Density: drivers, dividends and debates

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Urban Land Institute

About ULI

The Urban Land Institute (ULI) is a non-profit research and education organisation supported by its members. Founded in Chicago in 1936, the institute now has over 34,000 members in 75 countries worldwide, representing the entire spectrum of land use and real estate development disciplines, working in private enterprise and public service.

ULI has been active in Europe since the early 1990s and today we have over 2,200 members across 27 different countries. We have a particularly strong presence in the major European real estate markets of UK, Germany, France and the Netherlands but are also active in emerging markets such as Turkey and Poland.

ULI's mission is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide. We are committed to:

- Bringing together leaders from across the fields of real estate and land use policy to exchange best practices and serve community needs
- Fostering collaboration within and beyond ULI's membership through mentoring, dialogue, and problem solving
- Exploring issues of urbanisation, conservation, regeneration, land use, capital formation, and sustainable development
- Advancing land use policies and design practices that respect the uniqueness of both the built and natural environments
- Sharing knowledge through education, applied research, publishing, and electronic media
- Sustaining a diverse global network of local practice and advisory efforts that address current and future challenges

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Contents

Appendices to this report will be published online at http://europe.uli.org/research/density/. They will include further background, full case studies, and all the quotes and survey results from ULI members and leading experts.

This report

The preparation of this report was supported by a steering group of leading ULI members and staff including: Rosemary Feenan, JLL; Brian Moran, Hines; Michael Spies, Tishman Speyer; Clarissa Alfrink, Bilfinger; and Lisette van Doorn, Kathleen Carey, Sarene Marshall and Clare Game from ULI. The authors are very grateful for their guidance and support.

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Authors

The authors of the report are Prof Greg Clark, Senior Fellow at ULI Europe, and Emily Moir, Director at The Business of Cities Ltd.

Foreword

Dear Reader,

The world's urban population exceeded its rural population for the first time in history in 2009 and now 54 percent of the world's population, some 3.9 billion people, live in urbanised areas. By 2050 the urban proportion of the population is projected to grow by 2.5 billion, reaching 66 percent of the total, according to United Nations estimates.These now familiar statistics hide some fascinating and vital questions on how - and how closely - people will live in these places in the future.

ULI believes that delivering density will be a crucial part of successful urban futures.
However, the term itself has different connotations in different parts of the world and the understanding of the economics, planning implications and customer satisfaction of delivering dense development is at very different stages in different cities. To raise the awareness and be able to have a thoughtful discussion, ULI has taken on density – and the complexities of it - as a major theme of its research programme.

Therefore, we are very pleased to publish this first report which examines what we mean by the term density, how it's been delivered in different places around the world and what we can learn from different models to help equip us for the new generation of global cities. We have spoken with ULI members, city experts and industry leaders to get their views on whether the case for living more densely has long term benefits to people, the environment and on investments. Their insights feature heavily throughout this report.

Consecutive work will focus on density in relation to urban change and the relationship between density and investment returns.

The next project on density in relation to urban change 'The Density Dividend: solutions for growing and shrinking cities' will deal with the different challenges involved in population growth and shrinkage and how density may play a role in adapting and building strategies for future cycles. The underlying idea is that neither growth nor shrinkage are necessarily permanent trajectories. Demographic, geo-political and climatic factors are important underlying drivers. City populations can go up and down through different cycles of economic development, connectivity and mobility, migration, technology, public health, crime and security, and multiple other factors.

The objective of the project 'Supporting Smart Urban Growth: Successful Investing in Density' is to analyse, communicate and build an improved understanding of the impact of investing in dense, well connected urban centres on investment returns, while at the same time taking into account the costs per resident and carbon emissions.

We hope you will enjoy reading this report, which sets out to start this important process.

Lisette Van Doorn
Chief Executive, ULI Europe

Rosemary Feenan
Chair, ULI Europe Policy & Practice Committee

Executive Summary

As population growth continues and the world urbanises, as new cities emerge and older cities are re-populated, we face the challenging question of how to accommodate more people. For some countries this is dealt with by creating new cities, or by allowing existing cities to sprawl. But for the majority who think carefully about how to support population growth, the preferred choice is well managed and well serviced densification.

This has natural advantages: densifying cities can accommodate population growth within a contained environmental footprint, they can enjoy better connectivity, amenities, open spaces, and social interaction, and they become more productive and spawn innovation. Density is a way to have better cities and to provide for all the extra people.

Many cities want population growth and densification, especially those who have not yet reached their natural sizes, or matched previous population peaks. But many cities struggle to accommodate their rising population growth, and do not easily find space for new housing, schools, amenities, and parks. They resist density and additional population, and they fear over-crowding, loss of privacy, or the insecurity of a more anonymous city. But, in most respects, the thing they fear is a distorted idea about density, an amalgam of myths and memories of the failed densification of the past. They think of slums, of concrete jungles, and of tower blocks. They do not imagine Singapore, Paris, Barcelona, Toronto, or Vienna, all examples of cities that successfully densified in order to survive.

In this report we seek to expose the truth about density, to learn the lessons from past mistakes, and to make a new start with the pressing agenda of building civic support for more dense cities. We know now, better than ever before what is good density, and what is bad density, we know what drives and enables density and what inhibits or prevents it. We know that Europe, in particular, needs to embrace new density as a means to repopulate our cities and to drive forward our global leadership on the environment and our crucial position in the world's emerging innovation economy.

Much of the density we need can be created on the brownfield sites, at the transport interchanges, and in the converted shops and offices that technology releases back into our cities. But some of the density we need must come from sharing our established residential areas with more people, and using density to drive better transport, schools, and greater amenities for everyone. In the new sharing economy we learn how to trade away private space for public amenity - and the form that takes is more dense, and better facilitated, districts.

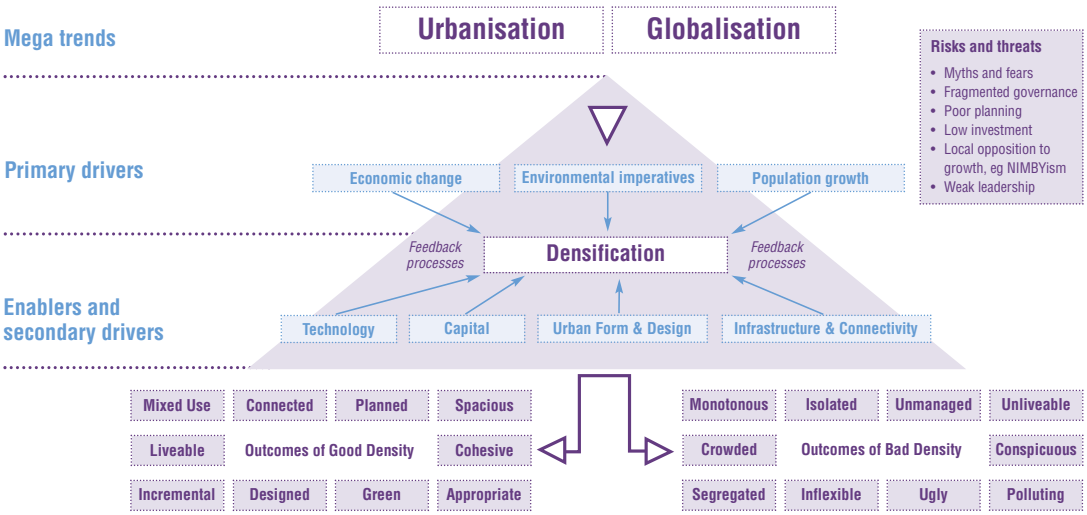
At the heart of this discussion lies a major cultural challenge: our democracy is sometimes at odds with our long term interests. Planning and investment decisions made by democratic local governments far too often prioritise the preferences of current residents, who seek to protect what they have, over the needs and interests of citizens who have not yet arrived, or have not yet been born.

So at the core of this project is a drive to demonstrate the value of density, to advocate for the best practices that can produce it, to bust the myths, and to start the process of informing and supporting new leaders to put density at the heart of long term planning for the future.

An agenda for advocacy, demonstration, and public education. There is a fundamental case for investing in **learning about density.** What is needed is clear:

i. More evaluation of city densities across the world and catalogue the ingredients of success.
ii. Identify whether a global density benchmark can be developed to protect land from urban sprawl.
iii. Training of planners and urbanists to be bolder and more effective in planning for density.
iv. Support for city leaders to learn how to promote density.
v. Create and disseminate demonstration initiatives that reveal how density works for liveability.
vi. Support for long term planning that delivers for the future citizens and not just for present preferences.

Densification: drivers, dividends and debates



Introduction
The Density Decades

> *"The efficient, effective and responsible use of land is a goal that would be a win-win for all cities, their businesses and their citizens: the key question though is how cities can achieve this while quickly absorbing the significant increases in population that are flowing from the world's continuing rapid urbanisation. Densification may be an obvious answer, but how to deliver successful densification is not so obvious and is one of the most important topics of this urban decade. Good density will mark out the next generation of winning cities."*
>
> **- Rosemary Feenan,** Director of Global Research, JLL, and Chair, ULI Europe Policy & Practice Committee.

The world is halfway through a 100 year long cycle of population growth and urbanisation, at the end of which close to 70% of people are projected to live in cities.[1] Global population is currently growing at a rate of 75 million people a year, and urbanising by an additional 1% every two years.[2] Nations accommodate their growing urban population in different ways, pursuing distinctive strategies:

i. **Sprawl and metropolitanisation.** Established cities expand into a regional hinterland and/or achieve a new polycentric growth pattern.

ii. **New cities, towns, and territories.** Build new cities or encourage small cities to grow. Many countries, especially in the emerging world, plan and construct new cities from scratch in order to absorb part of the urbanising labour force.

iii. **Densification.** Accommodate more people and activities through an increase of density within existing boundaries.

