SPACE UTILISATION: THE NEXT FRONTIER

How Asian market conditions are driving utilisation harder and faster
From Density to Utilisation

INSIGHT FOR CORPORATE OCCUPIERS

Space Utilisation by Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>China (inc. Hong Kong)</td>
<td>27%</td>
</tr>
<tr>
<td>Singapore</td>
<td>38%</td>
</tr>
<tr>
<td>United States</td>
<td>41%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>40%</td>
</tr>
<tr>
<td>Australia &amp; New Zealand</td>
<td>40%</td>
</tr>
<tr>
<td>Japan</td>
<td>46%</td>
</tr>
</tbody>
</table>

Global average empty 40%

Source: CBRE, September 2015.

*Figures based on CBRE observations.

UTILISATION OF THE SPACE

Space Utilisation by Industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>27% empty</td>
</tr>
<tr>
<td>Education</td>
<td>51% empty</td>
</tr>
<tr>
<td>Legal Services</td>
<td>29% empty</td>
</tr>
<tr>
<td>Business Service/Consulting</td>
<td>65% empty</td>
</tr>
<tr>
<td>Real Estate</td>
<td>31% empty</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>70% empty</td>
</tr>
</tbody>
</table>

Source: CBRE, September 2015.
Meeting Room Supply vs. Demand

Source: CBRE, September 2015.

The ‘Size of Meetings’ (light green) represents the percentage split of the size of meetings actually held observed by CBRE through our utilisation studies. The Size of Meeting Rooms’ represents the size of meeting rooms built within all the offices we have observed.

Most organisations build more larger meeting rooms, but most meetings are small in size. ‘Right sizing’ meeting rooms creates a huge efficiency opportunity.

Size of Meetings Held

2-3 person meetings make up 59% of all meetings observed, however the most common meeting room size observed was a six person room.

Static Dynamic Density Matrix

Shifting your workplace cost saving strategy from static to dynamic density achieves similar savings whilst creating potential for more effective workplaces.

“Space Utilisation” is defined as the average amount of time different types of spaces are occupied.
“Occupancy” describes how many desks are assigned to individuals or empty (not assigned) but does not tell you how frequently they are used.
One of the most common questions asked by CBRE’s clients is “how can we use our space more efficiently?” In other words, how can we:

• Accommodate additional headcount into our existing footprint without taking up more space?
• Accommodate increasing volatile headcount (flexibility) with a reservoir holding spare capacity?
• Accelerate the release of excess space?

Organisations are under enormous pressure to drive down costs by increasing their “static density”, or the space per sq. ft. dedicated for each workstation. However, there is a real risk of driving this too hard and damaging corporate performance and productivity. In many organisations, this has now reached a point where further reductions would put staff productivity, performance and retention at risk. Arguably, it has already begun to have that impact within a number of organisations.

It is a difficult, if not impossible, task to balance both. However, there is a third option. New and dynamic ways of working can simultaneously achieve both through enabling employee mobility.

Implementing these new ways of working will not drive down the cost per seat. Instead, they aim to drive down the cost per person by increasing their “dynamic density”. This allows staff to work flexibly through choosing different places to work within the office rather than being assigned a fixed desk as the one primary place of work. Once workers are dynamic in the way that they use space, then it becomes quite straightforward to recapture latent underutilised space or what is generally referred to as desk sharing. When executed well, this approach improves the real estate bottom line whilst enhancing overall employee productivity, performance and engagement.

Increasing “static density” is generally perceived by employees as an exercise in “taking away” amenities in a relentless drive for efficiency and failing to consider what employees feel that they need to work effectively, such as the private office, personalised desks, printers and storage space. Equally, leaders and staff are rightfully nervous about ill-conceived implementation of “dynamic density” work environments that might disrupt business and culture purely for the sake of cost savings.

There is, however, another approach. To build leadership and employee buy-in for a new dynamic work environment, there must be a narrative beyond reducing costs and a stronger value proposition that “gives” rather than “takes”. Those “gives” relate to choice, control, ability to respond to business change and enhancing the enjoyment and performance of work.

