

TODAY

The infrastructure investments made between the 1980s and 2000s, namely the Western Ring Road, CityLink and the Melbourne City Loop provided a substantial boost to the Victorian economy. However, significant state decisions have been made. From the early 2000s to today Melbourne has undergone record population growth, growing both in greenfield areas largely serviced by the extensive road network, as well seeing a period of urban densification, particularly around the long-held rail and tram network. The south-east growth corridor has begun to reach development capacity, with greenfield growth shifting to Melbourne's north and western growth corridors. This strong growth of the west necessitated the construction of the Regional Rail Link, due to open in early 2015. This period has also seen shift in the economic geography of the city, with EastLink providing greater access to firms and households in Melbourne's outer east and south-east. Additionally this period saw a resurgence in importance of the CBD, with high growth in professional services employment increasing travel demand to the CBD, leading to a significant rise in rail patronage.

IMIA 2015

Independent Insight.

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Environmental indicators

Greenhouse gas emissions have **stopped increasing** over the last 10 years. Municipal waste decreased from **1.9 million tonnes** in 2007 to **1.8 million tonnes** in 2012. Water use decreased from **208 litres** per person in 2004 to **160 litres** in 2014. Air quality is **getting worse**.

Governance indicators

Infrastructure spending is not keeping up with population growth. We are becoming **less satisfied** with the decisions of Government. We are unhappy with **political leaders** but one still participating in the democratic process. The proportion of the population aged 18+ who vote has increased by **2.8 percentage points** since 2010.

Economic indicators

Main household wealth increased by **62%** between 2004 and 2012. Disposable income per capita increased by **50%** over the last 10 years. Labour productivity growth remains **below trend**. 66% of people are poor or near poor in the labour force compared to **65%** ten years ago. Income distribution has remained about the same.

Social indicators

The unemployment rate increased from a low of **4.4%** in 2008 to **6.5%** at the end of 2014. Feeling of safety whilst outside in your local area is **increasing**. 96% of us can still turn to someone in times of need. Homelessness rate from **39 per 10,000 people** in 2001 to **43** in 2011. Where you live affects your ability to access opportunities.

Answering the question 'Is life in Melbourne getting better?' is a multidimensional challenge. There can be no conclusive answer, because we all have our own views about what is important to our own lives and how our city functions. Extensive analysis was undertaken to inform this discussion.

To understand the progress of Melbourne we must examine many aspects of people's lives - their incomes, their work life balance, their health, the quality of their environment, their access to opportunities, and so on. These dimensions of progress are intertwined. To earn more income, people may need to work longer hours and so have less leisure time. Rising incomes can lead to greater inequity.

From a data perspective, we have drawn on Melbourne, Victorian and at times national data to help inform how Melbourne has been progressing. To provide context to the data we present a time series or comparison to Australia or Sydney/ New South Wales. In some cases the most recent data is a few years out of date.

Much of what makes us happy is close to home - our families, our community, the built environment and local facilities and services. For those who own their home in a good location, have secure employment and are involved in their local community, life has improved greatly over the past decade. For those searching for their first job, or whose family is in the lowest income brackets, life has become more challenging. There are more unemployed, underemployed and a greater number of homeless people in Melbourne.

We still feel healthy but our personal relationships have weakened. Fortunately 96 per cent of us can still turn to someone in time of need. We are unsatisfied with our political leaders but are more engaged in the democratic process.

