SPACE UTILISATION: THE NEXT FRONTIER

How Asian market conditions are driving utilisation harder and faster
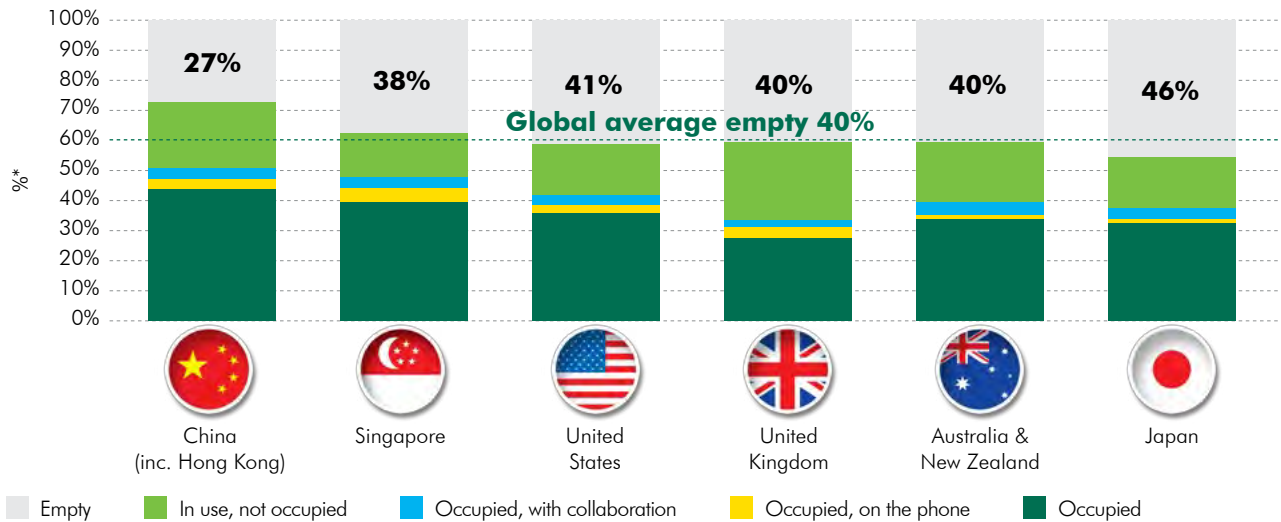
From Density to Utilisation
INSIGHT FOR CORPORATE OCCUPIERS

Space Utilisation by Country

Country	Empty %
China (inc. Hong Kong)	27%
Singapore	38%
United States	41%
United Kingdom	40%
Australia & New Zealand	40%
Japan	46%

Global average empty 40%

%*

Legend:
- Empty
- In use, not occupied
- Occupied, with collaboration
- Occupied, on the phone
- Occupied

Source: CBRE, September 2015.
Figures based on CBRE observations.

UTILISATION OF THE SPACE

Space Utilisation by Industry

Government
27% empty

Education
51% empty

Legal Services
29% empty

Business Service/Consulting
65% empty

Real Estate
31% empty

Telecommunications
70% empty

Source: CBRE, September 2015.

Meeting Room Supply vs. Demand

Percentage split of size of meetings held / Percentage split of size of meeting rooms