This report is concerned with the strategy and phenomenon of densification. Density is back on the international agenda - **a resounding 89% of almost 200 global ULI members** surveyed for this report felt that *the issue of density had become very important or critical in the last five years.* This is because the drivers of density are intense, urging us to build more compact cities, just at the same time as so many issues concerned with density are either not well understood or are resisted. If real estate is to deliver value for users and investors it must address the design, planning and engineering aspects of density, but it can't do that without a broad consensus that density is a key catalyst for progress.

Methodology: For this short introduction to a complex topic we have:

- Held a series of density dialogues with ULI members.
- Held detailed in depth interviews with 20 experts in the field of density from diverse global locations.
- Undertaken a survey of 194 leaders in real estate and allied professions. The survey asked leaders for their opinions on:
  - current density trends and what is driving those trends;
  - the ingredients of successful density;
  - reasons for supporting and opposing density;
  - concerns or fears they might have about density;
  - examples of success stories and failures; and
  - the future of the density debate, including future leadership of the agenda.
- Undertaken a literature review and horizon scan.
- Prepared case studies of 10 cities around the world which have different levels of and approaches to density. These cities are: Atlanta, Barcelona, Hamburg, Mexico City, Oslo, Paris, Seoul, Singapore, Toronto and Vienna and are profiled in Appendix 3, published online on the ULI website.

Section 1
Defining density

Density is a term that refers to the relationship between a physical area and the number of people who live in or make use of that area. It is usually expressed as a ratio of population size or number of dwelling units, compared to area units. Although density aims to be an objective and value neutral term, different definitions and methods of calculation can produce widely varying meanings and statistics, as Figures 1 and 2 show.

Potential variables which come into play when calculating density include:

- **Kind of density:** this can relate to either people e.g. number of residents or employees within a given area, or to physical units e.g. number of homes or built assets. The Density Atlas, an online resource for comparing urban densities around the globe, identifies *dwelling units per acre, population per acre, and floor area ratio* as the three most commonly used measurements of density.[3]
- **Size of land area:** densities can differ considerably depending on whether input data relates to a single land parcel, a block, individual districts, core city areas, or wider metropolitan regions. Whilst some cities might display high densities at one geographical scale, this may not hold true at a larger or smaller scale. For example whilst Athens has a very dense core, it has some of the least dense suburbs in the world.[4]
- **Gross or net:** population may be divided by total geographical area (gross), or alternatively certain land uses may be excluded from the geographical area denominator (net);
- **Time of measurement:** populations at night can be very different from those in the day, density can measure permanent residents or include visitors and commuters.

Figure 1: Variation in population density statistics (number of people / Km^2) provided by three major international sources[5]

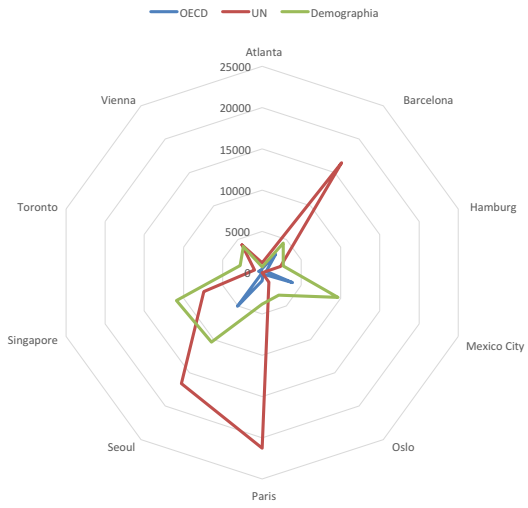
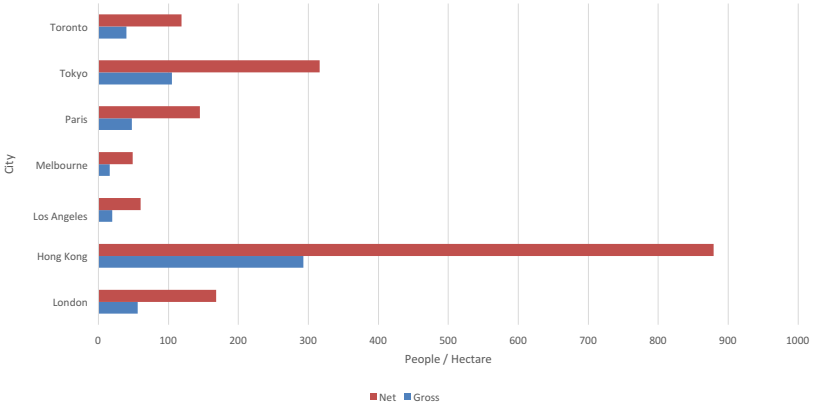


Figure 2: Graph showing net[6] vs gross residential development calculations for seven cities[7]



> *There is no such thing as a 'generic city'; therefore there is no such thing as 'generic density'. City form is a reflection of different cultures, political belief systems and ecologies. Understanding the specifics of density requires more than a spreadsheet or matrix; it is a qualitative concept as well as a quantitative measure.*
>
> **- Prof. Ricky Burdett,** Professor of Urban Studies, Director, LSE Cities and Urban Age, London School of Economics and Political Science

Figure 3: Schematic diagrams of population density in Mexico City, London and Johannesburg (Produced by LSE Urban Age Project)[9]

Figure 4: Table illustrating the differences between densities at region, city and district level in ten case study cities.[10]

City	Density		
	Region	City	District
Atlanta	Low	Low	Low
Barcelona	Medium	Medium	High
Hamburg	Low	Low	High
Mexico City	High	High	High
Oslo	Low	Low	High
Paris	Low	High	Low
Seoul	Medium	High	High
Singapore	N/A	Medium	High
Toronto	Low	Low	High
Vienna	Low	High	Low

> *When we think about density it is interesting that we can be talking about it at different scales. We can think about it at the level of an agglomeration, or at the level of a housing block. It could be really beneficial to clarify what we mean by density in different types of setting at different scales. Identifying a common language or system for measuring density would also enable us to compare like with like.*
>
> **- Dr Karima Nigmatulina,** Executive Director, Master Planning Institute, Moscow

LSE's Urban Age project has created schematic images of densities in nine different cities which illustrate the potential differences well, extracted in part in Figure 3. Compare for example Mexico City's high density which stretches right across its metropolitan area, with that of Johannesburg, which displays a polycentric pattern with pockets of high density in particular neighbourhoods. These different urban forms result from unique combinations of geographical, cultural, historical, economic and political influences in cities.

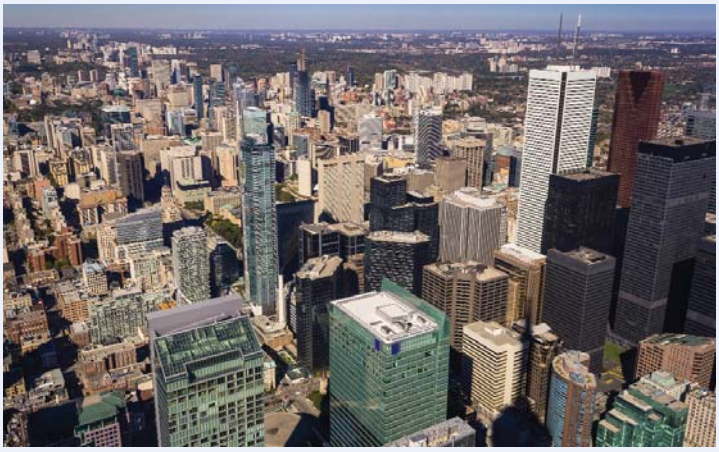
Nonetheless, it may be useful to make sense of this diversity by categorising cities into notional typologies, depending on their densities at different urban scales. Figure 4 classifies the densities of our ten case study cities as high/medium/low at the metropolitan, city and neighbourhood levels.[8]

Based on the examples in Figure 4, some typologies can be extracted:

- **Low-High-Low cities:** are cities which are characterised by high density cores, but much lower density suburbs (which has the effect of significantly reducing overall metropolitan densities). Many European cities fit this typology.
- **Low-Low-Low cities:** are those cities with expansive suburbs and high levels of car dependence, as well as spacious downtown zones. Many North American cities (as well as Australasian cities) provide the classic example of these low density urban areas.
- **Low-Low-High cities:** are those cities which have made conscious efforts to densify particular neighbourhoods or districts (see case study of Toronto), whilst retaining a low density environment overall. Toronto and Oslo are good examples of this typology.
- **Medium-High-High cities:** are both sprawling and dense, with crowded informal housing on the peripheries and particular pockets of very high density, around transit hubs for example. The degree and pace of growth in many developing world cities mean that many fall within this typology.

Inevitably many cities do not fit neatly within a typology.

Barcelona for example has neighbourhoods of extremely high density (namely the Eixample and Sagrada Familia districts) which have evolved from a combination of unique factors including topographical restrictions on outwards growth, and a series of densification efforts focused on particular neighbourhoods e.g. brownfield redevelopment projects which prepared the city for the 1992 Olympic Games. Singapore is also difficult to categorise as the lack of hinterland in the city state means it has no real wider metropolitan region.