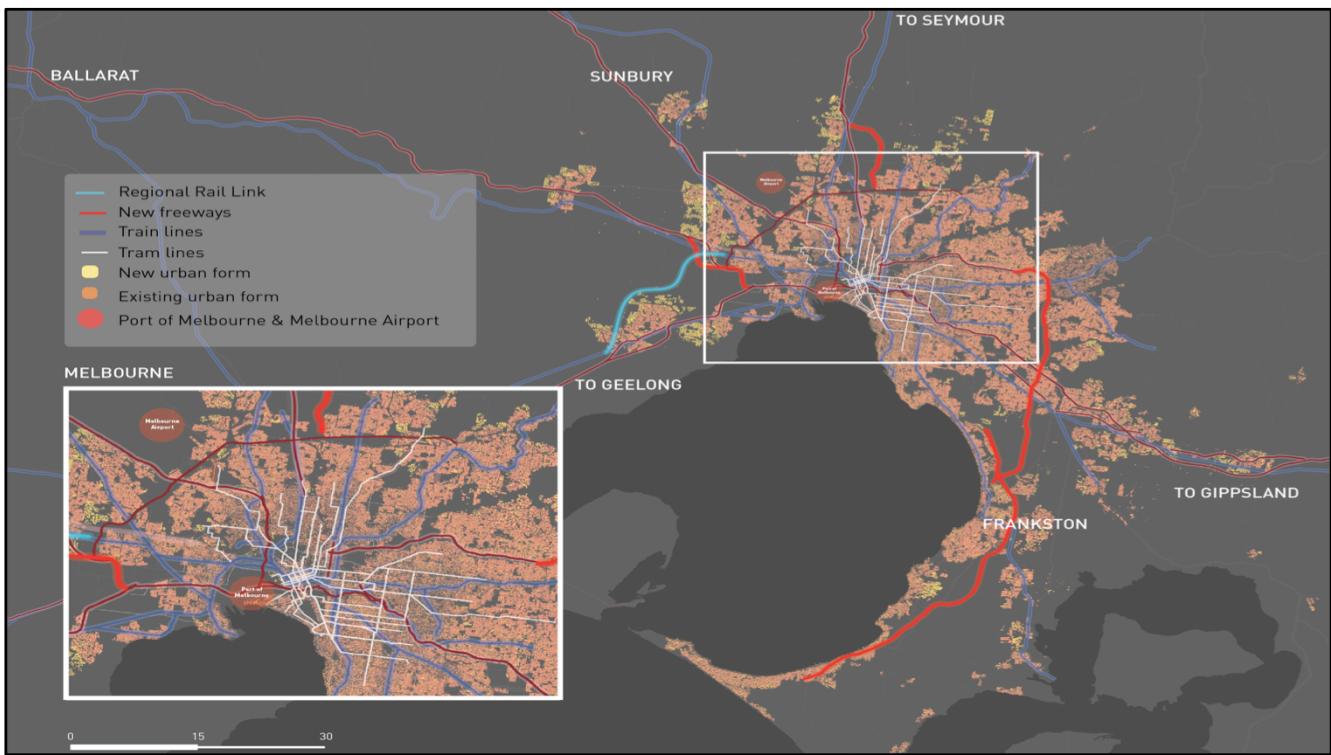
Our economy continues to expand, but at a slower rate and productivity growth remains sluggish. Infrastructure spending is not keeping up with a growing city. Health spending continues to rise as the population ages and we become more dependent on pills and procedures.

If these trends continue this poses challenges for the future livability of our city.

My name is Andie Yam, I'm from Sydney and I'm a consultant at SGS economics and planning.

I consider myself a GIS specialist and a practitioner in city planning.

I work with clients solve technical issues on the extraction, manipulation and implementation of spatial layers for modelling and analysis, I also work with web designers and digital producers on how to graphically represent data and maps on digital platforms. But most important of all, my job is to work with planners and economists to find out answers about cities and to analyse data about the demographics and economics of geography



A lot of times, the work that we do revolves around supply and demand of services that is of spatial significance. For instance, where do people live and where do they work. Is there enough land, jobs or houses to service underlying demand. If there is, where is it best to be located, and if there isn't, what should be done about it and how do we find resources to fill in those gaps, etcetera, etcetera. In most cases, these questions are best answered using a map or some form of spatial representation of the area. Because planning is inevitably territorial, and when clients think about their 'territory', what they want to see is how things are distributed across the functional area and want to understand how people movements and economic flows influence the way services should be delivered within that particular area.

And because of that, mapping and spatial science is so deeply integrated within SGS that it becomes almost like an enabling tool in the practice and every project that we undertake is like a collaborative effort between planners, economists and spatial scientists like myself.

SYDNEY @ 9M



And I want to show you a case study where all these 3 elements worked so well together that it had given us unexpected results than we planned for. And I want to share a with you glimpse of what I mean by collaborative work within Land Use and planning.

Sydney at 9 million is a paper written on behalf of a client in NSW which considers a range of urban structures for Sydney with a population of 9 million people.

This was Sydney at 1.2 million people, and this is Sydney today at almost 5 million people.

As you can see the city has grown its urban structure has changed and evolved. How the urban structure of Sydney will evolve as population grows is hard to predict, with many factors influencing the speed, direction and intensity of change. Apart from the NSW Bureau of Transport Statistics (BTS) projecting a population of just over 8 million by 2041 (show chart) Major investments in transport infrastructure have long legacies since the 1800s still has a fundamental influence on the structure of the city.

