The Future of Urbanism
Framework Document

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Definition

People have been moving towards towns and cities from the countryside in great numbers for the past two centuries. While it's far from a new trend, there is as much uncertainty as there ever has been. Our roads are overcrowded, our cities are polluted, and more and more unspoilt land is being turned into sprawling housing and shopping developments. There are many factors that could change the future shape and character of our cities, some under our control and some not.

This document mainly concentrates on the situation in the US. The problems faced by many of the cities in the developing world are completely different in scope and character, with their total population expected to grow by two billion over the next thirty years; Mexico City, for example, has grown from a population of 100,000 to 20 million in less than a hundred years. However, many of them are attempting to follow a similar path to that taken by American cities, with a concentration on the use of private cars and, where land allows, the division of land into large suburban plots.

There are also many factors affecting cities that are not covered by this framework including public health, global environmental concerns such as rising sea levels and atmospheric temperatures and the generation of waste. While these are vast and important problems (for example, Tokyo is estimated to dump 20 million tons of waste every year), this document concentrates more on the form and structure of the environment in which we live.

Information sources

Experts

Manuel Castells
Professor of City and Regional Planning at UC Berkeley. Currently interested in the sociology of information technology, urban sociology, sociology of social movements, comparative sociology and author of *Information Age: Economy Society and Culture* among many other titles.

Mike Davis
A writer on the larger effects of and dangers to our current way of living. He has written mostly on Southern California, with books such as *City of Quartz*, and *Ecology of Fear*.

Andres Duany
A Florida-based "neo-traditional" planner and speaker who, with his wife Elizabeth Plater-Zybek, has designed many walkable towns based on the principles of new urbanism.

Peter Hall
Professor of Planning at the Bartlett School of Architecture, Building, Environmental Design and Planning at University College, London. A prolific writer on planning issues and history.

David Harvey
Professor of Geography, Johns Hopkins University. A prolific author, his interests include global urban development and the environment.

Richard Rogers
One of the world's best known architects, and an advocate of designing sustainable and pleasant cities.

Texts

Christopher Alexander, Sara Ishikawa, Murray Silverstein, *A Pattern Language: Towns, Buildings, Construction*, Oxford University Press, 1977.
A set of patterns for the language of our built environment, ideas to bear in mind when arranging anything from a room to a city.

Joel Garreau, *Edge City*, Anchor Books/Doubleday, 1992.
A great description of this phenomenon; the out-of-downtown commercial centres which spring up, often at the intersection of freeways (The area around Houston's Galleria, for example).

Mike Davis, *City of Quartz: Excavating the Future in Los Angeles*, Vintage Books, 1992.
A vivid description of a dystopian LA, its disparity of wealth and the people in control.

Peter Hall, *Cities of Tomorrow*, Blackwell, 1996.
Not really about the future at all, but a good round up of the people and ideas that have formed planning theory since the late 19th century. Mostly features America and Europe, but there are a few excursions further afield, such as New Delhi, Brasilia and Lima.

Raymond Unwin, *Town Planning in Practice*, Princeton Architectural Press, 1994.
Originally published in 1909, it's the classic description of how to build towns and cities that are human in scale.

Richard Rogers, Philip Gumuchdjian, *Cities for a Small Planet*, Westview, 1998.
Propositions for creating liveable and sustainable towns and cities that are a pleasure to live in without exploiting their local environment.

Edward W. Soja, *Postmetropolis*, Blackwell, 2000.
The third in a trilogy, "it is the first comprehensive text in the growing field of critical urban and regional studies to deal with the dramatically restructured megacities that have emerged world-wide over the last half of the twentieth century."

Elizabeth Wilson, *The Sphinx in the City*, University of California Press, 1992.
Looks "at some of the world's greatest cities – London, Paris, Moscow, New York, Chicago, Lusaka, and So Paulo – and presents a powerful critique of utopian planning, anti-urbanism, postmodernism, and traditional architecture."

Periodicals

Cities
"The International Journal of Urban Policy and Planning"
(*www.elsevier.nl/inca/publications/store/3/0/3/9/6/*)

City
"Analysis of urban trends, culture, theory, policy, action."
(*www.journals.tandf.co.uk/carfax/13604813.html*)

International Journal of Urban and Regional Research
(*www.blackwellpublishers.co.uk/asp/journal.asp?ref=0309-1317&src=cts*)

Urban Affairs Quarterly
No information available.

