes dryers, air-conditioners and common lighted areas such as parking garages and foyers. Most studies do not include this latter important element, simply because they are based upon consumer bills which do not include common consumption. In addition there is the greater energy per resident required to construct high-rise.

Looking towards the future, if we are to reduce our urban energy and water footprint by individually collecting localised solar energy and rainwater it appears reasonable that this will only be practical for dwellings that have a large roof area per inhabitant. That means low density.

In summary, in the Australian situation there is no environmental emission evidence that justifies forcing people to live in apartments - if anything the reverse seems to be the case.

Transport. Not only does transport comprise only a minor portion of household emissions, the energy difference between the use of public and private transport modes is surprising small. The Sydney [City Rail](#) website states “greenhouse gas emissions per passenger kilometre for rail transport is **up to** five times less than that of car transport” (my emphasis).

However one cannot assume optimal conditions to always prevail such as full carriages. Such theoretical figures are just that – theoretical. Theoretical figures for automobiles would also be much more favourable if one assumes for example full occupancy of seats.

In fact the actual greenhouse gas emissions per passenger kilometre for the Sydney rail network, transporting around 500,000 passengers each day, is 105 grams⁶. The figure for automobiles in Australia, assuming an average seat occupancy of 1.3, averages 155 grams and is much less for modern fuel-efficient vehicles that emit a mere 70 grams. It needs to also be considered that direct point to point travel distances by personal transport are frequently less than that for equivalent public transport journeys so further reducing the energy difference.

High-density imposed on communities hardly reduces per person travel intensity at all. Dudley dismisses a Melbourne study⁷ I mentioned that shows

that people squeezed into newly converted dense areas did not use public transport to any greater extent and there was little or no change in their percentage of car use. He claims this is due to Melbourne being “a sprawling city”. However the overall density of Melbourne is not relevant here as, in addition to being well served by public transport, the converted areas are located very close to the central business district. It sometimes seems that the last refuge of Smart Growth advocates is to declare whatever they don't like as sprawl. Indeed, it could be argued that there are no cities in the developed world that do not sprawl.

Developers recognise that units without parking are not saleable. In Melbourne medium density housing projects located near commercial or transit centres invariably include one or two parking places per dwelling⁸ The initial developers of a 5.7ha site near Sydney Central Station abandoned their proposed development of the huge multi-unit project mainly because authorities insisted that a maximum limit of 60 per cent of the units could be allocated parking⁹. This abandonment was in spite of the fact that the site could not be in a better location for public transport, being adjacent to the central railway station and major bus routes that radiate out from the locality.

The reality is that, for many journeys undertaken (including travelling to locations outside the city centre, attending childrens' sport and recreational activities, transporting pets and visiting friends), public transport is unsuitable or even forbidden such as for bulky goods or pets, as well as being too inconvenient and time-consuming to be of practical benefit.

A 2008 Canadian study on the relationship between density and transit use does not alter the above assessment. It plainly shows how little density contributes to a change in automobile use. Without any evidence to the contrary it seems reasonable to assume that the Canadian fraction of total household emissions that relate to transport is similar to that shown on the Australian Conservation Foundation's website, being 10.5%. Applying this value to the data in Chart 2 of this Canadian study one finds that for those living within 5 km of the city centre there would be a difference attributable to density of only 1% in total annual emissions per person. For people living 20 km or more from the city centre the difference would be much less at 0.2%. Yet it seems that for Smart Growth advocates this miniscule difference justifies cramming people together like sardines. These believers ignore other much more significant factors affecting emissions that completely over-ride this minute transport-related effect.

Even New York City (local government area or municipality) does not provide a model to be followed of density allowing the predominant use of transit. New York City includes the special case of Manhattan, where there is the aggregation of many unique entities such as head offices that are best located near each other. Furthermore transit in the city of New York itself accounts for approximately 60% of work trips by car or transit (this compares to 32% for the larger New York urban area). Assuming the work trip to total travel ratio in the New York urban area applies (10.7%), the transit market share for all car and transit travel in the city of New York would be only about 20% (this analysis is limited to cars and transit because travel market share data is not available for other modes)¹⁰. What is more, New York City cannot be

considered an independent entity that could be excised from the larger New York urban area, as the areas are interdependent. On its own it cannot realistically be used as a model.

It is interesting to note that journey to work travel times do not seem to decrease as density increases. Looking at New York and some examples of large cities of different density there is no indication that these times are less in dense cities:

DENSITY & JOURNEY TO WORK TIMES: EXAMPLES

URBAN AREA (Agglomeration)	Population	Density (Population per Square Kilometre)	Average Journey to Work Travel Time (Minutes)
Atlanta	3,500,000	689	30.4
<i>References</i>	3	3	2
New York	17,800,000	2,050	34.8
<i>References</i>	3	3	2
New York City	8,008,000	10,116	39.0
<i>References</i>	3	3	5
New York Inner Suburbs	Not Available		28.8
<i>References</i>			5
New York Outer Suburbs	Not Available		24.8
<i>References</i>			5
Los Angeles	11,789,000	2,729	28.5
<i>References</i>	3	3	2
Osaka-Kobe-Kyoto	17,250,000	6,350	36.2
<i>References</i>	1	1	4
Tokyo-Yokohama	34,250,000	4,350	45.9
<i>References</i>	1	1	4
Sydney	3,641,000	2,050	34
<i>References</i>	1	1	6
Melbourne	3,372,000	1,550	Not Available
<i>References</i>	1	1	