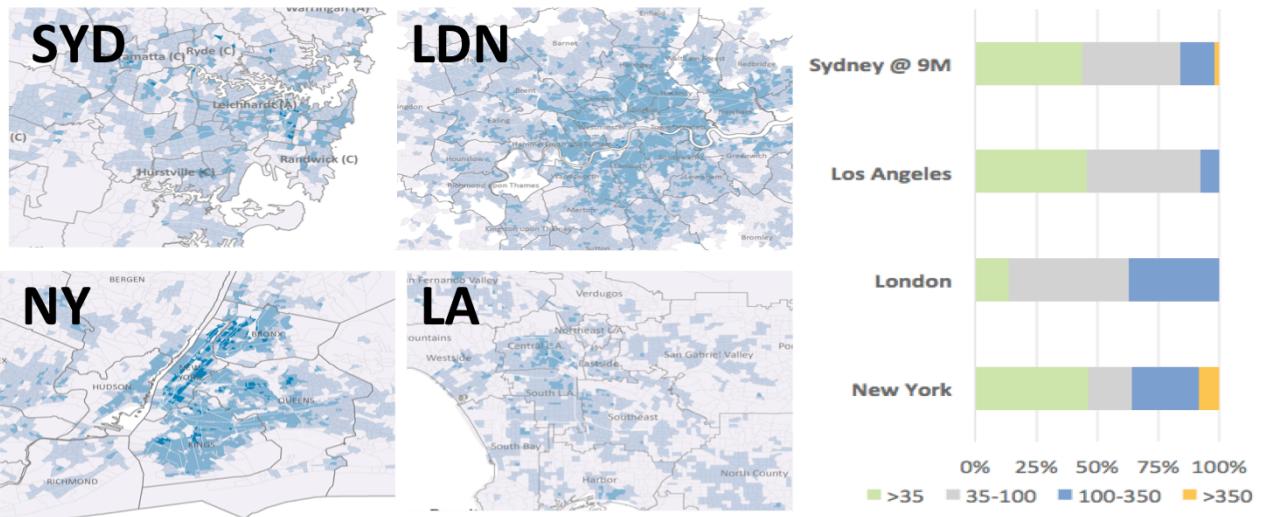
SYDNEY @ 9M



So it becomes a bit hard to know how our city would look like when it surpasses the expected population growth produced by BTS. Stakeholders would want a snapshot of the answer in order to know whether the foundations that they lay down today is sufficient to accommodate a population up to 9 million people.

For this reason, we've developed a number of urban growth scenarios which draw inspiration from the urban structures of larger cities from around the world, namely New York, London, and Los Angeles. Each of these cities accommodate their population differently, varying both in absolute density and relative distribution. They provide a range of urban structures that Sydney could adopt as it grows to 9 million.

SYDNEY @ 9M



Here's are some maps showing NY, LDN, LA and Sydney at their relevant statistical bands. The chart on the right shows the proportion of people living under the 1st, 2nd, 3rd and 4th band at each of these cities.

As you can see, Sydney houses the bulk of its population (88 per cent) in the two lowest density bands. But almost 50% of the population live under the lowest density band, and is similar across LA and New York. In other words, 50% of people in Sydney, LA and NY live in a house that looks like this.(see next slide)