Case study: Toronto – A "Low-Low-High" city

Toronto is a city with a rapidly growing population that has sought to concentrate substantial growth through the densification of its central areas which are well served by public transport. Toronto's Official Plan (2006) steers development in the city until 2026. Its central geographic theme is to direct growth to appropriate areas and away from the city's stable residential neighbourhoods and green spaces. New development is channelled towards approximately 25% of the city's lands and strives to protect the remaining 75% from significant intensification. The Downtown and Central Waterfront area is the key area for both residential and commercial development, with close to 40% of approved new developments in the city. Much of the development to date, and planned for the future, has been high rise – indeed Toronto had more high rise buildings under construction than any other city in North America from 2012 to 2014.

The term 'density' is related to many other terms that have distinctive meanings.

Compact City

Managed and tightly bounded development pattern. Urban districts linked by public transport systems with access to local services and jobs. E.g. Freiburg, Germany

High Rise

Development with many storeys. No accepted threshold height. Key drivers are high land prices, advances in building materials and rising populations.
E.g. Hong Kong has more than 7,500 buildings over 12 storeys.

Intensification

The processes, policies or strategies employed to achieve an increase in density. E.g. re-use of brownfield sites, conversions of existing development.

Concentration

Extent that something (e.g. a service / housing) is featured in a given space. Can also refer to degree of agglomeration or specialisation of activity in an area or city compared to the wider system / other cities.

Proximity

Degree to which different land uses are close to each other in a given urban area. Reduces reliance on public / private transport.
E.g. New York is highly proximate and walkable.

Agglomeration

A concentration of workers and firms within urban areas. Spatial concentration of particular industries. Provides productivity and innovation advantages. Tech cluster at Silicon Roundabout, London.

Urbanisation

The increase in proportion of people living in urban, rather than rural areas.
The world's most rapidly urbanising cities are found in Africa and Asia.

Re-urbanisation

The movement of people and businesses back to core city areas from suburban locations. An observable trend in wealthier nations.

Shrinking City

A city which is losing population.
Can result in a hollowing out of the municipal centre, leading to abandonment of property and rising crime rates
Characterises one-third of European cities with more than 200,000 inhabitants.

Urban Sprawl

The spread of low-density in cities without systematic metropolitan or regional land-use planning. Its features are suburban residential development, detached housing and open streets and landscapes.

Polycentricity

A city or region is considered functionally polycentric when there is not an over-centralisation of functions in the city centre, which is supported by a dense network of smaller centres. E.g. San Francisco Bay Area, Frankfurt Am Main.

Sustainability

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Can relate to economic, social or (most commonly) environmental factors.

The term 'density' is often used interchangeably with many of the terms shown in the chart above. In fact, these terms each have distinctive meanings, although they relate to inter-connected ideas. Understanding the lexicon and these inter-relationships is crucial in avoiding confusion. For example:

- **Density** may result from intense and well managed **urbanisation**, but it is not the only possible form of urbanisation. Indeed **sprawl** - an opposite of **density** - is another possible form of **urbanisation**. Making **sprawl** liveable involves careful **densification**.
- **Density** may facilitate **proximity, agglomeration** or **sustainability**, but it does not achieve those things on its own.
- **Density** and **intensification** have causal relationships but **intensification** may need to go a long way before it produces outcomes that are relatively dense.
- **Compact cities** and **polycentric cities** tend to have well managed **density**: it is one ingredient of their success.
- **Concentration** is a broader term than **density**, it refers to the portion of a total activity that finds itself in one place. A city that has a **concentration** of banking might be dense (e.g. Hong Kong) or not dense (e.g. Zurich). A country that concentrates all of its investment in one city will probably end up with that city becoming rather dense (e.g. Seoul), but only as a means to accommodate the **concentration**. Some countries might not concentrate activities in one city but still have dense cities (e.g. China, Brazil, Australia).
- **Shrinking cities** may de-densify at the start, but they often realise that re-densification around a smaller population is key to adjusting to shrinkage

Section 2
The density debate: what is bad and what is good density?

Density has a history. Despite the recognised success of densification in the late 19th and early 20th century, what prevails in the memories of many people are the failed high density developments of the latter part of the 20th century (see Box Doomed Density?). These have led to a psychological resistance to density that plays out in town hall planning committees, local media, and on the street. It has led to a series of myths about density that are easily recognised, but must be tackled if the promise of density is to be realised.

Common Density Myths

"Density is always about crowding poor people together."
"High density areas attract crime."
"Cities that become denser lose individuality."
"People don't want to live in high density buildings."
"You cannot combine low density and high density areas successfully within one city."
"Density always involves loss of privacy."
"High density means high rise."

Doomed density? What went wrong?

Why did densification fail in the past? Failed projects of the past linger in the collective public memory and have given density a bad reputation. But what can we learn from these failed projects, what do they have in common?

In the **1960s and 1970s public housing** in Europe and North America often had the unintended consequence of concentrating poor people together in one place, often with low level public amenities and facilities. Rapid construction, low quality materials and poor design meant that buildings became dilapidated quickly, exacerbating the poor liveability of these developments.

Second central business districts – Developments like La Défense in Paris, and London's Canary Wharf/Dockland developments were criticised in their early incarnations, for their myopic focus on business use. These high rise developments lacked support by good quality infrastructure, and lacked shops, restaurants or other facilities that workers could use outside of the office. Their single use meant that they were not seen as 24 hour destinations and could be desolate at night. Both districts have made substantial progress since the first years of their development by incorporating a greater variety of uses.

Suburban shopping centres – Out of town shopping centres in the US, Europe and Australasia created high concentrations of retail space, but many have been criticised as being soulless, overly car

dependent and offering little by way of amenity other than retail. With the rise of online retail and the return of younger residents to urban environments some suburban shopping centres have been abandoned, and others have fostered mixed use.

These examples of failed density feature at least four common factors, which can be said to be ingredients of 'bad' density that should be avoided:

1 Single land use
2 Lack of public space and amenity
3 Dependence on one mode of transport, often the car
4 Failure to provide a 24 hour environment and safety with 'no go' zones or times

Desired and undesired density

Although very real opponents to density do continue to fight their corner, what is perhaps the biggest and most pertinent contemporary density debate is not whether cities should densify but how. Using the results of ULI's member survey, our interviews with industry experts, and the ten city case studies, we propose '10 ingredients' of good and bad density:

Characteristics of 'good' density	Characteristics of 'bad' density
Mixed use of land. Combining residential, commercial, retail, transport and green space creates a vibrant urban landscape which is used at all times of day and by different groups.	**Monotonous.** Dense single land use appears to prevent the advantages of density from being leveraged and fosters negative externalities instead.
Connected. Includes high volume reliable public transport and leverages existing infrastructure. 80% of ULI members surveyed identified good infrastructure as an essential component of successful density.	**Isolated.** Without transport infrastructure density is not able to fulfil its key role of facilitating access, and can lead to unmanageable traffic challenges.
Planned in advance and incremental in pace. Good density is the product of an overarching strategic vision about place-making and specific / explicit project choices.	Occurs at a rapid and **unmanaged** pace. Places and people become overwhelmed by rapid density which prevents assimilation and the investment needed to make density work.
Cohesive. Meets social needs as well as economic needs. The aim of good density is not just to create capital assets but to serve people who live and work in the city.	The concentration of single income populations (whether high income or low income) or single ethnic groups. If density is combined with income or ethnic **segregation,** it can have the unintended effect on increasing 'ghettoisation' or spatial inequality.
Liveable. Enhances quality of life and liveability for residents. Good density mitigates the liveability stresses caused by concentration and takes advantage of the opportunities it creates to enhance public services and quality of life.[11]	**Unliveable.** Without good public and private services density can become monolithic, scary, and imprisoning. Bad density can breed crime and insecurity, making dense spaces fearsome and unattractive.
Spacious. Good density provides public and open spaces for citizens to decompress regardless of their income.	Absence of public and open space / connectivity. Without the space to decompress density can become oppressive and feel **crowded.**
Has flexibility. Good density can be increased or added to **incrementally.**	Lack of adaptability to changing economic and social circumstances. Dense buildings that are **inflexible** can prevent a whole district or neighbourhood from adapting. It can have a blighting effect.
Has **design** built into it. High density does not always have to mean high rise, but should always mean high quality urban design.[12]	The absence of good urban design. Density can be created in ways which are perceived to be **ugly.**
Green. Has an environmental benefit and uses energy, waste, water and transport systems more efficiently. Encourages shared facilities and services.	**Polluting.** Traffic congestion and heat island effects stemming from poorly planned density can be detrimental to the environment.
Appropriate. Minimises impact on existing settled neighbourhoods and places. Good density reflects and accentuates the local character of existing neighbourhoods. Planners take measures to accommodate and provide for existing residents.	**Conspicuous** and inappropriate to existing scale of buildings and character of city scape. The blend of buildings in the same neighbourhood is key, each city or district has its own vernacular or narrative that dense buildings need to be in tune with.

What is Good Density: The Experts' Opinions

"The key goal is to have density and retain authenticity: that means respecting the historic character, the natural environment and the street life."

- Mark Cover, Senior Managing Director, CEO – Southwest Region, Hines-Houston

"The key combination is density with place-making and infrastructure. If you have both you get a really successful city like London. If you have density without place-making you get a different kind of city. So the skills of place-making are critical, but in general city governments don't understand how to commission it."

- Brian Moran, Senior Managing Director, Hines

"Successful density needs a good mixture of uses, architecture and urban design. People will no longer accept a monoculture."

- Dr Zenja Antalovsky, Executive Director, Urban Forum, Vienna

"Good density is mixed use, transport enabled, integrally designed, well serviced. We are learning now that we need to have a real diversity of skill sets within master-planning teams, including people who can look at the anthropological and community issues that are at the heart of density. We can't rely on traditional development teams alone to come up with all the right answers."