Number of people

■ Size of Meetings ■ Size of Meeting rooms
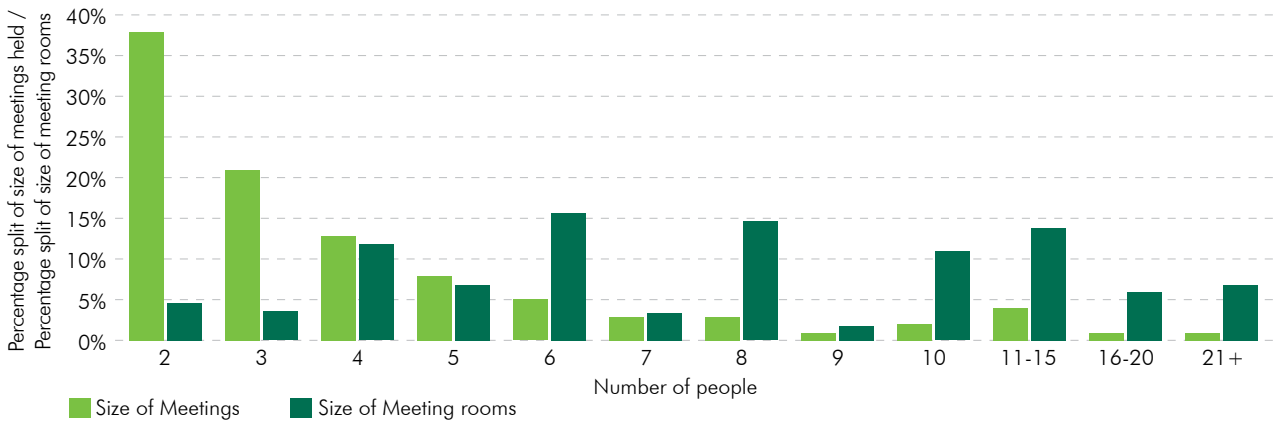
Source: CBRE, September 2015.

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.
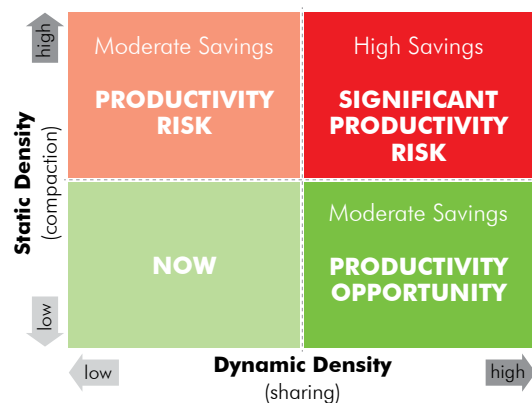
Size of Meetings Held

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

Source: CBRE, September 2015.

Static Dynamic Density Matrix

	Moderate Savings **PRODUCTIVITY RISK**	High Savings **SIGNIFICANT PRODUCTIVITY RISK**
	NOW	Moderate Savings **PRODUCTIVITY OPPORTUNITY**

Static Density (compaction) — high / low

Dynamic Density (sharing) — low / high

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

Source: CBRE, September 2015.

"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.

