

The *International Journal of Forecasting* is published by Elsevier on behalf of the International Institute of Forecasters. The quarterly, peer-reviewed, scientific journal publishes high quality papers covering all aspects of forecasting, including methods, applications, implementation and evaluation. So far so mundane. But stay with me.



The IJF published a paper last year that can only be described as remarkable, for the nature of its forecast. ¹ The paper begins quietly enough as the authors, Jonathan Auerbach and Phyllis Wan, reference UN data on the rapidly urbanising world population: up from two billion urban dwellers in 1985, to four billion today, and projected to reach six billion by 2050.

But it is what follows that is truly remarkable: where the paper moves from a dry statistical analysis to a finding that brings us right back to the epicentre of the post-Covid workplace debate.

The authors employ complex mathematics described as ‘extreme value theory’ as a “*principled basis for forecasting vertical growth*”. And from this rather obscure branch of sums, they forecast that the global number of skyscrapers (defined as over 150m and 40 floors) will grow from 3,251 today, to 41,000 by 2050.

Over forty thousand skyscrapers! More than ten times the number today!!

The pace of skyscraper completions has certainly accelerated over recent decades. According to the Council on Tall Buildings and Urban Habitat, during the 1980s there were an average of around six buildings of over 200m completed globally each year. This then rose to an annual average of 10 in the 1990s; to 31 between 2000 and 2009, and to 188 between 2010 and 2020.

Almost 1,500 buildings over 200m have been built since 2000. ² Of course these buildings comprise all-office towers, all-residential towers and mixed-use towers.

Not all cities have embraced tall buildings with equal vigour, and they remain relatively scarce in western Europe. For example, London waited until 1967 for the 111m Centre Point, and until 1981 for the 183m Nat West Tower (since renamed Tower 42) – both designed by Richard Seifert. Another decade lapsed before the completion of Canary Wharf's first tall building, the 236m 1 Canada Square in 1991.

But even in London, the situation has changed dramatically. Between 2001 and 2010, 33 buildings over 20 storeys were added. And then the market was turbo-boosted. Between 2011 and 2019, 164 tall buildings were completed, with 60 in 2019 alone (90% are residential). And at the close of 2020, there were a further 89 under construction; 308 with planning consent and 76 applications.³ These are set to transform London's historically low skyline

So what is going on? Why are cities becoming denser at a time when technology allows us to cut the tethers that held central business districts so tightly together? And what do these trends mean for the post-Covid workplace?

One popular narrative is that developer avarice forces buildings ever higher in search of super profit. Another is that corporate hubris drives buildings ever upwards. But, while convenient, these are inadequate explanations. Skyscrapers are symptomatic of more fundamental forces at work.

As everyone knows, skyscrapers first appeared in America in the late nineteenth century, in the aftermath of the great Chicago conflagration of 1871. Innovative solutions to elevators and high rise plumbing were found, together with new approaches to steel construction. Importantly, the larger structures also accommodated the much larger corporations being spawned by the rapid vertical integration of the national economy.

Ever since, skyscrapers have grown taller, although none has yet reached (nor is likely to do so) architect Frank Lloyd Wright's 1956 vision for a mile high colossus in Chicago, which he named 'The Illinois'. At 1,600m, Wright's design comprised 528 storeys and 1.7million square metres (18m sq ft) of space. Curiously, the world's tallest building to date has held the prestigious title for a decade: Dubai's Burj Khalifa, completed in 2010, stands tall at 828 metres.

Skyscrapers are symptomatic of economic agglomeration, which is the invisible glue that holds the office economy together in dense clusters. Whether in accounting, advertising, banking, consulting, finance, legal, and media; or in coding, developing, graphic designing, programming and software engineering; or in architecture, construction, design, engineering, planning and surveying, the office economy is bound together in enormously complex webs of relationships, involving partnering, collaborating, networking and socialising, driving innovation and higher output.

At their most basic, the clusters form vast job markets. At their most sophisticated they form sustainable and competitive business ecosystems. But most importantly they provide competitive advantage through the externalities of a cluster, including access to skilled labour, suppliers and support services. Firms that are linked

together as part of such ecosystems are seen to have advantages over more isolated, less connected, organisations.

More tall buildings – whether for living or working – suggest continuing agglomeration. Unless the IJF forecast is wildly inaccurate (a possibility) or the trends indicated are dramatically reversed (unlikely), it seems that global cities are set for more high rise, both for living and working.

So how does growing density sit with the increasingly popular narrative that the post-Covid world will see lower density and a flight from the city centre as office workers desert the office to avoid the commute?

It is something of a puzzle that, since the dawning of the digital office, the pulling power of city centres has strengthened rather than weakened. Despite the growing ability of individuals to work remotely and for organisations to move to the suburbs or set up a distributed model, centripetal forces have grown. There is a paradox in that while technology has enabled dispersal and de-concentration, CBDs have grown stronger.

Technological breakthroughs from the fax machine to the PC to the internet have been used to divine the end of urban concentration, and all have proven wrong. Similarly, Zoom meetings during a health crisis do not signify the break-up of the CBD. While tech disciples continue to preach the “*technology allows, therefore*” mantra, the data suggest that we will have growing numbers of people living in or near CBDs; we will have more people working in CBDs, and we will have a continuing cultural acceptance of high rise living and working.

Automation and AI will undoubtedly change the nature of work; but in a knowledge economy the socialising of ideas is fundamental. Ideas create ideas, and ideas lead to innovation. This does not happen so easily remotely. And the more complex the problems are that need solving, the more interaction and socialising they require. Work is more than a transaction between employer and employee.

None of this is to suggest that we will return completely to the *status quo ante*. Cities and work will continue to evolve. Companies will continue to restructure and respond to uncertainty with adaptable business models. Office workplaces will continue to move towards an experience-based model, focused on wellbeing and performance. Office workers will continue their journey from ‘New Ways of Working’ to ‘Agile Working’ to ‘Hybrid Working’. And real estate will continue its journey towards commoditisation with flexibility and service.

Urban places and public realm, organisations, workplaces and workers will all respond in different ways but, if nothing else, the global experiment in social isolation has reminded us of the value of ‘social’: in the case of working and being together, we reap far more than monetary reward from social contact.

Even if a privileged and well-rewarded cadre of office workers adopts a more hybrid workstyle, and even if some larger corporations reduce their real estate footprint as

a result, it seems unlikely that the basic morphology of CBDs will change radically as a result of the pandemic. The skyscrapers will continue to be built as cities continue to densify, even if Frank Lloyd Wright's colossus remains elusive!

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¹ Auerbach J & Wan P (2020) [Forecasting the Urban Skyline with Extreme Value Theory](#) *International Journal of Forecasting* Elsevier Vol 36 No3 pp814-828

² <https://www.skyscrapercenter.com/year-in-review/2020>

³ These data are provided by various editions of New London Architecture's annual *Tall Buildings Survey* <https://nla.london/insights/londons-tall-buildings-survey-2020>