- Andy Martin, Senior Partner, Strutt & Parker

"In the US, high rise does not appear to be a means of achieving vibrant mixed income neighbourhoods. The rents involved are way beyond the means of lower income groups. But lower rise brownfield redevelopment, and in particular the infilling of abandoned and vacant land, can be an important tool in creating affordable housing."

- Richard Baron, Chairman and CEO, McCormack Baron Salazar

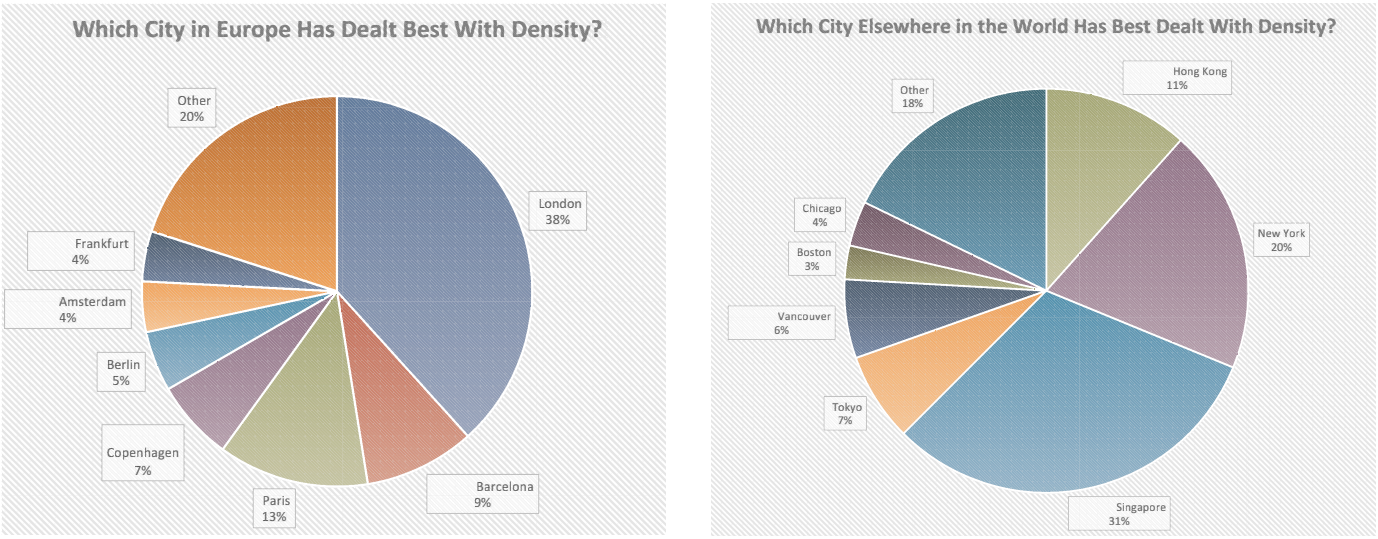
"Density requires amenity and that amenity is public transport. Doing density at any scale requires infrastructure investment. Density as a model requires public investment as much as private investment."

- Professor Peter Newman, AO, John Curtin Distinguished Professor of Sustainability, Director DSD Curtin University Sustainability Policy Institute

Which cities have succeeded in creating good density?

ULI members showed a remarkable degree of consistency when asked which cities, both in Europe and worldwide, they considered had dealt well with density. London, Paris, New York and Singapore emerged as particular success stories:

Figure 5: ULI member survey responses to questions regarding successful density



Research by other organisations highlights similar cities. The Centre for Liveable Cities in Singapore has produced a matrix of density-liveability based on the Mercer Quality of Living Survey which highlights Singapore, London and Vienna as cities with particularly good density:

Figure 6: Centre for Liveable Cities Density-Liveability Matrix [13]

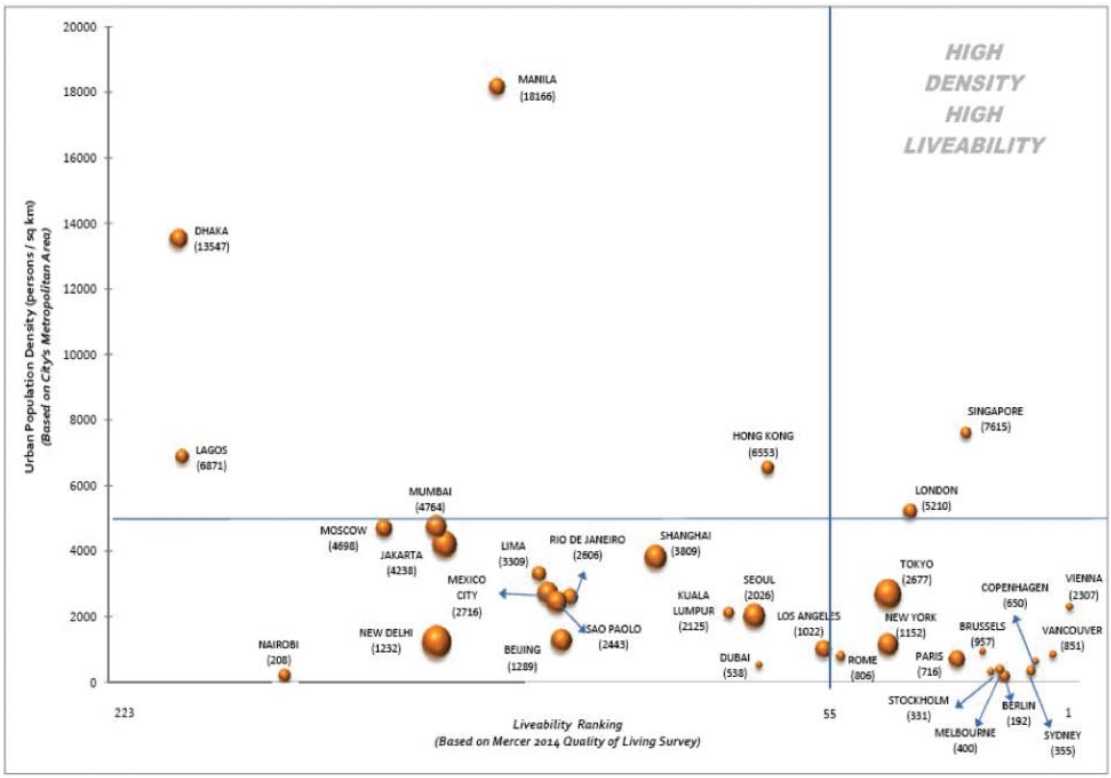
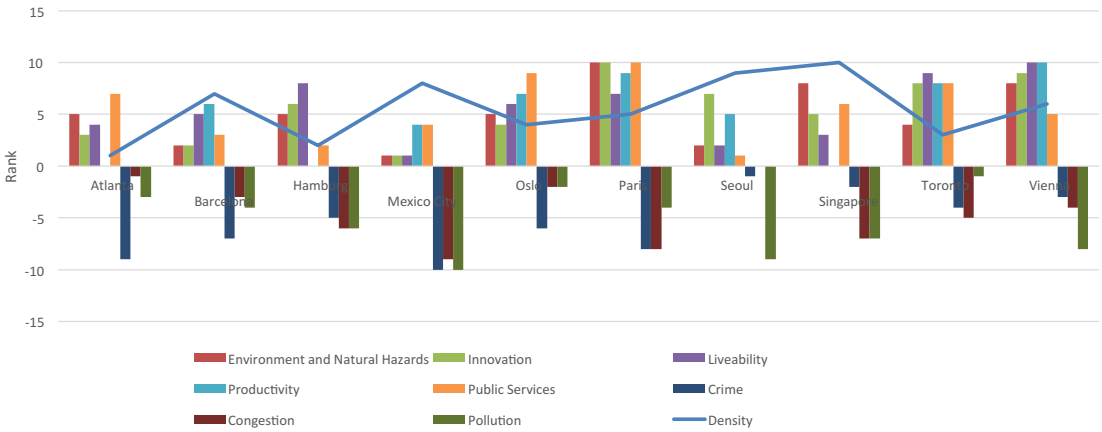


Figure 7: Comparative Performance of Ten Case Study Cities on 'Good' and 'Bad' Density Indicators



Similar results were again revealed using our own methodology of ranking our ten case study cities according to their performance on eight global indices: five which measure positive outcomes of liveability, productivity, innovation, strong environmental governance, provision of public services, and three which measure negative outcomes of congestion, crime and pollution.[14] Our conclusions are based on the premise that those cities with good density maximise its upsides and minimise its downsides.

Vienna and **Paris** stand out as higher density cities which perform strongly on the positive benchmarks (although Paris' success is tempered by some poor to middling performances on the negative benchmarks). **Mexico City** on the other hand is a high density city that is the worst performer on both 'good' and 'bad' density indicators. Seoul also struggles to convert its high density into strong environmental and liveability outcomes. Although less dense overall than the majority of the case study cities, Toronto is particularly successful in minimising the negative effects of density. Interestingly our comparison shows little correlation between the degree of density and performance on the global benchmarks reviewed - strong performers feature amongst the more dense and the less dense cities.

It is important to note that good density/bad density may **look different depending upon *who it is for.*** Some densities are desired by some social groups and not by others. Families with young children, for example, might be less inclined towards high rise living. Several interviewees talked about the human need to access a 'release' from density, and spend time in lower density environments. Where density is configured for social groups who perhaps do not have the means or access to holidays or weekends out of the city, that release mechanism must be built into the dense environment, in the form of parks, or beach, or other open space.