SPACE UTILISATION -
The Next Frontier

How Asian market conditions are driving utilisation harder and faster

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 optimising the utilisation of the space, which CBRE refers to as **"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.
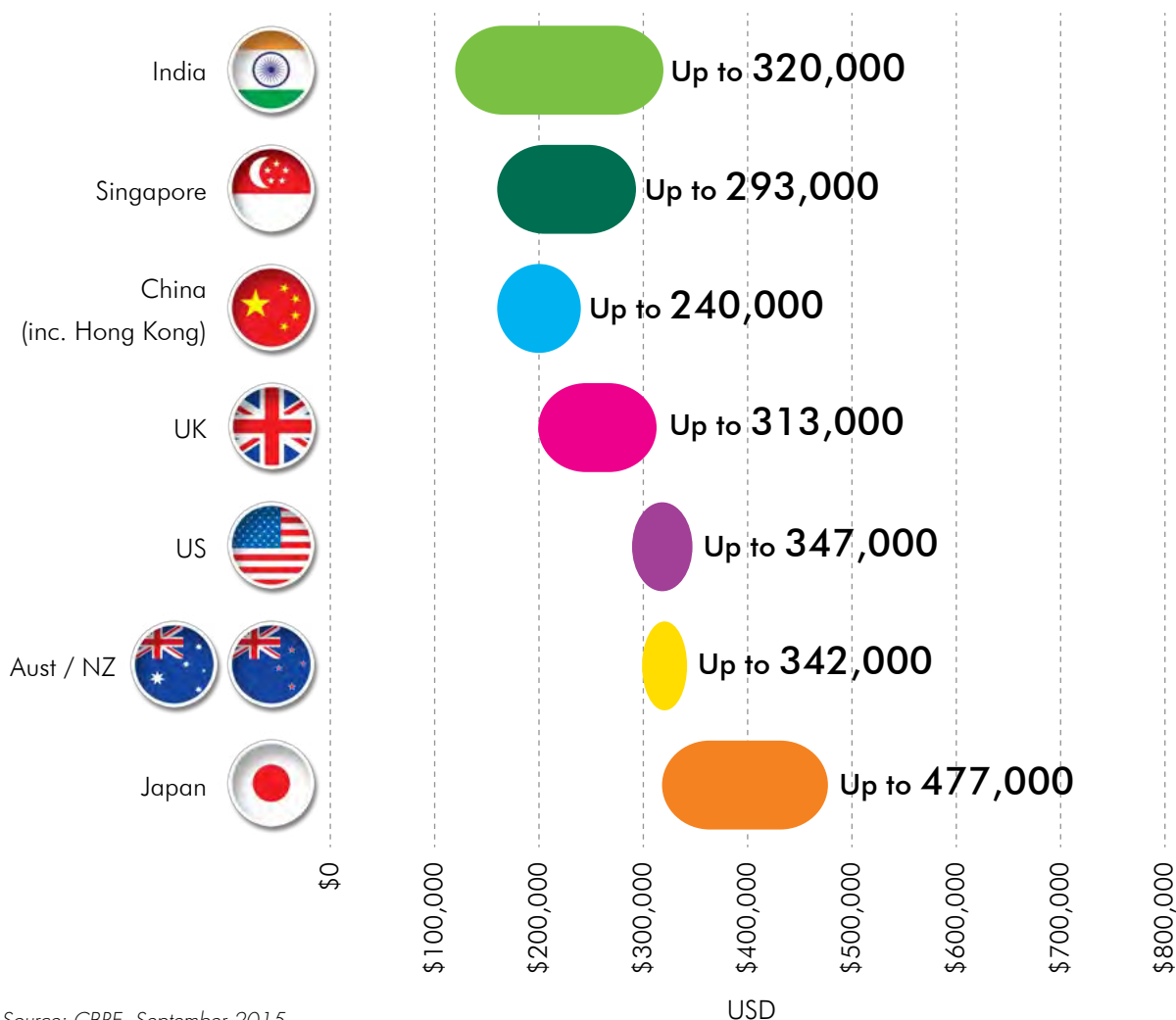
There is, however, another approach. To build leadership and employee buy-in for a new dynamic work environment, there **must** be a narrative beyond reducing costs and a stronger value proposition that "gives" rather than "takes". Those "gives" relate to choice, control, ability to respond to business 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 misinformed 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.

India	Up to **320,000**
Singapore	Up to **293,000**
China (inc. Hong Kong)	Up to **240,000**
UK	Up to **313,000**
US	Up to **347,000**
Aust / NZ	Up to **342,000**
Japan	Up to **477,000**

$0 $100,000 $200,000 $300,000 $400,000 $500,000 $600,000 $700,000 $800,000

USD

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.

1 STATIC WORKPLACE DENSITY

STATIC WORKPLACE DENSITY

Asia has driven static density to its limit, if not beyond, in search of efficiencies.

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.

Figure 1 shows workplace density in Asia Pacific by country, according to what companies typically target on a per sq. ft. per desk basis in a new office fit-out. In many parts of Asia, workplace density has already **reached a point where CBRE believes that any further increase will place staff productivity, performance and retention at risk**. In some countries, global organisations are making the case to local leadership to decrease densities in order to address the need to increase the diversity of appropriate focus and collaborative settings that enhance the performance of people in the workplace.