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2. American Community Survey of the US Census Bureau: 2008
3. US Census 2000
4. Japan Bureau of Statistics 2008
5. American Community Survey of the US Census Bureau: 2006
6. NSW Household Travel Survey for 2007

The increased congestion caused by high-density policies results in inefficient stop-start traffic which increases greenhouse gas emissions as a direct consequence of burning more fuel per km and increases the concentration of dangerous micro-particles from vehicle exhausts. The resulting greater traffic per area and less volume available for dispersion exacerbates this. The World Health Organization maintains that several times as many people die from these particles every year as do from traffic accidents¹¹.

The evidence is that the imposition of high density policies does not lead to reduced traffic congestion, lower air pollution levels and improved travel times. The reverse appears to be the case.

Health. The increasing concentration of dangerous micro-particles from vehicle exhausts is mentioned above.

In addition, mental health problems are of major concern. A study of over 4 million Swedes¹² has shown that the rates for psychosis were 70% greater for the denser areas. There was also a 16% greater risk of developing depression. The paper discusses various reasons for this finding but the conclusion is compelling: "A high level of urbanisation is associated with increased risk of psychosis and depression in both men and women".

Another study of a population of 350,000 people in Holland¹³ also finds adverse mental (and other) health consequences. After allowing for demographic and socio-economic characteristics, for those living in areas with only 10% green space the prevalence of depression and anxiety was 32% and 26% respectively. For those with 90% green space the prevalence was respectively 24% and 18%, a significant difference for an increasingly serious problem.

Research also indicates that bringing up young children in apartments can have adverse consequences¹⁴. Keeping children quiet emphasizes activities that are sedentary. There is a lack of safe active play space outside the home - parks and other public open space offer poor security.

There are other indirect indicators that relate to this question.

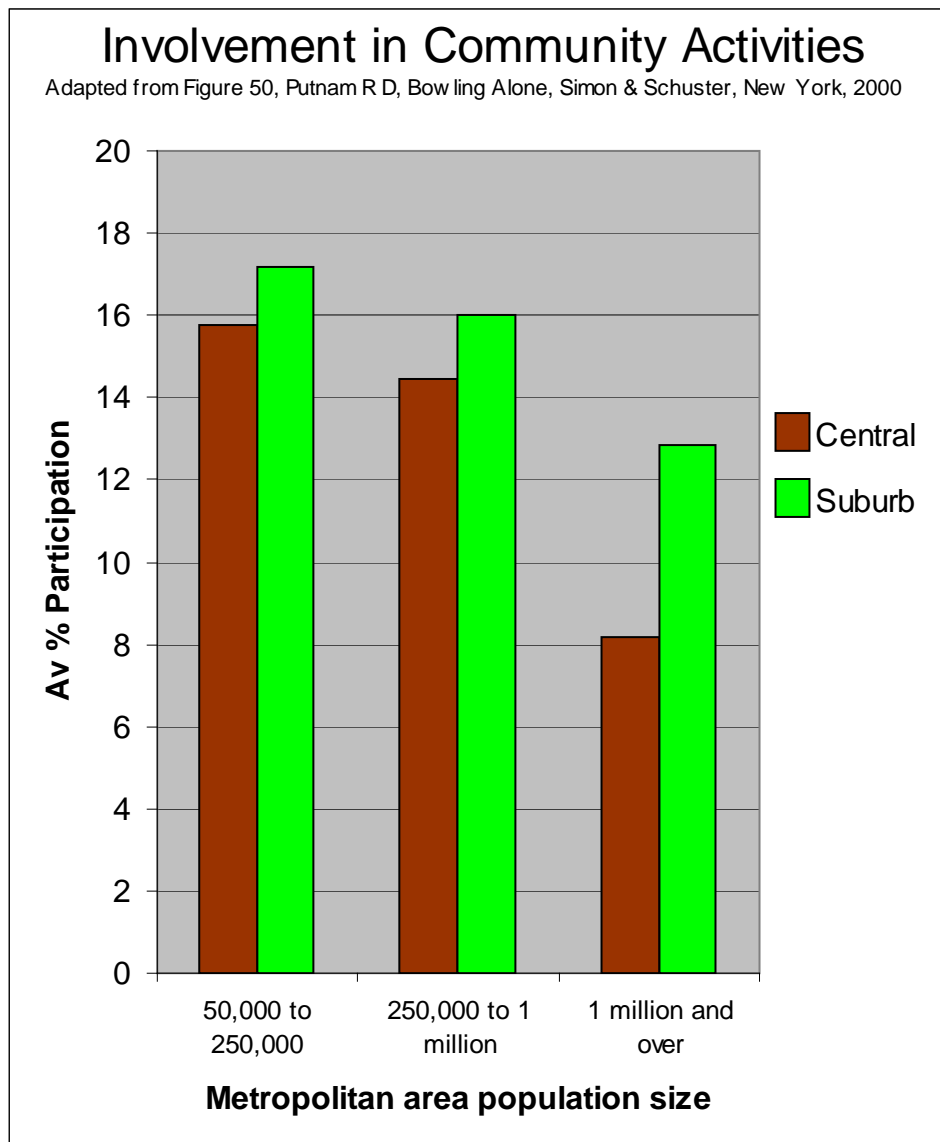
- The Australian Unity Well-being Index¹⁵ reported that the happiest electorates have a lower population density.
- A recent study in New Zealand¹⁶ asking people whether residents in particular areas would most like to live in that type of area, revealed that the answer was yes for 90% of rural residents, 76% for small town residents, 75% for city suburbs and only 64% for central city dwellers. Apparently as density increased, so did dissatisfaction with that type of living.
- The inference from a study on apartment life¹⁷ is that half of the apartment living households in Sydney and Melbourne would prefer to live in single-residential dwellings. This corresponds to only about 10% of all those in occupied dwellings in the two cities wishing to live in