Just as density can facilitate productivity, wealth creation, innovation, sustainability, and social cohesion it can also facilitate some or exacerbate some unwanted outcomes. Density combined with ethnic segregation or income polarisation, or informality and insecurity, will have the effect of making each tendency worse, increasing risks and concentrating challenges. So, we must be careful where and how we densify, and how we address unintended consequences of density.

> *"Overall I would say good density is about trying to achieve balanced development – achieving a good economic outcome, building a competitive economy, making sure that people have a decent quality of life, good homes, and maintaining a sustainable environment. It is about trying to achieve these liveability outcomes."*
>
> **- Khoo Teng Chye,** Executive Director, Centre for Liveable Cities, Singapore

Section 3
Drivers of density

Population change is the root cause of the recent densification in many parts of the world, but there are also other drivers that are essential to understand. Historic drivers of dense urban living are well documented. Topography and physical limitations, the location of public transport facilities and infrastructure, and a city's inherited traditions of lifestyle, design, culture and development all impact on the spatial clustering or dispersal of populations.[15] But in our new global urban era, new and additional drivers are also creating preferences for high urban densities. Here we identify seven key drivers of density in cities:

Primary drivers

i. Population growth in cities.
ii. The re-urbanisation of business, knowledge, and enterprise
iii. Environment and sustainability.

Enablers and secondary drivers

iv. Digitisation and technology development
v. The links between density and infrastructure investment
vi. The urbanisation trend in capital investment
vii. New preferences in architecture and urban design.

Primary drivers and enablers. Our review has revealed three drivers of density.

> *"Density is most intense an issue in the 10-20 million people cities, in those cities which are rapidly growing."*
>
> **- Olivier Piani,** CEO Allianz Real Estate

3.1 Population growth in large and medium sized cities

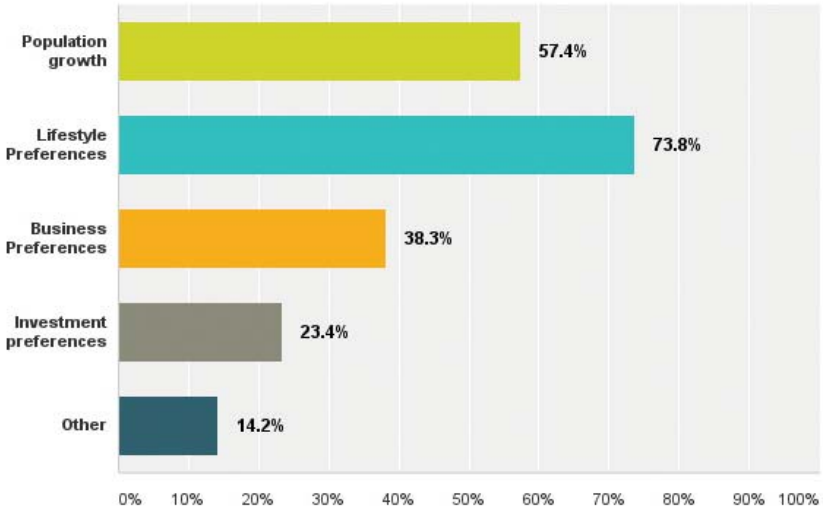
The combination of natural increase and ongoing urbanisation are projected to add 2.5 billion people to the world's urban population by 2050. The growth is geographically uneven - nearly 90 percent of the increase will be concentrated in Asia and Africa, and indeed more than a third of total urban growth to 2050 will take place in just three countries: India, China and Nigeria. But even in developed regions like Europe and North America, most cities are growing steadily.[16,17]

Naturally, population growth is most significant in driving increased density in those countries which are experiencing the fastest rate of growth – particularly therefore in Asia and Africa. Similarly it appears to be in the world's largest cities, where continuing population growth threatens to create unsustainable sprawling megalopolises, that the calls for density are loudest. In Europe on the other hand, where population growth is more moderate, ULI members rated it as only the second most important driver of densification (Figure 8).

The most important driver of European densification was seen as changing residential and lifestyle preferences. The growing trend for urban living, particularly among the so-called 'Millenial' generation has been widely reported, and as such we do not discuss those trends in depth in this report. In Europe and the US, many young people have moved into core urban areas attracted by the convenience, amenities and 24 hour lifestyle on offer. This re-urbanisation has often transformed neighbourhoods that were previously in decline - Shoreditch in London and the SoMa District of San Francisco being two examples.[18] Older people are also choosing to move back to cities, attracted by entertainment and amenities.

This reinvigoration and intensification of land use in previously abandoned or rundown areas is a clear driver of densification, enabled by proximity to successful and mature districts and the use of new technologies and cheaper land.

Figure 8: Why are European cities becoming more dense? ULI members survey reponses [19]



3.2 The re-urbanisation of business

At the same time as population is moving to cities, economies are also urbanising. The major growth sectors in the world economy are all sectors with an urban or metropolitan character – they include finance and professional services, creative industries, leisure, science and technology and education and healthcare. These sectors have an urban bias. They rely on urban environments and eco-systems for their growth and productivity. They want to locate in cities, for at least four reasons:

i. **Size of the market:** Cities offer businesses synergies and economies of scale in serving large, dense markets of clients and customers.[20] In European cities there is a 'consumer class' of nearly 500 million people.[21]

ii. **Shift in nature of products and technology:** In service and innovation economies, cities provide unrivalled opportunities for businesses to invent new things, and opportunities to test and sell them.[22] At the same time, the digitisation of business reduces their footprint and enables them to move back to cities despite higher rents. The growing sharing economy works best in cities where there are enough residents to create economies of scale and efficiencies in sharing.

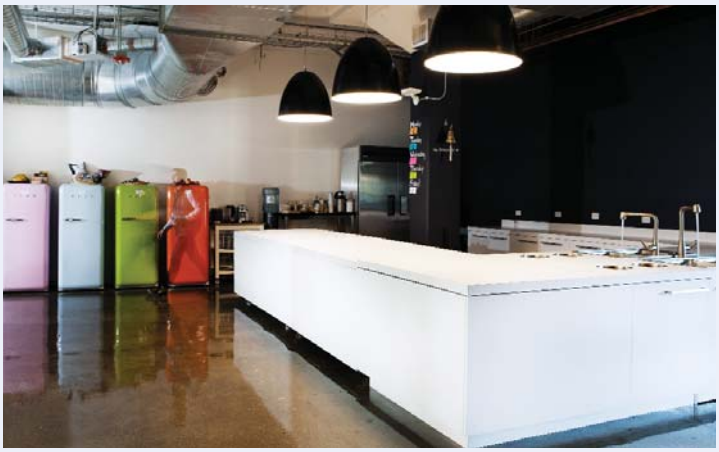
iii. **Cities themselves are becoming important customers:** city governments have high capital purchasing needs, which creates demand for the deployment of advanced technology and innovations in the design, finance, and delivery of city systems.[23] City governments also procure numerous services, including legal, finance, planning, etc.[24]

iv. **Changing working practices:** The rise of flexible working and self-employment reinforces the need for central meeting points, good late night transport options and improved security, all of which cities are best able to provide.

As a result, a clear majority of Western European cities have seen private sector jobs become more concentrated in city centres since the mid-1990s.[25] This drives an intensification of land use in core areas, not only from offices looking to locate centrally, but also from retail, restaurants and entertainment sectors who demand land in close proximity to the workforce / their customers. Densification is one means to accommodate these intensified demands. Furthermore, with re-urbanisation comes new business locations in cities, including:

- the rise of second and third districts
- new campus city centre locations
- new innovation districts, 3D printing, and the sharing economy in the work space
- the redevelopment of old industrial locations into new corporation and enterprise hubs.

> *"Employers who are looking to hire the best people will always follow the talent. An out of town business park isn't going to attract the best talent today. People want to be in lively and vibrant places, both at work and after work. This drives an intensification of urban centres."*
>
> **- Benjamin Lesser,** Development Manager, Derwent London



Case study: New types of office space – AirBnB

In 2013 AirBnB moved its headquarters to a 15,795 square metre (170,000 square foot) renovated warehouse in the SoMa district of San Francisco. The five storey warehouse, which is almost a century old, was originally built for Eveready batteries and later housed a wholesale jewellery market. The building was foreclosed during the economic downturn following the Global Financial Crisis. Redesigned by Gensler, the AirBnB HQ now represents a new type of office space - containing a kitchen, a library, break out spaces designed to replicate AirBnB listed apartments, places to nap, and, fundamentally, no individual offices. This open plan style accomodates a greater number of people than traditional individual offices, and today there are more than 200 workers based in the office. This figure is growing and represents a significant densification of an overlooked city building.

> *"Sustainability is an important driver of density. Densification and more intense use of land produces buildings and infrastructure that are more energy efficient. Ultimately sustainable and denser buildings and cities will provide a premium return and can be more affordable because of lower use of energy and resources."*
>
> **- Patrick Kanters,** Managing Director Global Real Estate & Infrastructure, APG Asset Management

> *"It is not just urban population growth that is driving the need for denser cities and urban districts, but the need to reduce the footprint and improve resilience of cities."*
>
> **- Paul Lecroart,** Senior Urban Planner, Paris Region

Each of these new locations has clear implications for density, as examples such as AirBnB demonstrate.

Urbanisation of business is not restricted to Europe and the USA. Many of the trends identified are also playing out in the cities of the developing world, where consumer markets are particularly large. In developing world cities mechanisation and technological improvements in agriculture and manufacturing are also continuing to move jobs away from rural areas and into cities, further intensifying densification.