Figure 1: Static Workplace Density range in Asia Pacific by Country (per sq. ft. per desk)
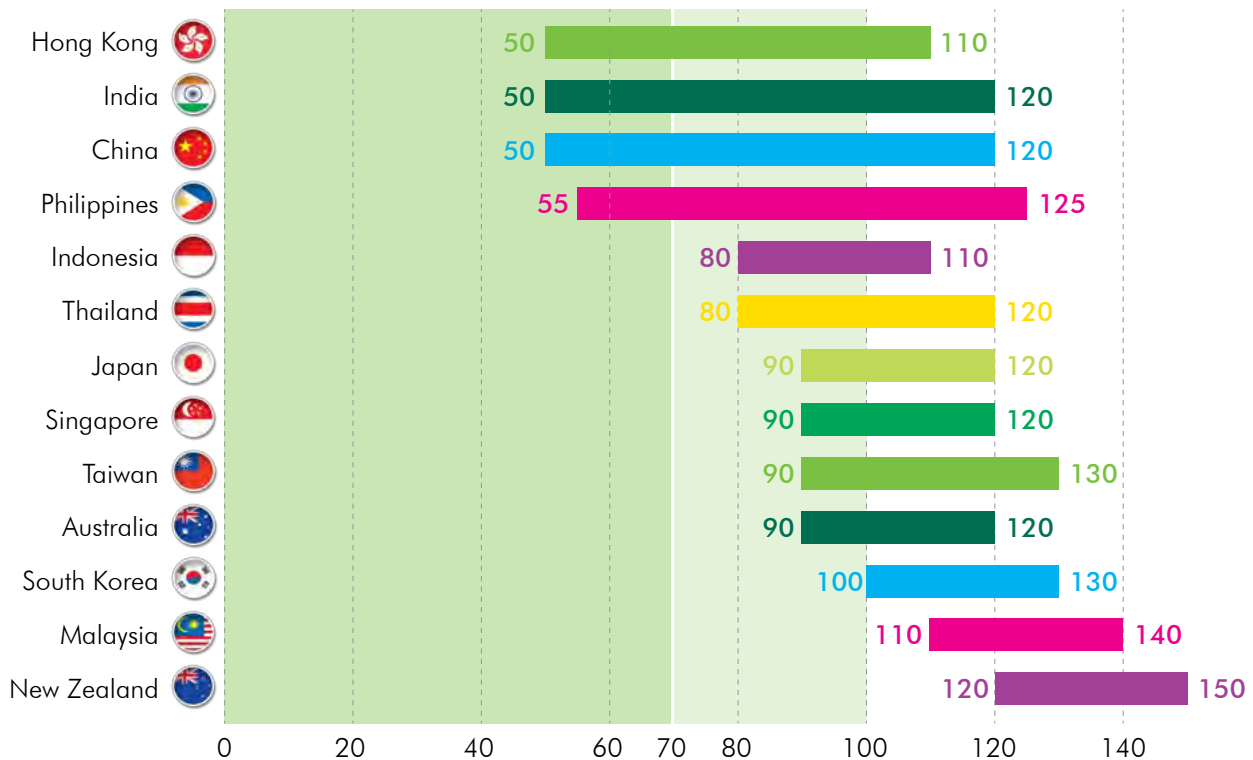
Disclaimer

The sq. ft. per desk quoted is based on Net or Usable Square Feet (USF) as opposed to Rentable Square Feet (RSF) which would be higher. USF excludes some or all of the following and is dependent on market practices in the particular country, i.e. lobbies, restrooms, stairwells, storage rooms and shared hallways.

The minimum sq. ft. per desk quoted represents the absolute maximum office occupational densities observed from available market data. In certain instances, the density may represent only particular pockets of space or levels within a building that CBRE has access to data on; however, the density when considered across all the floors that the occupier operates from may be higher due to uneven distribution of shared spaces.

In most countries, the minimum sq. ft. per desk is governed by relevant laws, regulations or codes that are determined by a number of factors including but not limited to the width of the fire escape staircase, fresh airflow / ventilation and the number of toilets. Most countries have a typical target density that they are built towards which represents the typical demand in the market. **However the more advanced / efficient the building design is, the higher the maximum allowable density could potentially be, with no set numerical limit dictated for most countries.**