Urban Affairs Review
"emphasises research and scholarly analysis on urban themes: urban life, metropolitan systems, urban economic development and urban policy. Historical and cross cultural perspectives add to its interdisciplinary features."
(*www.sagepub.co.uk/journals/details/j0095.html*)

Electronic sites

Best Practices Database
A subscription-only database of solutions to urban problems from around the world. *www.bestpractices.org*

Centre for Urban Technology - Links
The University of Newcastle's CUT provides a comprehensive set of links relating to technology and the urban environment. *www.ncl.ac.uk/cut/cutlinks.html*

Cyburbia - Internet Resources for the Built Environment
Vast collection of planning and architecture resources, including links, bulletin boards and many mailing lists. *www.cyburbia.org*

Demographia - Demographics, Development Impacts, Market Research & Urban Policy
A large collection of demographic charts based on urban developments.
www.demographia.com

Limiting Urban Futures
A description of how "future studies limit urban futures," with links to futures/urban-related pages at the bottom of the page.
web.inter.nl.net/users/Paul.Treanor/few.futures.html

Planners Network
Scroll down to find links to their bi-monthly newsletter featuring articles on urban issues around the world. *www.plannersnetwork.org*

Organisations

American Planning Association
www.planning.org

Centre for Advanced Spatial Analysis
Based at University College London, CASA "develops emerging computer technologies in several disciplines which deal with geography, space, location and the built environment." *www.casa.ucl.ac.uk*

Congress for the New Urbanism
Advocates cities suitable for pedestrians and public transport, neighbourhoods with a diversity of uses and inhabitants, and accessible public spaces. *www.cnu.org*

International Society for City and Regional Planners
A global association of professional planners. *www.soc.titech.ac.jp/isocarp*

Megacities 2000 Foundation
A focus for knowledge about the world's cities with more than 10 million inhabitants. *www.megacities.nl*

Planners Network
An association trying to bring about change in the environment in order to eliminate society's inequalities. *www.plannersnetwork.org*

Current Conditions

Top 20 largest world urbanised areas, 1991.

Rank	Name	Population	Sq. miles	Pop/sq. mile
1	Tokyo-Yokohama	27,245,000	1,089	25,018
2	Mexico City	20,899,000	522	40,036
3	Sao Paulo	18,701,000	451	41,466
4	Seoul	16,792,000	342	49,099
5	New York	14,625,000	1,274	11,480
6	Osaka-Kobe-Kyoto	13,872,000	495	28,024
7	Bombay	12,101,000	95	127,379
8	Calcutta	11,898,000	209	56,928
9	Rio de Janeiro	11,688,000	260	44,954
10	Buenos Aires	11,657,000	535	21,789
11	Moscow	10,446,000	379	27,562
12	Manila	10,156,000	188	54,021
13	Los Angeles	10,130,000	1,110	9,126
14	Cairo	10,099,000	104	97,106
15	Jakarta	9,882,000	76	130,026
16	Teheran	9,779,000	112	87,313
17	London	9,115,000	874	10,429
18	Delhi	8,778,000	138	63,609
19	Paris	8,720,000	432	20,185
20	Karachi	8,014,000	190	42,179

Source: www.demographia.com/db-wldurb91.htm

Top 20 largest American metropolitan areas, 1998

Rank	Metro area	population	% change since 1990
1	New York-N New Jersey-Long Island	20,102,875	3.2%
2	Los Angeles-Riverside-Orange County	16,036,587	10.4%
3	Chicago-Gary-Kenosha	8,885,919	7.8%
4	Washington-Baltimore	7,359,044	9.4%
5	San Francisco-Oakland-San Jose	6,873,645	9.5%
6	Philadelphia-Wilmington-Atlantic City	5,999,034	1.8%
7	Boston-Worcester-Lawrence-Lowell-Brockton	5,901,589	3.8%
8	Detroit-Ann Arbor-Flint	5,469,312	5.4%
9	Dallas-Fort Worth	4,909,523	21.6%
10	Houston-Galveston-Brazoria	4,493,741	20.4%
11	Atlanta	3,857,097	30.3%
12	Miami-Fort Lauderdale	3,711,102	16.2%
13	Seattle-Tacoma-Bremerton	3,465,760	16.7%
14	Phoenix-Mesa	3,013,696	34.6%
15	Cleveland-Akron	2,910,616	1.8%
16	Minneapolis-St. Paul	2,872,109	13.1%
17	San Diego	2,820,844	12.92%
18	St. Louis	2,591,456	3.2%
19	Denver-Boulder-Greeley	2,417,908	22.1%
20	Pittsburgh	2,331,336	-2.6%