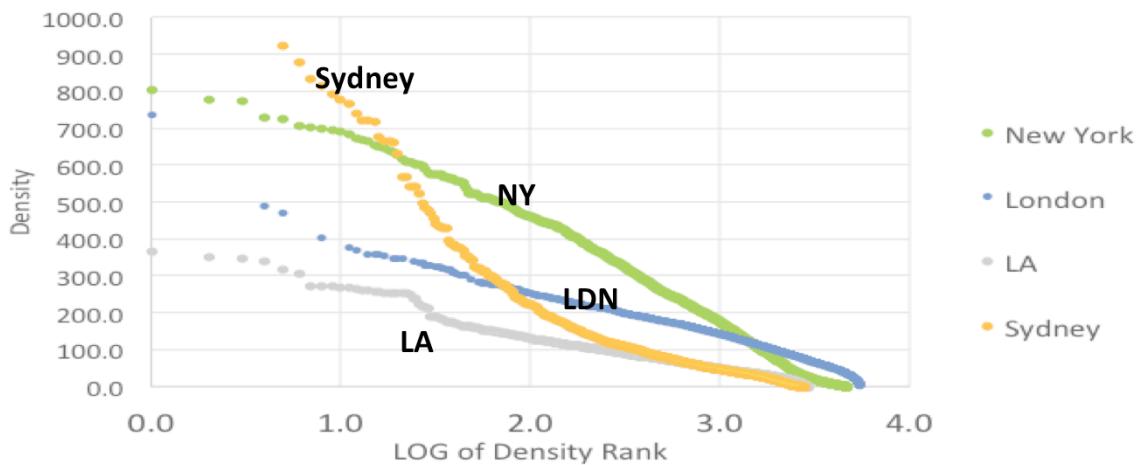
Essentially, Sydney is really similar to LA. There's a lot of people living in low dense areas, and also medium to low dense areas. The difference between Sydney and LA is that there are a lot more people living near centers, where train station supermarket and offices, in a say, 80sqm apartment with 2 bedrooms and a garage. (so low density house -> 80 sqm apartment) Whereas in LA, the low density becomes medium low. (perhaps the difference between a mansion and a townhouse).

Sydney predominately differs from New York in terms of the proportion housed in high densities of more than 350 people per hectare. And the conclusion of this slide is Sydney is most different to that of London.

50% of population live at this level of density in
Sydney, LA and New York



Simulation



This chart here shows the relative density of cities against the log of rank of the density.

and it just another way of explaining the relative densities of each cities.

So In order to simulate a city of 9M people that is similar to the 3 model structures, what we did was we redistributed the population in sydney and tried to fit them to the curve based on these density distrbution.

High density mono-centric city



And here are the results from the simulation.

Lets start with the photo on the right, That's a streetview of a neighbourhood located about 1-5 kms away from Manhattan. Each lot has a 4 storey building, each storey has about 3 to 4 units.

The inset photo is somewhere in Glebe / Leichhardt in Sydney, also about 1 -5 kms away from the CBD. Each lot has 2 storeys, and each storey has about 1-units.

The maps on the left, the one on the inset shows BTS projected population growth. The one with more whites is showing, if Sydney were to be like manhattan, this is the additional number of people you need to accommodate and where it should be accommodated. So using the photo as a guide, the inner ring of sydney will increase in density almost by 4 times if it were to become the manhattan model.

Evidently, growth is more concentrated in centres, with inner and middle suburb centres such as North Sydney, Kings Cross, Broadway, Green Square, Randwick, Auburn, Parramatta and Bondi.

Consistent medium density city



And this is if Sydney were to grow into a city like London.

Again, it's showing that the city will grow at different pace and different proportion.
The inner core is still very dense, but not as dense as NY.

There is a strong growth in the South, Inner West and around Parramatta.

There will be less focus on the Green Field areas, where the North West and South West growth centre is, as more population is housed in the existing urban footprint.

Again, for the middle ring, instead of having 1 to 2 houses per lot, It is likely to have 2 to 4 houses per lot.