Information contained herein has been obtained from sources believed to be reliable. While we do not doubt its accuracy, we make no guarantee, warranty or representation about it or in any case condone the high office occupational densities observed in any manner. **Rather, the high densities highlight the need to shift thinking from 'static density' to 'dynamic density' allowing occupiers to increase the headcount that a given space can accommodate, whilst at the same time decreasing the 'static density' i.e. ability to accommodate more people whilst providing larger individual workspaces."**
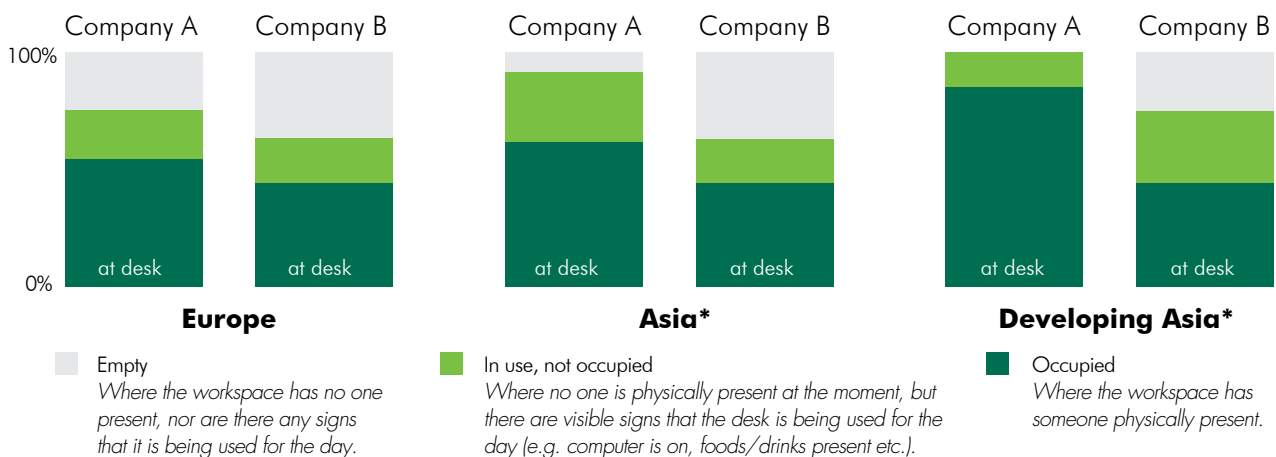
Source: CBRE, September 2015.

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.

2 SPACE UTILISATION