Poorly implemented desk sharing (agile working, activity based work, hot desking, etc.) is a very real business risk created by those who are focused only on cost savings and have limited understanding of the impact on organisational performance. CBRE regularly observes businesses and their advisers mindlessly undertaking utilisation studies, making uninformed decisions through poorly collected and interpreted data and undertaking strategies that are perceived to drive down costs but in reality cause organisational chaos. To make it worse, the scale of projected cost savings often never eventuate.

This special report aims to put some science behind this discussion and will explain how to use density and utilisation data to drive efficiency and performance within your organisation.
**INDICATIVE RANGE OF COST SAVINGS**

Indicative cost savings per annum in USD (per floor or c. 200 employees) by recapturing under-utilisation.

<table>
<thead>
<tr>
<th>Country</th>
<th>Cost Savings (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>Up to 320,000</td>
</tr>
<tr>
<td>Singapore</td>
<td>Up to 293,000</td>
</tr>
<tr>
<td>China (inc. HK)</td>
<td>Up to 240,000</td>
</tr>
<tr>
<td>UK</td>
<td>Up to 313,000</td>
</tr>
<tr>
<td>US</td>
<td>Up to 347,000</td>
</tr>
<tr>
<td>Aust / NZ</td>
<td>Up to 342,000</td>
</tr>
<tr>
<td>Japan</td>
<td>Up to 477,000</td>
</tr>
</tbody>
</table>

Source: CBRE, September 2015.

### Assumptions

The numbers in the chart above represent the possible rental and operational savings in USD if companies were to fully utilise their space, based on 200 employees or roughly one floor of office space in a standard size floorplate.

These savings are calculated based on the average seat cost per geographical location multiplied by the level of utilisation. The range of underutilised space from utilisation studies conducted by CBRE is typically between 27% to 58%. For this chart CBRE has adjusted the level of underutilised space to between 10% to 20% in order to produce a more conservative estimate.

Please note that these estimates of high level cost savings do not take into account the investment in mobility enabling technology that is required to make the solution work.
Density can vary quite broadly due to a number of factors, including:

- Cost considerations (e.g. whether an office is in the core CBD or a decentralised location);

- The nature of work (e.g. employees in the financial sector often have specialised space and desk requirements. Other sectors may require specialised support spaces i.e. labs, showrooms, customer spaces/experience centres, technical spaces etc.);

- Domestic and multinational firms;

- Size of the organisation;

- Prevailing standards and benchmarks at time of the office fit-out;

- Compliance and codes based on the building’s infrastructure;

- Measurement practices;

- The use of space as reward (e.g. senior staff are often allocated larger spaces or offices);

- Government and/or worker council regulations;

Despite these often dramatic variations, it is apparent that across all regions, particularly in Asia Pacific, **static density has approached the limit for many organisations and, in some cases, has exceeded it.** This reflects the increasing desire among companies to grow headcount within their existing footprint to offset increases in rental costs above CPI increases. This has led to the increasing densification of many workplaces in this and other regions.
Density “quick fixes” observed by CBRE

• The replacement of cubicles or L-shaped desks with bench desks;

• Compressed seats created by splitting two bench desks into three workpoints or six bench desks into eight workpoints to accommodate unbudgeted increases in headcount;

• Removing meeting rooms, informal collaboration spaces and amenities and replacing them with desks;

Rectangular “bench” desking and other high density open plan environment solutions are usually implemented without an adequate increase in private enclosed spaces e.g. undistracted work areas, quiet booths or increased flexibility to work at home or remotely to compensate. This trend appears to be unstoppable and comes despite the large amount of research data that suggest the corresponding increase in the amount of visual and audio noise distraction leads to decreased productivity (damaging to the workers’ attention spans, productivity, creative thinking, and satisfaction).

Workplace Density by Country

Targeted “static” workplace densities in new fit-outs have halved in some cities over the last decade. For example, in Hong Kong, they have shrunk from 100 sq. ft. per desk to 50 - 60 sq. ft. per desk, a similar ratio to Japan and South Korea.