Source: www.demographia.com/db-met99r.htm

Number of vehicles per 1,000 population

Area	Vehicles/ 1000 people
USA	767
Japan	535
UK	481
Eastern Europe	128
Latin America	90
Africa	22
World Average	**115**

Source: S. Potter, M.J. Skinner, Futures *32 (2000), p277.*

Public transport rides per capita per year in industrial metropolitan areas (1995 estimates)

Largest urban areas	Per capita rides/yr
Moscow	568
Tokyo	513
Bombay	346
Osaka	338
Paris	300
Mexico City	262
Seoul	204
Cairo	202
Sao Paulo	187
Rio de Janeiro	184
Buenos Aires	184
London	177
Manila	159
Calcutta	159
New York	105
Los Angeles	28
Other urban areas	
Sydney	155
Montreal	118
Toronto	106
Melbourne	93
San Francisco	55
Chicago	55
Washington-Baltimore	53
Philadelphia	47

Source: www.publicpurpose.com/ut-wldua.htm [Estimated from Jane's Urban Transport, US Federal Transit Administration and individual operator reports.]

Stakeholders

Everyone

Possibly the only people who have no direct interest in the levels of urbanism are those completely cut off from the rest of their society, who never even visit larger settlements. These people as a percentage of the total are of course decreasing.

Planners

The urban and regional planners who determine the layout and rules for new development. They must balance the demands of all parties concerned in new projects in an effort to create what they feel is the best environment for that will live and work there. Planners will often be part of the governmental structure, but not always.

Government

National and regional authorities have an interest in the levels of urbanisation and the conditions their citizens live in. They also have the power to introduce many factors affecting development such as tax breaks, zoning controls, green belts, etc., and are often involved in initiating new construction themselves, eg, council housing, public buildings, roads, etc.

Developers and the construction industry

The companies wanting to construct new buildings and projects, generally with the intention of making a profit.

Transportation manufacturers and owners

The car makers and the companies operating public transport systems have a great interest in the levels and organisation of urban developments. Their interests are often in conflict.

History

Humans first began coming together in cities about 10,000 years ago around the eastern Mediterranean and the Nile. Settlements often represented social structures in space, for example, with the more desirable housing towards the centre where most business was conducted. The center also usually contained any social construction (such as temples and government buildings) that appeared as cities grew larger and more complex.

New developments, such as the wheel, writing and better irrigation allowed society to advance and settlements to expand, with writing in particular allowing more consistent and long-lasting ideas to be passed through the generations. This period of urban history culminated with a few cities such as Rome and Teotihuacan reaching populations of perhaps 1 millions inhabitants, a total that wouldn't again be reached until 19th century London.

The Industrial Revolution in many parts of the world created a sudden shift of its populations towards towns and cities, with the centralisation of labour that it brought.

Country	Percentage of total population that is urban	
England	1801: 16.9%	1891: 53.7%
USA	1800: 3.8%	1890: 27.6%
France	1846: 24.4%	1891: 37.4%
Prussia	1816: 25.5%	1895: 40.7%

Source: Peter Hall, The World Cities*, World University Library, 1966.*

The shift towards industrialisation usually brings about a marked move towards urban living (Norway, Sweden and Switzerland have shown, however, that industrialisation can be markedly rural).

Patrick Geddes, a pioneer of town-planning theory of the early twentieth century, pointed out that the industrial revolution began with inventions of the eighteenth century that created heavy industries dependent on coal and benefiting from being situated close together. After 1900 inventions from the previous 50 years (such as the telephone, power station, internal combustion engine, radio) became more common in general use. Geddes, along with others such as Lewis Mumford and

Jean-François Gravier, thought that the industries created by these new inventions could be more free; they no longer relied on centralisation of activity, and in fact allowed greater freedom that could lead to complete decentralisation.