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.

Figure 2: Utilisation by Region for Company A vs. Company B in two different industries

Europe   Asia*   Developing Asia*

Empty	In use, not occupied	Occupied
Where the workspace has no one present, nor are there any signs that it is being used for the day.	Where no one is physically present at the moment, but there are visible signs that the desk is being used for the day (e.g. computer is on, foods/drinks present etc.).	Where the workspace has someone physically present.

* Mature Asia refers to Singapore and Hong Kong and Developing Asia refers to the Philippines. Note that this data represents a case study for two specific companies only.
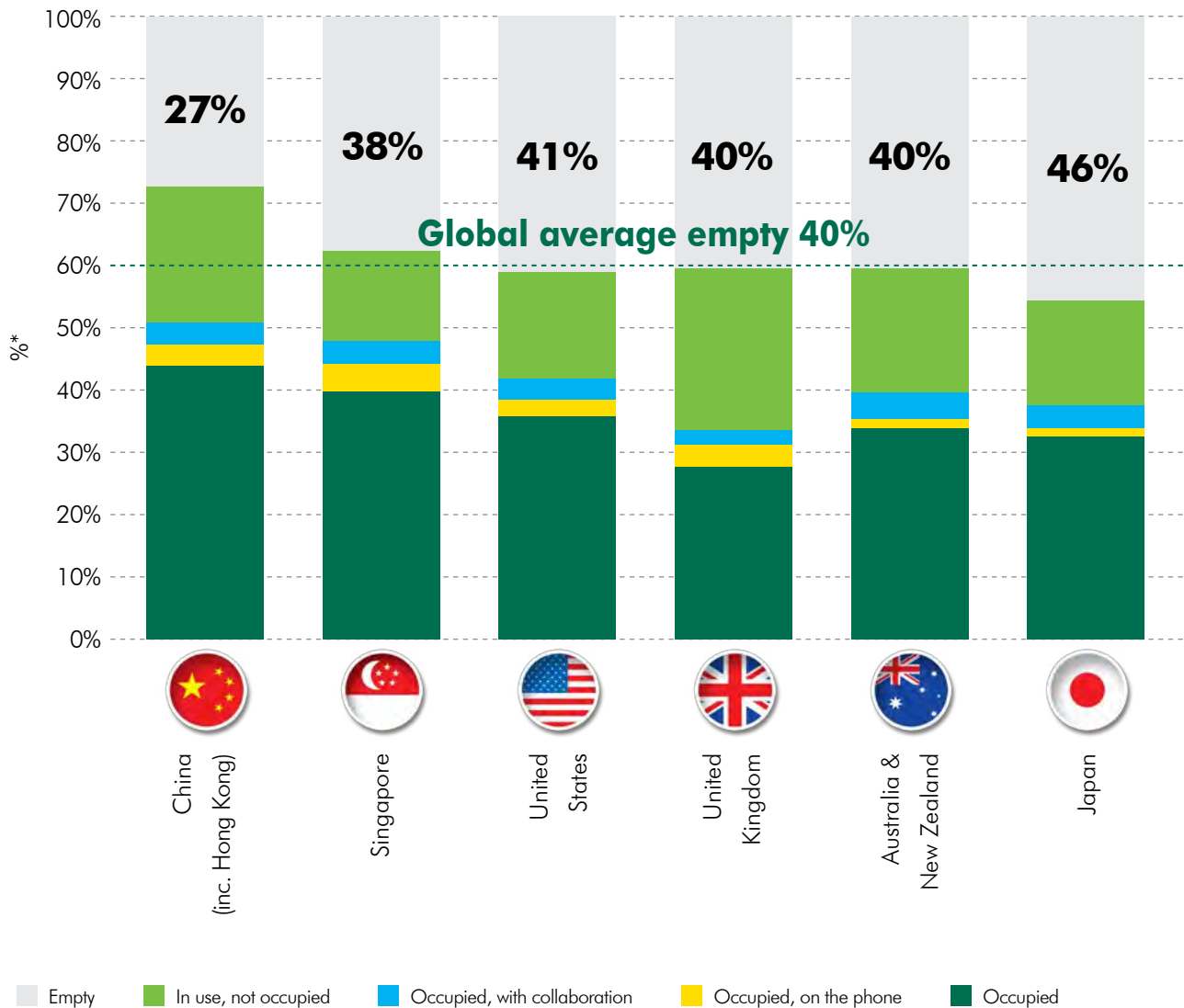
Source: CBRE, September 2015.