In Australia and New Zealand, standards remain more generous at around 100 – 120 sq. ft. per desk. In Europe and the United States, densities are at around 150 – 200 sq. ft. per desk, double the norm in Asia.
Productivity “Danger Zone”

CBRE believes that below 60 sq. ft. per desk is a definite productivity danger zone. Any further reductions may place staff productivity, performance and retention at risk as low densities imply reductions in shared collaborative and acoustically isolated work settings whilst shrinking desk size increases noise and levels of distraction in open work areas. Even at 60-110 sq. ft. in some organisations, there may be a risk that not all aspects of work are fully supported, particularly knowledge-based work. Smart organisations are maintaining or even increasing static density whilst implementing mobility strategies and sharing that simultaneously drive dynamic density down to lower levels – in some case much lower levels. These strategies do not require people to be “sent home to work” as they occur within already existing lower levels of desk underutilisation and allow the overall cost base to reduce, whilst holding steady or improving people’s performance. In that sense, these strategies can be seen to make sufficient savings so as to fund the creation of better quality work environments.
Every organisation and team is different but some generalisations can be made. For example, the sales, marketing and information technology functions within companies are generally quite mobile. In contrast, the financial, legal and human resources functions are generally more static. There are also variations across industry sectors and regional geographies.

Space utilisation can be driven by organisational culture. CBRE has observed that companies which drive very consistent behaviours globally have less regional variation in utilisation. Others are more subject to regional variance.

Over the past three years, CBRE has collected utilisation data in a standardised format allowing us to assist our clients in comparing their space utilisation against industry benchmarks and also across time. This data includes studies of 14 countries; 36 cities; 77 clients; 63,235 workpoints; and 3,315,170 observations.

Space Utilisation by Country

Figure 3 (on the following page) displays space utilisation by country across a number of different markets for knowledge worker office environments (excluding call centres). The results show that the average utilisation in China and Hong Kong is comparatively higher than other markets (at 73% on average). CBRE surveys have found that this is likely due to cultural working practices such as presenteeism (the practice of persistently working longer hours due to the feeling that being seen in the office by your manager is essential for career progression) and also the absence of alternative options i.e. most employees are given a desk and a handful of meeting rooms meaning that inevitably they will always be at their desk.
Note: The results are from CBRE client studies which are often completed for organisations where there is a perceived greater opportunity for leveraging under-utilisation. The level of under-utilisation shown may be higher than the overall average for each sample. However, the relative difference in the levels of under-utilisation between each country tells an interesting story.

Sample sizes differ significantly by location and the results should be treated as indicative as all organisations are unique. India was removed from the above graph as sample sizes were too small.

Source: CBRE, September 2015.

*Figures based on CBRE observations.

CASE STUDY

CBRE’s Workplace team in Japan recently finished a Time Utilisation Study (TUS) with a business services / consulting client with 4,200+ employees occupying a single building in Central Tokyo. The TUS found that the client’s office had a utilisation average of 27% and a peak of just 36%. These figures indicate that the company could cut its monthly rent bill in half, representing more than US$1 million in potential savings per month.
Figure 4 displays space utilisation by industry across the same markets surveyed in Figure 3. Government and legal services recorded the highest utilisation, reflecting the desk-intensive nature of work in these two sectors and the fact that employees are often engaged at their desks or in meeting rooms for a considerable portion of their working day. Sectors with comparatively low space utilisation include business services / consulting, whose staff are often out of the office with clients, hence the low rate of space utilisation.

**Figure 4: Space Utilisation by Industry**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Occupied and In use, not occupied</th>
<th>Occupied and In use only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>Legal Services</td>
<td>71%</td>
<td>29%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>Hospitality / Entertainment</td>
<td>67%</td>
<td>33%</td>
</tr>
<tr>
<td>Financial Services</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>Technology</td>
<td>61%</td>
<td>39%</td>
</tr>
<tr>
<td>Engineering</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>R&amp;D / Laboratories</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>Media</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>Manufacturing / Industrial</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>Utilities</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Education</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Energy</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Business Services / Consulting</td>
<td>35%</td>
<td>65%</td>
</tr>
</tbody>
</table>

Source: CBRE, September 2015.
DID YOU KNOW?

The global average utilisation of assigned seats is 60% (excluding vacant seats).

The global average meeting room utilisation is just 30%.

The majority of time (85%) at the desk is spent working individually.