3.3 Environment and sustainability

As it has become clearer that the future success of cities (and indeed the planet) is inextricably bound up with their environmental sustainability, planners and city leaders are looking for 'whole-of-city' ideas to minimise their city's energy consumption and environmental impact. Many see densification as the best option for doing so, and some key reasons for this are:

- Energy consumption is reduced in compact cities. The New Climate Economy, a flagship project of The Global Commission on the Economy and Climate which is supported by seven international governments, states that *"more compact, more connected city forms allow significantly greater energy efficiency and lower emissions per unit of economic activity".*[26] Indeed some studies have shown that a doubling of density results in a 30 percent reduction in energy use per capita.[27] Apartment style living and reduced reliance on private transportation both contribute to energy savings in dense cities.
- Denser cities are more walkable, and can provide more viable public transport options. In a joint report with ULI, The Centre for Liveable Cities reported that the lower density cities of the United States (typically ten persons per hectare or less) use about five times more energy per capita in gasoline than the cities of Europe, which are in turn about five times denser on average.[28]
- More compact urban forms have smaller physical footprints, preserving greenfield sites and natural habitats.
- Waste disposal and management services can be more viable and economical to construct and operate at high density.

Secondary drivers and enablers. There are four key factors that our review has revealed are important enablers and secondary drivers of density. These are not primary causes of density but they act to make density easier to achieve and also stimulate demand for density when operating alongside its key drivers.

3.4 Technology and digitisation

Technology and digitisation enable density by making land, buildings, and city systems more efficient. They enable cities to accommodate density more effectively. Ubiquitous technologies such as wireless networks, smart phones, and sensors enable much better customer/citizen interaction and smarter city management. New developments such as robotics and 3D printing will enable the re-use of both urban and suburban land.

Technological improvements are encouraging higher densities in a handful of different ways. Firstly, technological advances have been physically enabling people to live and work at higher densities since Otis' invention of the lift brake (and the consequent birth of the skyscraper) in the 1850s. New technology in lift design and building materials promises to enable buildings to soar higher and faster, enabling even greater vertical densities. The latest construction developments are also exploring the possibilities of cities going lower and lower – building underground as a means of accommodating more people within a given footprint.[29,30]

> *"Technology and communications are active drivers of density. They make greater interaction and connection more possible and more necessary. Fear of not being connected is an important concern and this fear is addressed by density, and the interaction that it brings."*
>
> **- Sir Terry Farrell,** British Architect, Urban Designer, Farrells

Secondly, technology has dramatically reduced businesses' floor space requirements, enabling employers and retailers to take advantage of the benefits of central business districts, rather than suburban retail, industrial or business parks. These smaller floor space requirements all contribute to more efficient land use and higher densities in the urban core. Indeed according to a recent report from the British Council for Offices, office densities in the UK have increased almost twofold since the 1990s.[31]

Thirdly, 'smart' technologies have enabled more efficient, denser use of public space within cities. Traffic monitors can direct traffic to empty roadways or create contraflow systems, whilst the sharing economy – with companies such as Airbnb and apps like *Parkonmydrive* have enabled the creation of more shared space and denser urban land uses.

3.5 Density and transport infrastructure investment

Good density needs efficient transport infrastructure, but infrastructure investment also needs density to justify resource mobilisation and achieve returns.

Many faster growing Asian cities have sought to manage urbanisation and population growth with a joint strategy of investing in transport infrastructure and clustering denser land uses near to stations and interchanges, whilst using the improved and integrated transport system as the framing device for a new spatial form (often polycentric, compact, and functionally complementary). Successful Asian cities such as Tokyo, Seoul, Hong Kong, and Singapore have perfected this approach and the result has been well managed densification that is supported, and supports, high capacity transport systems and underpins high quality public services.

Case study: Transport infrastructure and density in Seoul

Population growth in 1980s Seoul took place on an unprecedented scale. At its peak, it was estimated that 800 people moved into the city every 24 hours. To accommodate this growth, the government created a series of high density suburban developments, supported by an extensive and highly integrated public transport network. The Seoul Metro covers the most track distance of any subway system in the world, and serves over seven million people every day, second only to the Tokyo Metro in annual passenger volume. It is integrated with the bus system via the shared use of a single reusable pass. Suburban stations in Seoul feature countdown clocks and comfortable bus shelters. The metro also has dedicated areas for bikes and ramps leading to stations, maximising integration with the city's BikeSeoul bike sharing programme.

Many suburban metro stations form the focus for vibrant pedestrianised districts with entertainment, cultural, sporting and dining amenities in close proximity, and on multiple levels – typically up to ten storeys in height. Suburban residential development in Seoul typically features many 20 -30 storey buildings.

Essentially, this strategy involves deliberate and decisive spatial planning that designates areas within a city for intensification, regeneration, and/or land use change, and uses some of the anticipated land value uplift to finance the infrastructure needed to make the land use change feasible. In Hong Kong for example, the construction and operating costs of the Hong Kong metro were financed by the city operator, Mass Transit Railway Corporation (MTRC), which established joint ventures with private real estate developers and retail outlets located near subway stations, in addition to selling development rights.[32] This approach is now being developed in many cities in Europe, Latin America, Africa, Asia Pacific, and North America. Vancouver for example, has invested in infrastructure to support high density living, and become a very highly rated city.[33]

3.6 The urbanisation of capital

Over the last 30 years, investment systems and capital flows have been shifting incrementally in favour of fixed assets. Capital in many sources (institutions, sovereign wealth funds, private equity, international financial institutions) are increasing their allocations to urban real estate (both commercial and residential), infrastructure, and facilities. Indeed, a majority of institutional investors are now more likely to invest in real estate than any other asset class.[34] There is some debate as to whether this shift in investment allocations contributes to the demand for greater density, or is simply following the market. Quotes from our expert interviews demonstrate the two points of view which appear to co-exist at present:

> *"Capital markets reward density with large scale investments. They like the scale and the pace of dense projects. They can exit sooner. The availability of large pools of capital that seek large, unified, and faster investment projects incentivises and stimulates density."*
>
> **- Chris Frampton,** Managing Partner, East West Partners

> *Capital facilitates ambition and aspiration in cities, it does not drive density but enables it. In the past capital sometimes got it wrong and invested in dense projects that failed before they came good due to poor planning, lack of infrastructure and facilities. Today, capital is not so stupid.*
>
> **- Andy Martin,** Senior Partner, Strutt & Parker

One current observable investment trend in OECD countries is a growing privatisation of public land. In many cases this privatisation is a consequence of cash strapped governments seeking to balance their books in the post Global Financial Crisis era.[35] Whether in the form of investments in state owned companies, public private partnerships or private acquisitions, this privatisation provides new opportunities for capital to invest in cities. In the UK for example, since 2014 members of the public and businesses have been allowed to buy government land and buildings on the open market.[36] As investment in ex-public land assets is often related to the redevelopment of brownfield sites, it is also intrinsically linked to increasing density.

3.7 Architecture and urban design

Skyscrapers have symbolised economic might ever since the construction of the Empire State Building, and today many cities around the world are investing in ever higher 'trophy' buildings. These high rise buildings can be of such scale that they contribute to higher urban densities, particularly when clustered together in skyscraper districts.

Whilst skyscrapers have long been a feature of the skyline of US cities, in recent decades it is the cities of the East which have shown the greatest penchant for high rise, perhaps as a means of symbolising their arrival as economic powerhouses. The Middle Eastern Emirate states are especially well known for their high rise buildings, with the Burj Khalifa in Dubai being the world's current tallest building – stretching up to over half a mile high. However, Chinese cities have also embraced high rise: the skyline of Pudong in Shanghai has become particularly iconic, but the country's cities generally are bursting with skyscrapers. The twisting Shanghai Tower will be the world's second tallest building when it opens later this year.[37] High rise also remains in vogue in cities such as Hong Kong and Singapore, where it provides a means of accommodating large populations within a finite urban area – creating 'vertical density'.

> *In Hong Kong living on the 45th storey is not considered unusual. The concept of high rise living being bad just doesn't apply here. What is wrong with a 30 or 40 storey building if the infrastructure can cope?*
>
> **- Gordon Ongley,** Director, Development, Swire

Section 4
Density dividends

Figure 9: Which of the following do you think is the strongest argument for increasing urban density? ULI members survey results