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.

Figure 3: Space Utilisation by Country

Legend:
- Empty
- In use, not occupied
- Occupied, with collaboration
- Occupied, on the phone
- Occupied

Bars: China (inc. Hong Kong) 27%, Singapore 38%, United States 41%, United Kingdom 40%, Australia & New Zealand 40%, Japan 46%. Global average empty 40%.

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 underutilisation shown may be higher than the overall average for each sample. However, the relative difference in the levels of underutilisation 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.
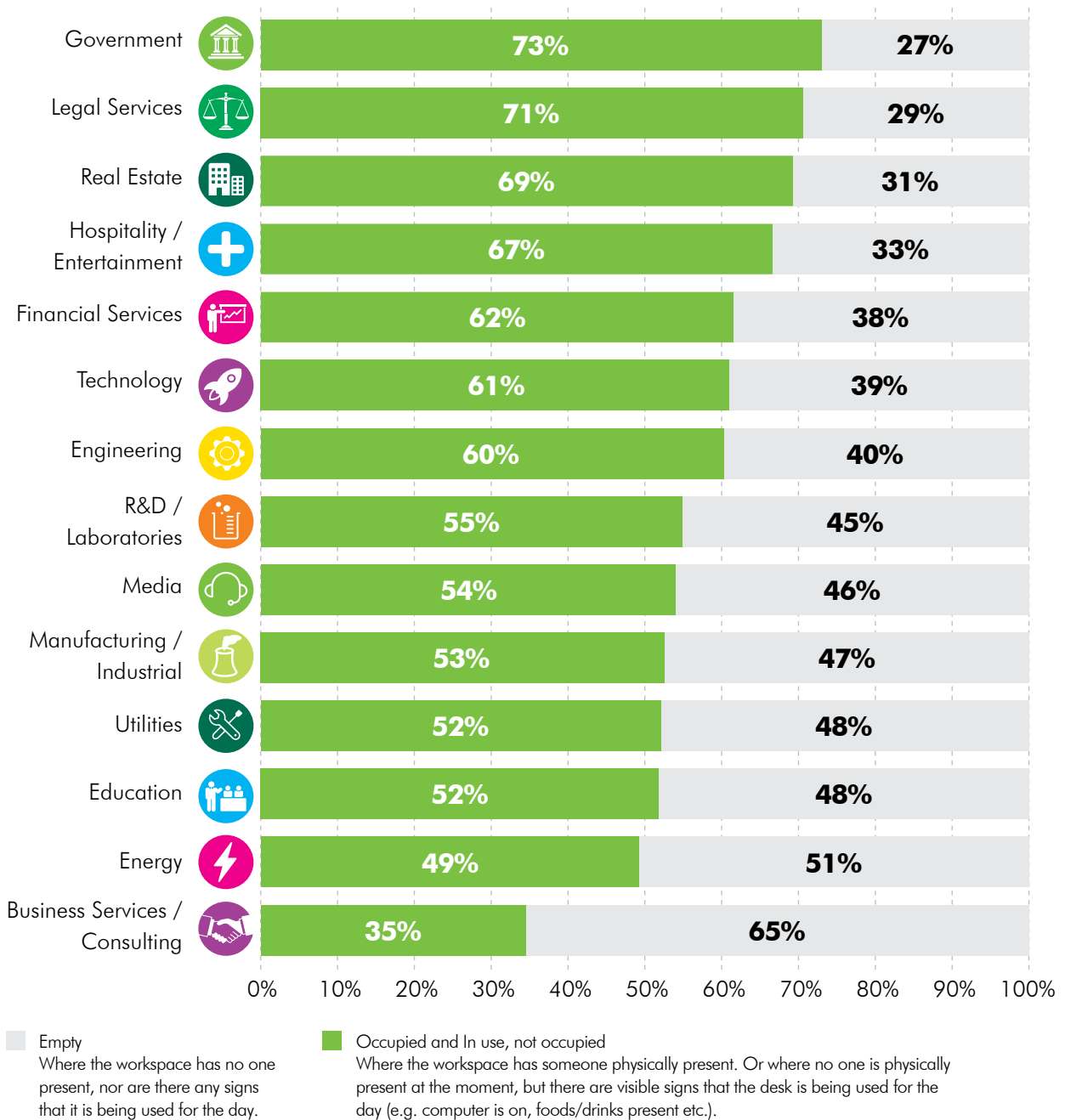
Source: CBRE, September 2015.

*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

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

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Empty
Where the workspace has no one present, nor are there any signs that it is being used for the day.

Occupied and In use, not occupied
Where the workspace has someone physically present. Or where no one is physically present at the moment, but there are visible signs that the desk is being used for the day (e.g. computer is on, foods/drinks present etc.).

Source: CBRE, September 2015.

DID YOU KNOW?

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

This underlines 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.

The global average meeting room utilisation is just 30%.

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.

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

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.

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.

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 staff actually spent 2% more time on average in the office on Friday compared to Monday to Thursday.

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

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.
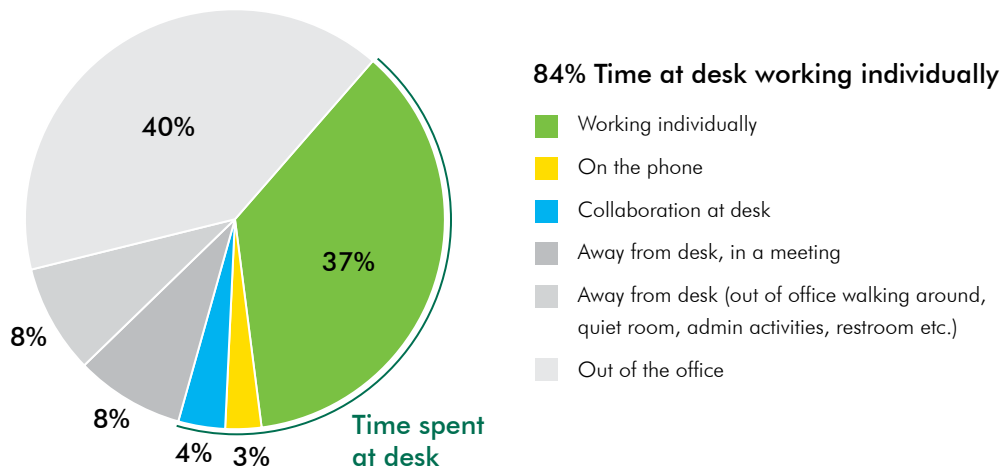
Perception vs. Reality