Collaboration at the desk averages around 3.6%

The highest rate was observed in Australia at 4.6% and the lowest was in California at 2.3%. CBRE believes that no matter how much collaboration space you build, people will continue to collaborate at the desk. This has implications for providing quiet or undistracted spaces in open plan environments. Many organisations build too much of the wrong kind of collaborative and meeting spaces, representing vast amounts of misspent investment.

The office is most heavily utilised on Tuesdays and least on Fridays.

The office is most heavily utilised after lunch (between 2pm and 3pm).

There is often a strong misalignment between perception and reality.

This underscores the fact that companies would be able to comfortably accommodate short to medium headcount growth within their existing office space through implementing a mobility programme that allows the existing latent underutilisation to be recaptured.

Furthermore, on average, less than 40% of seats in meeting rooms are occupied. This finding points to a clear need to rightsize meeting room mixes and include more smaller/informal spaces and less larger/formal spaces. Rather than being used for meetings, some of these rooms could be reassigned to support focused and private work activities. Alternatively this space could be reallocated to social and collaborative settings.

Greater consideration should be given to more quiet and undistracted spaces for focused work, especially in dense open plan offices. It also reflects the fact that not as much face-to-face collaboration happens as managers desire amongst team members, but also more generally that the general understanding of “what is collaboration and how do you support it?” is not well understood.

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CBRE found that staff left work earlier on Friday across all locations surveyed, with the exception of China. This differential (average of Monday to Thursday compared to Friday) was most pronounced in Germany (9%), the United States (8%) and the Philippines (8%). Staff in China actually spent 2% more time on average in the office on Friday compared to Monday to Thursday.

CBRE has also observed that napping at work during lunchtime is considered acceptable in some Asian countries, albeit more in local firms than in multinationals. In contrast in India, workers prefer to take social strolls in groups after lunch.

Perception vs. Reality

CBRE compared utilisation data as to what staff perceive that they do on an average day through survey questionnaire data (even adjusting for leave and other factors). The majority of the time, CBRE found that staff believe they are more anchored to their desks than they actually are. This highlights the need for effective change management in implementing new ways of working.

Note for the studies CBRE conducted in China, none of the organisations surveyed had to work on Saturday
Figure 5: Percentage of time spent in/out of the office

84% Time at desk working individually
- Working individually
- On the phone
- Collaboration at desk
- Away from desk, in a meeting
- Away from desk (out of office walking around, quiet room, admin activities, restroom etc.)
- Out of the office

Source: CBRE, September 2015.

Figure 6: Space Utilisation by time of day

Source: CBRE, September 2015.

Figure 7: Misalignment between perception and reality

Source: CBRE, September 2015.
Space Utilisation of Collaboration areas / Meeting Rooms

The global average space utilisation of meeting rooms is just 30%. This finding points to significant opportunities to convert meeting rooms to multipurpose spaces and increase their utilisation. CBRE believes that the optimal level of space utilisation for meeting areas should be between 40-60%.

If your organisation is under the optimal level, you should review whether you have too much meeting space and whether these spaces could be better utilised for other purposes. If your organisation is over the optimal level, you should be reviewing whether the spaces provided are of the correct size, or perhaps you should encourage your staff to use more informal collaboration spaces.

Figure 8: Space Utilisation of Meeting areas by Country

Figure 8 shows space utilisation of meeting areas by country. The findings should a particularly low rate of space utilisation of meeting spaces in the United States. It could be argued, therefore, that with the hype of collaboration over the past few decades, too much collaboration space has been built.

Figure 9: Space Utilisation of Meeting Areas by Industry

Please note – Real Estate industry data relates to CBRE global offices only.

Source: CBRE, September 2015.

*Where the workspace has someone physically present or where no one is physically present at the moment but these are visible signs that the desk is being used for the day (e.g. computer is on, food and drink are present etc)
DID YOU KNOW?

Meeting rooms are most heavily utilised mid-week on Wednesdays and the least on Fridays.

More than half of organisations (51%) have underutilised meeting rooms.

51% of clients have meeting rooms that are underutilised, 38% are within recommended target range (where rooms can occasionally be hard to book at peak periods but there are generally no problems) and 11% have high utilisation where it is extremely hard to secure a meeting room. There is a 50% chance meeting rooms in your organisation are underutilised.

Meetings involving 2-3 people comprised 59% of all meetings observed.