Consistent low - medium density city



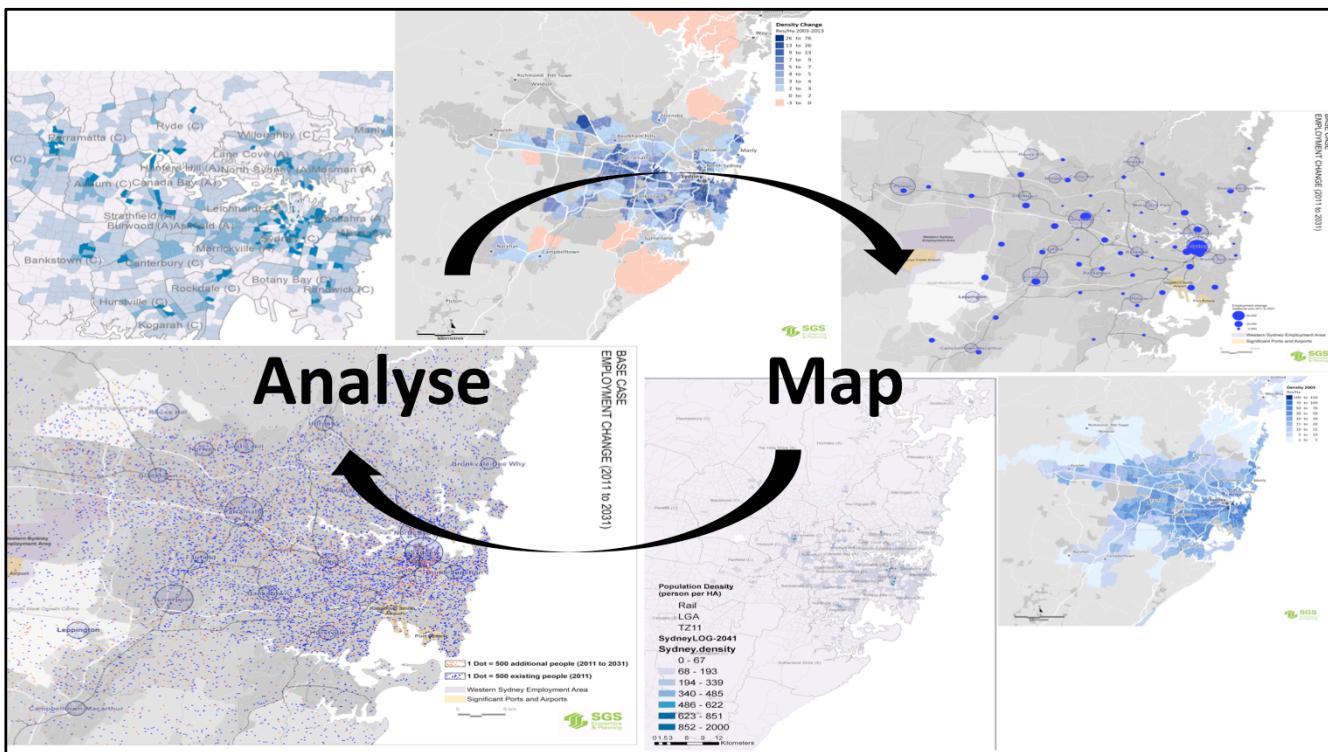
And finally the low density city – which is the LA model.

As discuss earlier, this is closest to what the BTS has projected.

More people living one level higher density band. This means that there will be a strong demand for houses particularly in greenfield areas in the North West subregion.

LGAs such as Blacktown, Bankstown, Fairfield, Liverpool, Camden and Sutherland in the outer ring see greater increases in population.

While, those in the City of Sydney, Inner North, Inner West, and East sub-regions see less population growth.



The reason I'm using this as an example is because GIS in this case is more than just a visualisation tool. This was the process that we'd gone through to get the right results. We were constantly mapping and checking and making sure that the story we want to tell makes sense. Each time we mapped it, it made the story clearer and gave us a bit more confidence with our method and the motivation to move forward.

In this case, it serves an exploratory data analysis function that allow questions to be answered using snapshots of the available data. It allows stakeholders to sense check, validate and think about an idea before having to commit to a final decision, and It is the spontaneity of turnaround from raw data to narrative that makes decision-making so much more effective and engaging.
This workflow is so central in planning practices.

But these two fields that are so fundamentally different in terms of training and professional background. One requires skills in computer systems, strong understanding of data structures and a good eye for graphic design. While planning relies on acumen of planning principles, knowledge in legislation and analytical abilities. That's why in order for these two to work together, it is so important to be able to collaboration and sharing of knowledge to ensure that mapping can be used



The other reason why collaboration is so important also because of technology
 Technology have reached a level of maturity that enables spatial analysis to be done
 on a 'on-the-fly' basis.

Most users these days expect to have the ability to toggle between maps, change
 density bands, slide through time series or simply the ability to interact with the
 maps instead of having to flick through hundreds of maps with different zoom levels
 and map view and etcetera.

This is increasingly relevant to us because it fulfils the criteria of instantaneous
 feedback and using snapshots of data to inform better decision making.

But this does not mean that they are always readily most situation. There is an
 integration cost that most companies may or may not be willing to pay for and scope
 of a project and also the skills of individual organisation.

Some businesses that embrace technology are unsurprisingly smart about the way
 they integrate spatial intelligence into their systems, For example, Walk Score
 website that promotes walkable neighbourhoods allows real estate agents to
 leverage their business by providing metrics and intelligence about health and active
 transport options. This initially was used to attract more visitors to the website and
 potential buyers but it also attracted a lot of attention from policymakers and