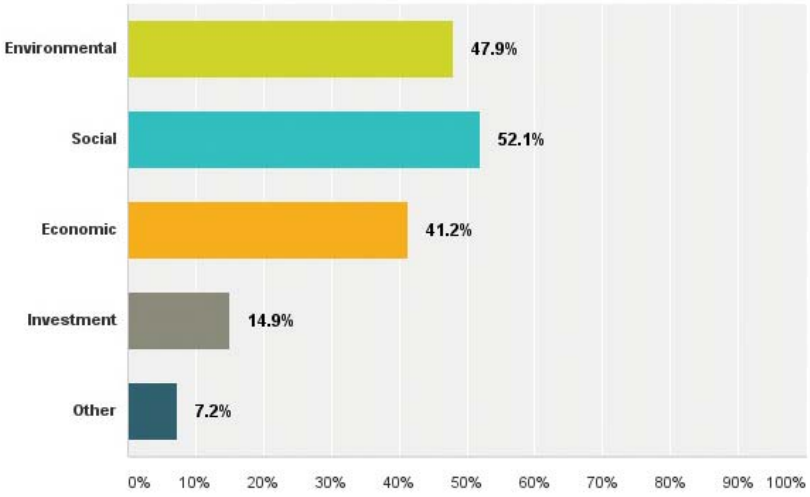
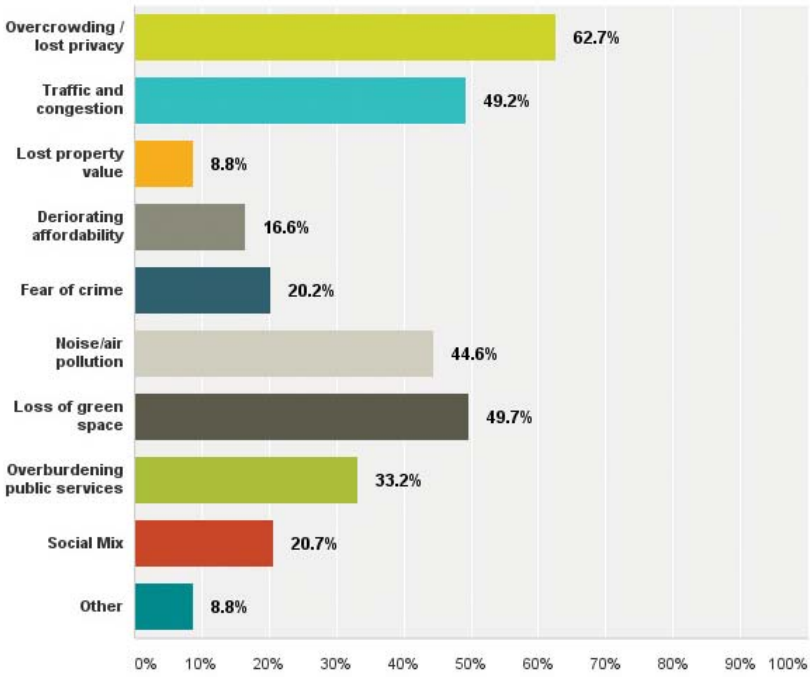


Figure 10: ULI members' responses to the survey question "Which of the following do you think is the most important reason for people resisting density? Please select your top three choices." [39]



Opinion as to whether dense urban forms should be embraced or avoided has been in flux since the earliest days of city planning. In the 1960s, the urbanist Jane Jacobs famously wrote:

"To say that cities need high dwelling densities and high net ground coverages, as I am saying they do, is conventionally regarded as lower than taking sides with the man-eating shark." [38]

Today, partly as a result of the emergence of new drivers of density, but also in recognition of its potential dividends, policy support for density is on a scale previously unseen. Those in support of density point out that it has potential social, environmental and economic benefits. ULI members surveyed showed a fairly even split of opinion as to which of these pro-density arguments is the strongest (Figure 9).

Nonetheless, opponents to density do endure. ULI members surveyed believe that it is liveability concerns (fear of overcrowding, noise and pollution, traffic, lack of green space) which are the most important contemporary reasons for resistance to density, ahead of social concerns (crime, segregation) or economic concerns (e.g. loss of property value, declining affordability) (Figure 10).

Members' own concerns about density reflected a similar pattern – the most frequent response when asked about their greatest concern was 'overcrowding' followed by 'congestion'.

> *"By the late 70s and early 80s the world seemed convinced of the merits of high density development, and Hong Kong made an important contribution to this debate – showing that high density urban development could be successful with proper planning and efficient urban management. I am surprised that the density debate is still continuing!"*
>
> **- KK Ling,** Director of Planning, Hong Kong Government

4.1 Density: dividends for the economy, society and the environment

In the following sections we seek to highlight the potential advantages and disadvantages of density, from economic, social and environmental perspectives. When creating density, the aim must be to optimise its potential advantages and minimise its disadvantages whether these are economic, social or environmental. In order to do so, it is essential to focus on using the ingredients of good density and avoiding the facts associated with the bad density.

Density and the economy

Potential advantages of density	Potential disadvantages of density
Can attract mixed uses (businesses, hotels, shopping and residential) to urban areas, which are more economically efficient. May increase the long term value of nearby housing stock.	May cost more to develop and maintain buildings / schemes, and therefore take longer to absorb land costs.
Can both encourage and facilitate infrastructure investment. May enhance viability of and investment in key urban services and community amenities including health, education, culture and recreation.	May increase relative prices for dwellings, goods and services.
May improve a city's productivity levels and employment opportunities. Ciccone and Hall (1996) found that doubling employment density increases average productivity by around six percent.[40] Can allow private business and development companies to draw out greater returns and so pay greater taxes which can be captured by government and re-invested into the city.	May limit access to local undeveloped land, which tend to be more highly valued.
Can create the optimum conditions for innovation to thrive, and enable knowledge to be transferred more quickly and seamlessly. The number of productive innovation districts emerging in cities such as Toronto, London, Stockholm, Medellin, Barcelona and Montreal suggests that there is a link between high density and the commercialisation of ideas.[41]	Can negatively impact economic development of surrounding rural areas and those further afield.

A key area of the density debate in the economic sphere relates to the so-called economies or diseconomies of agglomeration. Urbanists including Edward Glaeser, Richard Florida and Michael Storper believe that high densities in city cores generate economic benefits including knowledge spillovers, greater efficiencies and reduced costs in production and exchange, and greater 'pulling power' to both customers and suppliers. However, other theorists such as Polese (1996) and Camagni (2005)[42] suggest that beyond a certain threshold, agglomeration in fact produces diseconomies – whereby competition drives down pricing power, and crowding and congestion create avoidable costs and externalities for businesses such as traffic, pollution and labour shortages.

Density and society

Potential advantages of higher density	Potential disadvantages of higher density
May enhance accessibility as people live closer to work, shop and play. This can help to promote social equality as low income workers without a car are not disadvantaged. May enhance access to and quality of key urban services and community amenities including health, education, culture and recreation.	Might lead to increase competition between groups for space, risking social ties, forcing up land values and potentially excluding lower income groups and reinforcing social inequality.
May benefit health from more walkable, cycle friendly neighbourhoods with reduced car use/reliance.	Potential for cramped living conditions, with obstructed views, loss of privacy and increase in noise / nuisance.
Greater mix of land uses may add diversity, vitality, and opportunities for creative and social interaction.	Might create difficulties in supervising children at outdoor play.

The relationship between society and density is complex because communities are not homogenous. While increasing density may have a positive impact on one individual or social group, it may have a negative impact on another. Paradoxes also emerge – for example, whilst increasing density in core areas might make access to jobs, amenities and services easier and cheaper, therefore enhancing social equality, higher land prices in core areas may have the opposite effect of reinforcing inequality.

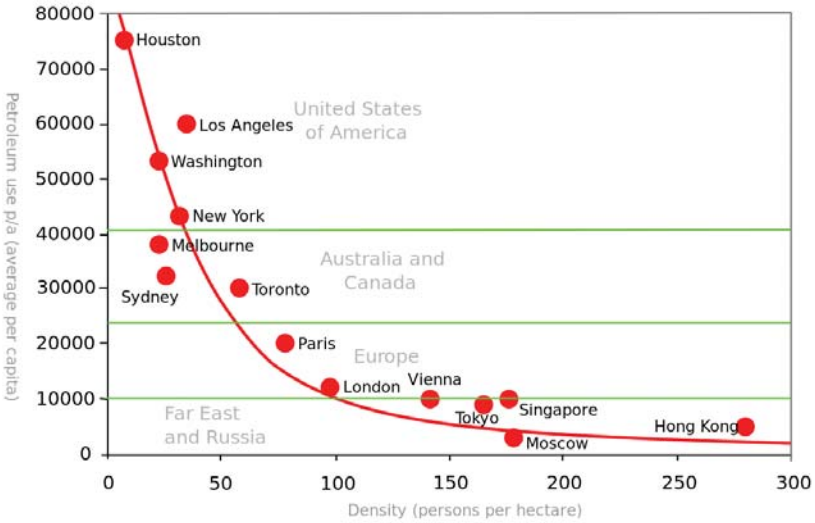
> *"The densified city will produce a more liveable and sustainable reality that addresses the polarisation of income by providing shared amenities and spaces between people. Densification is the physical manifestation of the sharing economy."*
>
> **- Michael Spies,** Senior Managing Director, Tishman Speyer

Density and the environment

Potential advantages of higher density	Potential disadvantages of higher density
Public transport, walking and cycling may become more viable – reducing dependence on private cars and therefore vehicle emissions and fossil fuel use.	Can exacerbate traffic congestion and accidents in central areas.
Can reduce development pressure on greenfield land, preserving open spaces, clean air and water, biodiversity and habitats of fauna and flora. May increase resident attachment to local open space.	May use more energy during construction of high density buildings.
Can facilitate and makes viable innovative, green design and shared energy technologies such as combined heat and power and district heating networks. Can also lead to greater energy efficiency as dwellings become smaller and more efficient, thereby reducing water and power usage.[43]	Loss of public open space in central city areas might limit recreational opportunities, reduce land's capacity to absorb rainfall, and can exacerbate pollution if reduced space for trees that purify the air.
Likely to lead to greater use of existing infrastructure e.g. roads, sewers etc, enhancing their efficiency.	Can be more challenging to cope with domestic waste and to recycle.
Urban agriculture may strengthen local food security.	May limit potential for some forms of ambient energy systems, such as passive solar power.

The UN, World Bank and New Climate Economy Group (whose work will feature in future ULI reports) are just some of the high profile bodies which have pointed to the environmental benefits of densification. Nonetheless, ambiguities and evidential challenges do exist. For example, whilst many studies find a strong link between increased urban densities and reduced petrol consumption (see Figure 11)[44], these findings are not universally supported. Gleeson and Brehen (2011) for example argue that even in high density, individuals maintain a desire to travel to distant locations (for example to a rural area for the weekend) and therefore car use does not drop. Moreover, they argue that increasing density can increase congestion and travel time, leading to greater emissions overall.[45]

Figure 11: Relationship between petrol use and density[46]



Case study: Professor Peter Newman and Perth

Professor Peter Newman is co-author of *The End of Automobile Dependence* (2015). His work considers that three types of city are observable today: 'walking cities', 'transit cities', and 'automobile cities'. He argues that whilst high and medium density walking and transit cities are growing and attracting population, the low density automobile based city is no longer viable or attractive.