In spite of most meetings involving just 2-3 people, the most common meeting room size was a six-person room.

Meetings are becoming more intimate. This means that a greater number of smaller meeting areas and collaborative spaces are required.

In an average meeting in an average room, at least half the seats are sitting empty. This shows that any occupier trying to quantify meeting room requirements should always make evidence-based decisions based on quantitative data.
The ‘Size of Meetings’ (light green) represents the percentage split of the size of meetings actually held observed by CBRE through our utilisation studies. The Size of Meeting Rooms’ represents the size of meeting rooms built within all the offices we have observed.

Most organisations build more larger meeting rooms, but most meetings are small in size. ‘Right sizing’ meeting rooms creates a huge efficiency opportunity.

Meeting sizes are largest in China, with 5.7 persons in every meeting compared to Australia and New Zealand, which averaged at 4.3 persons.

The larger average meeting size perhaps suggests an organisational culture that is more consensus driven and where decision making power is more centralised.
Tools For Measuring
There are many tools for measuring utilisation. However, before companies start, they need to ask themselves the following questions:

- What kind of data do you want?
- How often do you want to capture information (intermittent or real time)?
- What is your budget?
- Are you undertaking research to inform a business case for change; or is it for ongoing space management; or another purpose?

In some cases, organisations are already collecting some of this information through existing business systems and can tap into that existing data to understand utilisation. Other organisations may need to create a solution that combines a number of different techniques. Before starting, they must be very clear not only about using the right tools, but how they are going to interpret and use the data.
Figure 14: Common Methods of Measuring Space Utilisation

CBRE has looked at all available methods to gather utilisation data. An assessment is provided below. This is split into three categories in terms of the source of the data: (A) what organisations already have (B) physical data collection and (C) technological data collection methodologies.

<table>
<thead>
<tr>
<th>Options</th>
<th>Cost</th>
<th>Scalability</th>
<th>Accuracy</th>
<th>Granularity</th>
<th>Invasiveness</th>
<th>Work profiling</th>
<th>Reporting Speed</th>
<th>Acceptability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WHAT ORGANISATIONS ALREADY HAVE</strong></td>
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<tr>
<td>Swipecard or security data</td>
<td>Moderate</td>
<td>Good</td>
<td>Good</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Prone to inaccuracy due to tailgating, the data may not be readily available, and no detail of desk usage.</td>
</tr>
<tr>
<td>Incoming (and outgoing if available) data from security card access is used to inform presence by individuals.</td>
<td>Moderate</td>
<td>Good</td>
<td>Good</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>IP/PC/IP/VOIP/THIN client monitoring</td>
<td>Poor</td>
<td>Good</td>
<td>Good</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Lack of PC processing activity does not equate to zero activity plus no data collected on non-desk spaces.</td>
</tr>
<tr>
<td>The use of hard-wired and wireless data ports to detect presence and activity.</td>
<td>Poor</td>
<td>Good</td>
<td>Good</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
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<tr>
<td><strong>PHYSICAL STUDIES</strong></td>
<td></td>
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</tr>
<tr>
<td>Body count or “bed check”</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Cheap and cheerful but cannot be used for workstyle profiling or detailed analysis of work patterns. Prone to observer errors.</td>
</tr>
<tr>
<td>Individuals walk around noting attendance. ONLY recorded on paper. Can record a variety of data, some planned, other unplanned.</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Paper based observations</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Paper entry makes a good back-up if copied. Post survey data entry can delay delivery of results. Slow turnaround and very prone to data entry errors.</td>
</tr>
<tr>
<td>Individuals walk around noting attendance and different work activities on a floor-plan or spreadsheet from which it can be analysed and visualised.</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
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</tr>
<tr>
<td>Electronic observation studies</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Electronic methods allow monitoring of the data during the study and also built in checks for data input errors by observers. Can be longer and more expensive than paper to set up.</td>
</tr>
<tr>
<td>Individuals walk around entering data onto a tablet app which records the data geo spatially and provides a broad array of automated reports and data visualisation.</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
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</tr>
<tr>
<td>MOBY (CBRE Proprietary mobility profiling tool) Electronic observation method.</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Poor</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Greater accuracy, granularity of data and reporting speed. Additional data captured through process allows for work profiling to be done for each team (e.g. paper usage / storage, desk personalization etc.)</td>
</tr>
</tbody>
</table>