However, the structure of the economy was changing and while enterprises had once been financed by single people or families, the process of financing them gradually became a separate industry of its own. These new financial organisations, along with new industries that developing consumerism generated (advertising, marketing, media), saw benefits in being physically close to each other and a large pool of potential employees.

Electric trams and rail allowed workers to live further away from the centre, with trains and underground rail networks later increasing the commuting range. Workers who could afford to often began living further away from the crowded city centres. Cars and buses again furthered this trend of suburbanisation, allowing gaps to be filled in between the main fixed commuter lines. Governments later began constructing motorway networks to cope with this increased personal traffic which, along with better cars, again increased the distances people were willing to travel to work. While city centres are still the main draw, recent decades have seen the development of commercial centres further out, relying entirely on cars.

Fastest growing US cities, 1940-1990

Rank	Metro area	1940	1990	Increase	% change
1	Las Vegas	28,611	852,737	824,126	2,880.5%
2	Sarasota-Bradenton, Fla.	42,204	489,483	447,279	1,059.8%
3	West Palm Beach, Fla.	79,989	863,518	783,529	979.5%
4	Phoenix	215,034	2,238,480	2,023,446	941.0%
5	Miami-Fort Lauderdale	307,533	3,192,582	2,885,049	938.1%
6	Orlando	129,752	1,224,852	1,095,100	844.0%
7	Tucson	72,838	666,880	594,042	815.6%
8	San Diego	289,348	2,498,016	2,208,668	763.3%
9	San Jose	174,949	1,497,577	1,322,628	756.0%
10	Tampa-St. Petersburg	291,622	2,067,959	1,776,337	609.1%
11	Sacramento	238,913	1,481,102	1,242,189	519.9%
12	Albuquerque	103,534	589,131	485,597	469.0%
13	Houston	735,553	3,731,131	2,995,578	407.3%
14	El Paso	131,067	591,610	460,543	351.4%
15	Los Angeles	3,252,720	14,531,529	11,278,809	346.8%
16	Dallas-Fort Worth	936,180	4,037,282	3,101,102	331.3%
17	Bakersfield, Cal.	135,124	543,477	408,353	302.2%
18	Austin	214,603	846,227	631,624	294.3%
19	Denver	512,449	1,980,140	1,467,691	286.4%
20	Baton Rouge	138,683	528,264	389,581	280.9%

Source: www.bizjournals.com/journals/demographics/reports/5/5-1.html

Trends

The Top 20 fastest growing metropolitan areas from America's 50 largest, 1990-98

Rank	Metro area	1990	1998	Increase	% change
1	Las Vegas	852,646	1,321,546	468,900	55.0%
2	Phoenix	2,238,498	2,931,004	692,506	30.9%
3	Austin	846,227	1,105,909	259,682	30.7%
4	Atlanta	2,959,500	3,746,059	786,559	26.6%
5	Raleigh-Durham	858,485	1,079,873	221,388	25.8%
6	Orlando	1,224,844	1,504,569	279,725	22.8%
7	Portland, Ore.	1,793,476	2,149,056	355,580	19.8%
8	West Palm Beach, Fla.	863,503	1,032,625	169,122	19.6%
9	Denver	1,980,140	2,365,345	385,205	19.5%
10	Charlotte	1,162,140	1,383,080	220,940	19.0%
11	Dallas-Fort Worth	4,037,282	4,802,463	765,181	19.0%
12	Salt Lake City	1,072,227	1,267,745	195,518	18.2%
13	Houston	3,731,029	4,407,579	676,550	18.1%
14	Nashville	985,026	1,156,225	171,199	17.4%
15	San Antonio	1,324,749	1,538,338	213,589	16.1%
16	Seattle	2,970,300	3,424,361	454,061	15.3%
17	Jacksonville	906,727	1,044,684	137,957	15.2%
18	Miami-Fort Lauderdale	3,192,725	3,655,844	463,119	14.5%
19	Sacramento	1,481,220	1,685,812	204,592	13.8%
20	Minneapolis-St. Paul	2,538,776	2,831,234	292,458	11.5%