Newman sees the adaptation of automobile cities as a challenging but achievable goal for the next two decades. He points to the city of Perth, which has deliberately reversed its urban model from one of sprawl to one of successful polycentric density, supported by light rail. Obtaining citizen support is key to such adaptation projects. Perth benefitted from its European and Asian immigrant populations who were relatively open to dense urban living (in comparison to Anglo-Saxon communities, whose cultural preferences for an individual homestead may well be harder to overcome). Citizens were also provided with evidence and demonstration projects showing the efficiency and convenience of density over sprawl.

4.2 Debunking density myths

Debunking the myths about density is now greatly aided by the evidence available. The old myths about undesirable density need to be tackled head on with public education and information.

Myth	Reality
"Density is always about crowding poor people together."	High density living can be planned for, and made attractive to, all socio-economic groups. Dense neighbourhood districts such as Manhattan Island, San Francisco's Nob and Telegraph Hills and London's Notting Hill, all testify that upper income groups do live at high densities, and indeed often pay premiums to do so.[47] New brownfield developments such as HafenCity in Hamburg and Oslo's waterfront development are targeted at a mix of income groups, and will have the effect of densifying their neighbourhoods and cities.
"High density buildings attract crime."	Research does not show a clear causal link between high density and crime.[48] Oscar Newman's classic text Defensible Space concluded that design and use of public space had a far more significant effect on crime levels than density.[49] High density cities such as Toronto and Singapore are renowned for their public safety: these cities ranked second and sixth respectively on the crime sub-index of PWC's health, safety and security metric in the *Cities of Opportunity* report 2014.[50] Density proponents argue that high density can in fact reduce crime by 'putting eyes on the street' and fostering a 24 hour community.
"Cities that become more dense lose individuality."	Some of the more dense cities in the world are renowned for their individuality. Hong Kong and Paris for example are each high density cities with highly unique identities. Both were placed within the top five city destinations worldwide by Euromonitor's 2015 benchmark, which is testament to their individuality and draw.
"People don't want to live in high density buildings."	Increasingly, people, both older and younger people, are displaying preferences for core urban living, choosing to live close to their places of work as well as restaurants, culture and entertainment.[51] High density residential buildings can contain some of a city's most desirable and expensive accommodation. Beetham Tower in Manchester for example is Europe's highest residential building, and commands some of the highest rental and purchase prices in the city.[52] The 42 storey Meier on Rothschild Tower in Tel Aviv and 49 storey Odeon Tower in Monaco contain apartments which rank among the world's most desirable (and therefore expensive) addresses.[53]
"You cannot combine low density and high density areas successfully within one city."	Cities such as Toronto and Oslo refute this myth. As Section 2 of this report shows, these cities perform strongly on positive city indicators measuring factors such as sustainability, innovation and liveability. Both cities have focused densification efforts on particular neighbourhoods, whilst maintaining lower densities in the wider metropolitan area.
"Density always involves loss of privacy."	Individual privacy is certainly more vulnerable in high density living, but studies have found that privacy can be supported by a strong sense of community responsibility.[54] The proximity which arises from high density can facilitate social interaction and promote good community relations without compromising privacy.[55]
"High density means high rise."	Low and medium rise developments can also be dense. Cities like Paris, Barcelona and Montreal all display medium to low rise patterns of dense development. In central Paris, buildings are rarely higher than five or six storeys, but density is at some of the highest levels in Europe. This is partly as a result of the city's narrow streets and smaller apartment sizes.

Section 5
Conclusions: The drive for density

Looking forwards not backwards. The world does not fully understand the potential benefits of density at present, and its view of density may be skewed by the mixed results densification has achieved in the past.

Changed cultural imperatives. As a result, cultural preferences in the West have, for the past century or more, been biased in favour of low density and car dependent living, at a huge environmental cost. In North America, Australasia, and parts of Europe low density living and the suburban idyll became part of a national system of values. Whilst these cultural norms are slowly unravelling, the rate of change is slower than economic and social imperatives. We need to accelerate.

The world faces stark choices. Over the last two decades most cities in the world have become less dense – they have continued to grow outwards. This trend is set to continue for some time - cities in developing countries, where almost all urban growth will take place, are expected to triple their land area between 2005 and 2030. Urban footprint growth is expected to be almost as significant in industrialised countries (2.5 times growth), despite overall slower rates of population growth.[56] However, continuing on the pathway of outwards growth is the inferior option of the two stark choices that cities are presented with, and we must turn the tide towards density.

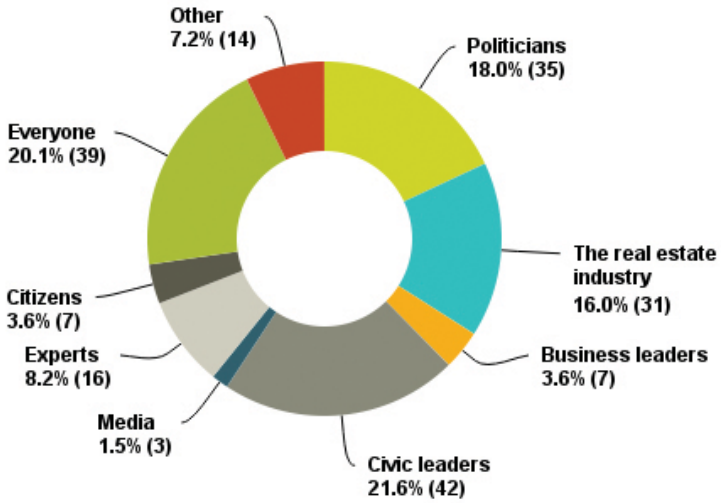
> *When given a choice, people make trade-offs between higher density and access to jobs and services like schools, hospitals and leisure facilities. Overcrowding within residential units affects attitudes towards neighbourhood density.*
>
> **- Prof Ricky Burdett,** Professor of Urban Studies, Director, LSE Cities and Urban Age, London School of Economics and Political Science

> *City making in the 21st Century has become the human race's biggest endeavour ever.*
>
> **- Sir Terry Farrell,** British Architect and Urban Designer, Farrells

Density makes sense. Density is a very important tool not just for managing population growth and economic change but for doing so in ways that are environmentally and socially efficient. Density is now about the ability to live affordably and in tune with the planet and its resources. Density is a means to live in prime locations and to share space and facilities with others, density is a sharing activity. The competitive advantage of density will be something that people and firms will not want to live without. Three quarters of ULI members surveyed felt that increasing density was either a critical or very important tool for the future success of cities around the globe.

Invest in skills of planning and advocacy. Density is difficult to communicate, to plan, and to design. It requires a skilful mix of design, communication, participation, demonstration, and illustration. ULI members survey responses shows that no one group is solely responsible for taking the debate forwards – it requires the input and involvement of as broad a mix of skillsets and interest groups as possible.

Figure 12: Responses to ULI members survey question: Who needs to lead the density debate?



> *People hate two things most: first they hate sprawl, then they hate density. Leadership is needed to show that density can be liveable. Local politicians need to take a lead on density. Artificial growth controls are not the answer.*
>
> **- Phil Hughes,** President of Hughes Investment and Hughes Commercial Real Estate

> *It is difficult to plan effectively for growth in a democracy which prioritises current preferences over future needs. Political process is always more attuned to those who have been here, versus those who would like to be, or those who have not yet arrived.*
>
> **- Michael Spies,** Senior Managing Director, Tishman Speyer

Density and democracy. Density and democracy have much to offer each other. Density can help to secure social, environmental, and economic goals, better sharing of physical space, it can make change easier to achieve and create more flexible cities. But democracy can often lack that longer term perspective that density requires, especially if we need to shift from a low density-low investment equilibrium to a much higher density-high investment model, as was done in Europe in the past, and has been achieved in Singapore, Seoul, and Hong Kong. Whilst we educate the public on density it is essential to support local politicians to learn how to promote density as a means to achieve public goals.

An agenda for advocacy, demonstration, and public education. There is a fundamental case for investing in learning about density. What is needed is clear:

i. Increase evaluation of city densities across the world and catalogue the ingredients of success.

ii. Identify whether a global density benchmark can be developed to protect land from urban sprawl.

iii. The training of planners, urbanists, to be bolder and more effective in planning for density.

iv. Support for city leaders to learn how to promote density.

v. Mount and disseminate demonstration initiatives that reveal how density works for liveability.

vi. Support for long term planning that delivers for the future citizens and not just for the present preferences.

vii. Provide tools to investors for them to better evaluate the value of good density areas in their investment models.

> *More than anything we need a renewed focus on demonstration projects, public education and the training of development and investment professionals associated with density. It is clear that density is, in most cases, the best way to accommodate economic change and population growth providing the optimal returns for society and the environment whilst also creating value that can be captured and shared, and making our cities more flexible. But the world does not yet know how important densification is or how it can best be achieved. Therefore we must commit ourselves to meeting this gap in knowledge and skills and to a new generation of advocacy, education, and inspiration about density.*
>
> **- Lisette van Doorn,** Chief Executive, ULI Europe

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[6] Excluding open space and non-residential land

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[14] The full methodology and details of indices used can be seen in the Appendix.

[15] http://lsecities.net/media/objects/articles/urban-age-cities-compared/en-gb/

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