Good | Moderate | Poor
<table>
<thead>
<tr>
<th>Options</th>
<th>Cost</th>
<th>Scalability</th>
<th>Accuracy</th>
<th>Granularity</th>
<th>Invasiveness</th>
<th>Work profiling</th>
<th>Reporting Speed</th>
<th>Acceptability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TECHNOLOGY CAPTURE</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People counters</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>Covers a wide area of space or entrances so no detail of desk usage available or of work activities.</td>
</tr>
<tr>
<td>Technology can also be installed to count the number of people entering and exiting an area through the use of video imaging and shape recognition.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Passive Infrared (PIR) sensor systems</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>Expensive to set up but cost-effective for long-term monitoring; occupancy rather activity data only.</td>
</tr>
<tr>
<td>Receivers mounted to the under side of chairs and throughout the office to detect employee presence through infrared sensors.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>People tracking</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>Unreliable as sensors not always carried by occupants; considered obtrusive and privacy infringement.</td>
</tr>
<tr>
<td>Sensor technology that is worn by employees to track motion as well as conversations and social patterns. Technology is designed to aid in determining why individuals are spending time in various spaces and creating social mapping.</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Passive WiFi tracking</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>Easily scalable. However, potentially inaccurate if people have not turned on WiFi or conversely have more than one device. Also cannot show utilisation by teams. Potentially intrusive as raises data privacy concerns.</td>
</tr>
<tr>
<td>Uses Wi-Fi signal from devices and routers to triangulate user position.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED light sensors</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>Emerging technology that is currently being explored by organisations.</td>
</tr>
<tr>
<td>Motion sensing LED track lights that can “heatmap” space.</td>
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</tr>
</tbody>
</table>

The various tools and methodologies all have their costs and benefits. CBRE has rated them based on the following factors:

- **cost** – the cost of setting up and completing the study;
- **scalability** – whether the method can be applied as easily to 1,000 as 100 desks and spaces;
- **accuracy** – how well the method reflects the actual occupancy of the space across the study period;
- **granularity** – the level of detail in terms of the frequency of measurement and/or the ability to pinpoint specific spaces;
- **invasiveness** – how much the method interrupts the occupant or infringes on perceived privacy;
- **work profiling** – the ability to generate information regarding the work styles/patterns of the teams;
- **reporting speed** – the time required to generate a report after data is collected;
- **acceptability** – the level of acceptance by clients related to the invasiveness of the approach e.g. most clients find any type of electronic surveillance unacceptable.

Source: The WCO Guide to: Utilisation and Occupancy Studies, April 2013 (edited by CBRE April 2015)
The CBRE MOBY Work Profiling Tool

There are many tools in the market that simply measure whether desks are empty or occupied. When developing its own tool, CBRE asked the question, "Why would you send someone walking around the office every hour to just measure whether a desk is empty or not?"

The CBRE MOBY tool captures a greater volume of information regarding employee work styles including how they collaborate, use technology and paper and even how they personalise their work environments. Technology capture tools only capture utilisation and they often fail to answer the question “why?” MOBY attempts to do this. The outputs are invaluable for helping to created tailored workplace strategy and change management solutions. MOBY can provide a whole range of enterprise solutions and can also connect into back-end space management systems.

How does the tool work?

**Preparation**
- The floorplan is scanned in, stored as an image, and is registered to a particular building.
- Using a tablet or a desktop computer, route stops are numbered sequentially over the floorplan. Site checks are conducted to ensure robustness, and modifications performed.

**Training**
- Training will be delivered in an interactive classroom. Style setting with test routes and scenarios are presented to candidates at the end, with them responding using their handheld device. This is intended to familiarise candidates with the software and reduce scenario interpretation error rates while minimising the costs associated with training.

**Data Collection**
- Personnel capture information directly on their own handheld devices and it is synchronised with the central server.
- The data capture utility does not require any installation and works on any recent touchscreen smart phone. No information other than the route numbers, is available to them.