Source: www.bizjournals.com/journals/demographics/reports/77/77-2.html

Percentage of world's population that is urban

Year	Percentage
1950	29%
1965	36%
1990	50%
2025	(est.) 60%

Source: Richard Rogers, Cities for a Small Planet, *Westview Press, 1997.*

Number of telecommuters in United States

Year	Estimate
1985	10-30,000
1991	5.5 million
1993	6.1 million
1995	8 million
2002	15 million

Source: G.H. May, Futures *30, 1998, p890.*

Nine [optimistic] trends from The Planning Commissioners' Journal

1. Co-operation between developers and environmentalists. Seeing growth as inevitable, both sides can be more flexible on identifying common interests and creating "smart growth" that is best for all concerned.
2. Increased focus on "participatory" planning. "The more citizens interact with one another and the government as citizens and equals, not clients, the healthier the community and stronger the government."
3. Cyberspace impacts on land use. A decentralising of many office functions to low-cost areas, smaller satellite offices, or private homes. Other changes (not mentioned on the website) could result from ecommerce: changes of use for traditional stores, more deliveries, more small companies able to reach a wider market without multiple outlets.
4. More compact development and mixed-use centres. Denser, more varied neighbourhoods, featuring commercial and residential buildings, with a wider mix of housing types and a lesser reliance on cars.
5. Open space networks and greenways expand. Pedestrian and bicycle friendly networks of open spaces as an alternative to conventional roads and sidewalks.
6. Integrating transportation and land use planning. Creating a highway, road and sidewalk network that meets the best needs of all users, and is not divorced from the planning of the land through which it travels.
7. Growing needs of the poor and older Americans. Conventional development separates different types of housing and works against those wishing to rent their home. The growing number of elderly will have impacts on all of society and should be borne in mind.
8. Downtowns come back. Many downtown areas are booming (Houston expects its downtown population to quadruple by 2010) thanks to new redevelopment and people wanting to take advantage of the areas' amenities and density.
9. Regional co-operation increasingly valued. It is important for regions to take a wider view of new developments, cities and suburbs acting together for example.

Source: www.plannersweb.com/trends.html

Other trends

- 53.2 million Americans lived outside of metropolitan areas in 1995, up 5.0 percent from 1990. That nearly matched the growth rate for the nation as a whole, 5.6 percent. (*www.bizjournals.com/journals/demographics/reports/51*)
- An increase in boutique-type stores in suburbs, catering to younger people who have moved out from the city. (*New York Times Magazine,* 2000-04-09)
- Peoples' fear of crime leading to greater demand for more secure houses and communities; LA's gated mansions for the middle-class. e.g., Houston's Canyon Gate developments (*www.canyongate.com*).
- Increasing numbers of Reclaim The Streets style protests asserting pedestrians' and cyclists' rights over cars.

- New building materials and techniques allow new forms of building. This will no doubt meet resistance, considering the vast number of “traditional” housing forms that seem popular. But public buildings are becoming increasingly daring, and this may, over time, bring about acceptance of new forms.
- Increasing numbers of elderly people, and younger people living alone, could create a need for more alternatives to detached houses.

Expected future, baseline forecast

Top 20 projected fastest growing US metros (of the 50 largest), 1995-2020

Rank	Metro area	1995 (est.)	2020 (proj.)	Increase	% change
1	Sacramento-Yolo	1,604,724	2,770,060	1,165,336	+72.62%
2	Dallas-Fort Worth	4,449,875	7,412,332	2,962,457	+66.57%
3	Austin-San Marcos	999,936	1,656,298	656,362	+65.64%
4	San Diego	2,644,132	4,173,814	1,529,682	+57.85%
5	Orlando	1,390,574	2,173,267	782,693	+56.29%
6	Phoenix-Mesa	2,563,582	3,990,792	1,427,210	+55.67%
7	West Palm Beach-Boca Raton	972,093	1,504,081	531,988	+54.73%
8	Las Vegas	1,138,758	1,760,723	621,965	+54.62%
9	Atlanta	3,431,983	5,215,731	1,783,748	+51.97%
10	Seattle-Tacoma-Bremerton	3,265,139	4,943,055	1,677,916	+51.39%
11	Salt Lake City-Ogden	1,199,323	1,733,924	534,601	+44.58%
12	San Francisco-Oakland-San Jose	6,539,602	9,396,971	2,857,369	+43.69%
13	Raleigh-Durham-Chapel Hill	995,256	1,419,452	424,196	+42.62%
14	Portland-Salem	2,021,982	2,806,810	784,828	+38.81%
15	Nashville	1,093,836	1,503,006	409,170	+37.41%
16	Denver-Boulder-Greeley	2,233,172	3,036,753	803,581	+35.98%
17	Tampa-St. Petersburg-Clearwater	2,180,484	2,963,304	782,820	+35.90%
18	Los Angeles-Riverside-Orange County	15,362,165	20,849,218	5,487,053	+35.72%
19	Charlotte-Gastonia-Rock Hill	1,289,177	1,720,939	431,762	+33.49%
20	Norfolk-Virginia Beach-Newport News	1,540,446	2,053,253	512,807	+33.29%