apartments. A recent housing preference survey ([press release](#)) sent out with rate notices by Ku-ring-gai Council in Sydney reveals a similar result.

Within reasonable limits people should be allowed to live in the type of housing they prefer. They should not be forced into living in a manner prescribed by planners who profess to know what is best for them. It should be emphasised that we recognise that there are some people that prefer high-density living. What we are arguing against, is the *forced* imposition of high-density policies, such as is occurring in Australia and other countries, to the overall detriment of their citizens and the environment. It appears from deprecating comments about the “free market” and “libertarian” views that Smart Growth advocates are unconcerned about what people actually want.

- Social networks should also be considered. Putnam in his famous book “Bowling Alone” sums up that “suburbanisation, commuting and sprawl” have contributed to the decline in social engagement and social capital¹⁸: However charts in this book show the opposite. The chart below aggregates Putnam’s portrayal. This indicates that involvement¹⁹ in these social activities of people in the centres in the more spacious small towns is nearly twice that in dense large cities. It is also apparent that such community involvement is greater in low-density suburbs than in denser central city areas, especially for the

larger centres.



The data therefore show, contrary to what was claimed, that as density increases, people's involvement in community activity declines.

Facts available indicate that adverse health and social consequences of high-density living are significant.

Infrastructure: When costs of infill compared to greenfield site development are compared, it seems the costs of bringing the standard of infrastructure back to the level of service people enjoyed before high-density was imposed are not taken into account (such as in the Australian study released last summer). It is one thing to compare the direct costs of proximally servicing additional infill by adding onto existing infrastructure, it is quite another to include the costs of bringing trunk infrastructure, for example transport infrastructure, up to the appropriate level to prevent increased congestion.

Since the onset of the imposition of high-density policies in Sydney roads, rail and bus services, water supply and electricity have visibly deteriorated. Newspaper articles repeatedly cite these as the main reasons for the current unpopularity of the New South Wales Government.

The New South Wales Energy and Water Ombudsman has reported a record number of complaints and more households seeking help to pay their bills²⁰. The report from the Independent Pricing and Regulatory Tribunal reveals from 2008 to 2012 the charges for Sydney domestic water and sewage services will be increased by 31%.

There is no evidence that charges in high-density areas are less than in low-density areas – if anything the converse seems true.

Housing Cost

This aspect has been adequately covered in the Demographia Survey. It seems reasonable to conclude that the major cause of excessive housing costs in Australia lies in over prescriptive land use regulation. In Sydney, where housing costs are the second highest in the 272 markets surveyed, the New South Wales government has restricted the release of greenfield housing sites²¹ while at the same time demanding municipalities increase densities under threat of removing the councils' planning powers. Since 1977 the New South Wales population increased by 38%²² while the proportion of greenfields land release sites decreased from an annual average of 20% of dwelling production to 5%²³.

As a consequence of the resultant land shortage the land component in the price of a house in Sydney has increased from 32% in 1977 to 60% in 2002²⁴ and to an estimated 70% today.

High-density policies increase the cost of housing, with special disadvantage to the younger generation by locking them out of the housing market. In addition they disadvantage the economy by throttling the competitiveness of new business trying to set up in the region.

Evidence-based planning. The evidence available so far indicates that Smart Growth policies forced into unwilling communities do not reduce greenhouse gas emissions, does not facilitate travel, does not improve health, does not increase housing choice and does not reduce overall costs.

But the onus of proof should not lie with resident action groups. We do not have access to the funding and resources that government and academia enjoy, from the public purse as well as via political donations from developers in some cases. The responsibility of proving high density to be beneficial lies squarely with the proponents of these policies who have ready access to taxpayer funding. We await this proof.

Without the benefit of robust evidence-backed planning it seems we will be swept backwards into despotic, overcrowded Dickensian gloom.

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