**Reporting**
- All data captured by researchers is available for analysis and review immediately after the TUS is completed. The automated dashboard generates all statistics and graphs, and can be filtered across different variables.
- Alternatively, the data can be extracted in standard excel format for customised analysis according to client needs.

Benefits:
- **Accurate** - One-step smartphone data capture avoiding the two step process of collection on paper and data entry, reducing the chances of human error.
- **Efficient** - Streamlined process means less time spent on data collation and more time on generating insights from the data.
- **Speed** – Very fast mobilisation and standard reports can be issued immediately upon completion of data collection. Preliminary reports can be created mid-stream of data collection.
- **Secure** - Access to the application and collected data is restricted, ensuring data is kept safe.
Risks – How Poor Execution Creates Execution Risk

There are some in the real estate and workplace industry who oversimplify the collection and interpretation of utilisation data. In doing so they risk making false assumptions or estimates as to the level of potential savings and the ability of an organisation to adapt systems, processes, culture and technology in order to enact new and dynamic workplace solutions.

With every utilisation study there are certain risks that must be managed to ensure that the quality of the data is high, and that it is correctly interpreted and then applied:

- **Observer error**: The largest risk with utilisation studies is the proper training of observers to ensure that they understand the difference between empty (no one is using the desk) observations and temporarily unoccupied spaces (the desk is being used, but the user is temporarily away from the desk). A comprehensive and consistent training regime is critical.

- **Interpretation errors**: When assessing the potential for sharing ratios, some analysts only include the time people are physically at their desk as a “desk in use”. The data tells us that this is only about 50-70% of the time people are in the office building, which is a massive overstatement of sharing potential. For this to be true, this would mean that every single time a staff member leaves their desk they would have to pack up all their belongings to ensure someone else is able to use that setting. Clearly this is nonsensical.

- **Peaks versus averages**: Workers are rightly nervous when they are being presented dynamic and shared workplace solutions that are estimates based on averages, and worry about much higher peak periods. For instance, bankers will be nervous about month end processes where they expect all staff to be present. Any interpretation of utilisation data into a sharing ratio must build in a buffer to account for these patterns and/or create a physical solution that has overflow capacity.

Recognising the difference between the two is key to observing utilisation. Understanding the difference between the two is critical when interpreting the data and making recommendations.

Source: CBRE, September 2015.
CASE STUDY

CBRE used its MOBY tool to help an unnamed financial institution measure its space utilisation.

Empty or underutilised space within this organisation was reduced from 32% to 10%, allowing the organisation to utilise their space much more efficiently.

**Figure 15: Space utilisation pre-and post implementation**

Before

![Graph showing space utilisation before implementation]

- 32% Empty
- 24% In use, not occupied
- 44% Occupied

After

![Graph showing space utilisation after implementation]

- 10% Empty
- 39% In use, not occupied
- 51% Occupied

Source: CBRE, September 2015.
3 CONCLUSION

We are at a time when there is extraordinary potential for change in the physical workplace in response to the evolving nature of technology and work. Benchmarking metrics such as workplace density and space utilisation are becoming critical in helping corporate occupiers inform workplace and real estate decisions and managing their real estate as a strategic asset. At the same time, there exist significant risks. Overly simplistic understanding of this data may lead to companies increasing static or dynamic workplace density at the expense of productivity and the satisfaction of workers.

There are many ways to measure utilisation. Organisations need first to understand why they need the data and what data they need before rushing to solutions.

The real question companies need to ask themselves is what workplace solution is appropriate for their organisation, both now and in the future. Corporate occupiers must develop a complete understanding of how their people work and what their organisational objectives and imperatives are. It is only by aligning these two fundamental perspectives that companies can implement a workplace strategy capable of achieving cost effective business transformation.

It is time to take stock of the current situation, rethinking density and utilisation and putting robust evidence behind how you manage your space and build a business case for change. This will not only save you money but improve business and employee performance.

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DISCLAIMER

Utilisation data contained herein has been obtained from CBRE MOBY, our proprietary mobility profiling software. The data includes studies of 14 countries; 36 cities; 77 clients; 63,235 workpoints; and 3,315,170 observations. While we do not doubt its accuracy, the sample size varies for each country, city and industry resulting in varying degrees of level of confidence in the results in drawing out conclusions. These results should be treated as indicative of the broad industry trends.
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