Source: www.bizjournals.com/journals/demographics/reports/63/63-1.html

Qualitative description

The populations of cities will continue to grow, with more and more people heading for new suburbs built further and further from downtown. Most development will continue to be sprawling suburbs (Phoenix now covers an area similar to Los Angeles, with a population only one-third the size). The value of properties between these new layers of development and the redeveloped and expensive downtowns will drop. These areas could become run down areas housing only those who are not able to escape or could be renovated or redeveloped, just as downtowns are now. More cities will experiment with expensive mass transit projects as a way to alleviate increasing traffic problems and boost their images (e.g., Houston, St. Louis, Buffalo, Memphis, and more). There will continue to be scattered attempts at building neighbourhoods suitable for

walking, with conventional mixed-use centres, but there will also be more secure communities and private security guards elsewhere. Vehicle ownership will increase, particularly in developing parts of the world, with the number of vehicles world-wide rising from 550 million today to more than one billion by 2020. Working or studying from home will be an increasingly available possibility for some, although it is hard to tell how many will take the chance. New building technologies will allow new kinds of buildings, and construction on previously unusable land. See the third scenario below, for another look at a baseline forecast.

Potential events, wildcards

- The price of gasoline rockets meaning few people can afford to run their cars as often as they do now.
- A number of, perhaps, Columbine-style disasters in suburbs create a national dislike of this style of development. Greater demand for security.
- Government restrictions on car use to combat pollution, gridlock and/or global warming.

Issues, dilemmas, choices

- The number of cars is increasing. Should authorities build more roads, develop public transportation and/or restrict car use?
- How can the present transport infrastructure be most effectively and economically integrated?
- Should authorities play a greater role in determining the shape of new private development, eg, restricting appearance and layout of new stores or requiring pedestrian-friendly features?
- Can older developments be retro-fitted to meet current ideals. e.g., downtown buildings built in the 60s and 70s often have little at ground-level to interact with pedestrians. Can this be easily rectified?
- Should incentives be given to developers to create in-fill housing and a variety of housing types rather than typical suburbs of large houses?
- Should authorities create green-belts to preserve open land and restrict outward growth, with the knowledge that this can lead to rising property values?
- How can redevelopment of run-down areas be best achieved without simply moving the current residents to another run-down area?

Key uncertainties

- The number of people working from home.
- The quantity of mixed-use, pedestrian friendly development compared to conventional suburban housing and “big-box” shopping centres.
- The price of oil.

Alternative futures, scenarios

Using the two uncertainties above concerning price of oil and the number of home workers in a GBN-style matrix. Four scenarios for 2010.

1. *Island suburbs* – many home workers, the price of oil has risen dramatically.

Maisy has been working from home for several years now. Her company offered telecommuting as an option to all phone operatives a long time ago, but it wasn't until the price of oil shot up the first time that she decided to give it a try. It was tough at first, stuck in her sprawling neighbourhood day after day, resisting the temptation to use the car as often as she'd like to visit the office or go shopping or just drive the few miles to the nearest mall to meet up with friends. But more and more people in her neighbourhood have started working from home, one by one deciding they can't afford to make the daily car trips to work any more, so they meet up at each others houses for lunch sometimes. The city started a regular (gas-powered) bus service to downtown last year now the demand is there, although it's still a twenty minute walk to the main road from Maisy's end of the development.

Next month though the new shopping centre opens on the previously vacant land between this neighbourhood and the next. Well, it's more than just a shopping centre, with offices and some small apartments above the stores too. Maisy's looking forward to being able to walk to the shops again, especially with the delivery charges for all the e-stores going up so much the last few years. Maybe she can find a job there that'll let her meet people for a change! It would be good to get out of the house more often, as being cooped up in the same place 24 hours a day with her husband can get a bit much at times. He decided to go back to college. Even though it's only the other side of town he studies from home most of the time as it works out cheaper.

2. *Standing room only* – few home workers, the price of oil has risen dramatically.

Another wait in the dark for the train. Ben's been getting up earlier than ever recently, as the trains have become increasingly crowded. Unless you get to the station for 7am they're full by the time they pull in here on the way to downtown. He can hardly believe everyone used to drive to work. He's only been out of school a couple of years and the price of oil went through the roof a long time before then. He went to a university that was only on the other side of town, but he got a room there as the rent was cheaper than driving from his parents' house every day. When he left university he had to turn down the perfect job offer because it was at an office complex by the mall. With no public transport going there he couldn't afford to drive on the entry salary. He couldn't afford to replace his old car with an electric model either, like his parents did when they passed it on to him, but he plans to do so soon.

Until then he squeezes onto the train early every morning. They say they're upgrading the lines to allow for more trains, using money diverted from the hurriedly aborted roads program. The long train journey takes him past the really expensive housing closer to the business district. It doesn't seem long ago that these were run down inner city areas, but as gas prices rose the idea of living close to the centre of town became more appealing. Anyone who could afford to moved away from their sprawling and distant suburbs to town houses and apartments above shops that went rapidly upmarket.

It's so different from Ben's neighbourhood; no one wants to live there now, with little chance of finding work nearby, and the prospect of an expensive or crowded commute every day. His neighbour tried working from home for a while, just before he moved away, but he couldn't take the isolation and felt cut off from the people who still went into the office every day. Ben doesn't like the idea either. It may be an uncomfortable journey to work, but it's better than spending every day alone in the house without even a corner store within walking distance.

3. *Business as usual* – few home workers, the price of oil stays steady.
Another day, another traffic jam. It's taking Terry longer and longer to get into work each day, and she regrets buying a place so far away from work now. But it's a lovely house, plenty of garden and greenery, a long way from the pollution of the more crowded parts of town. Still, it could be worse; quite a few people have electric cars these days, although not as many as the government predicted; with gas still affordable most people have stuck with what they know, although the younger kids seem to be taking to the EVs more. But even these add to the congestion. The city extended its light rail system a few years ago, but most people still prefer to sit in their own cars rather than park and ride, even though driving takes so long. Besides, housing close to the light rail has shot up in price, especially since they introduced all the traffic restrictions in the area.

Some days Terry works from home, but only occasionally, when she needs to concentrate on a project. It's no problem with video conferencing and everything, but she couldn't do it all the time. But she may have to stay home more often if the city restricts car traffic into town, like they're threatening to do.

4. *Moving on out* – many home workers, the price of oil stays steady.
Not long ago Danny moved away from his old neighbourhood to this new place further out. The old place had seemed spacious and a break from the city when he moved in, but over the years all the new development in the area made it seem like any old neighbourhood, especially with all the extra traffic it brought. So he moved even further out to this brand new suburb, and just in time too; prices began to plummet in the old neighbourhood, what with so many people wanting to move further away.

It's a hell of a long way to drive to most places now of course, but that's not a big problem for Danny. He's been working from home for years and doesn't miss office life one bit. He can sit at the far end of the garden and imagine he's in the countryside, all the time still in close contact with his workmates (most of whom are working from their homes too). He goes into the office maybe once a week, to touch base and meet clients face to face; it's a couple of hours drive, assuming average levels of congestion, but that's OK.

It can get lonely of course, but he often drives to visit friends or meet up at one of the malls that have followed the residential development out into the countryside.

Leading indicators

- Percentage of people working from home, and number of hours worked at home.
- Number of new developments outside the limit of current suburbs, compared to infill development.
- Redevelopment of inner cities, and property prices there.

- The price of oil.