There is often a strong misalignment between perception and 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.
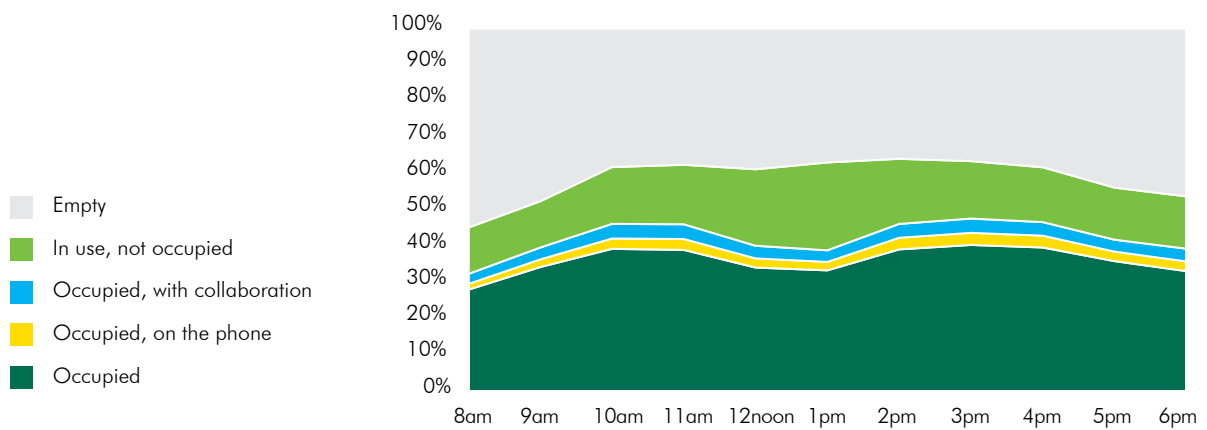
Note for the studies CBRE conducted in China, none of the organisations surveyed had to work on Saturday

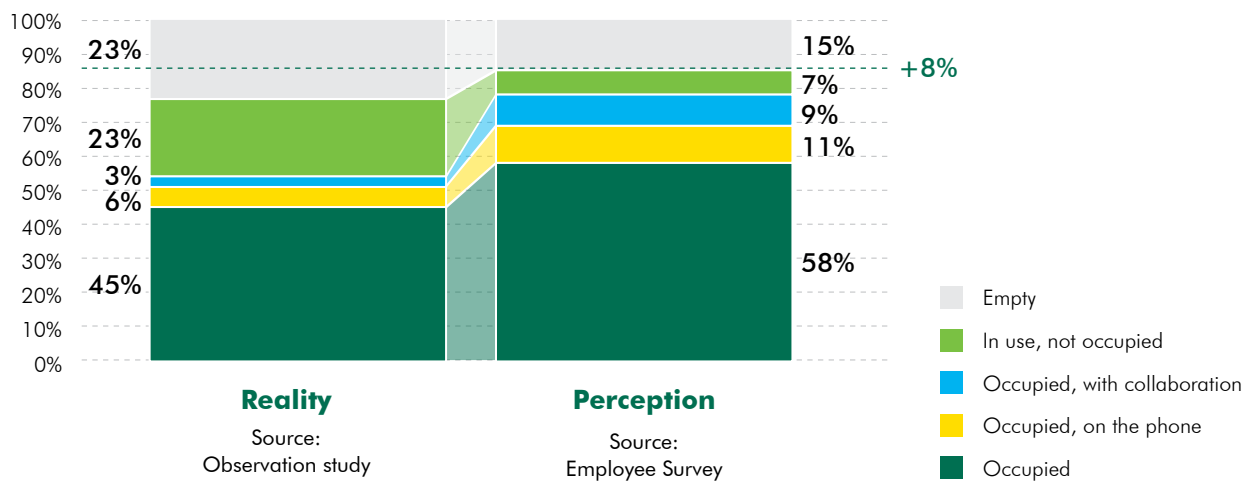## Figure 5: Percentage of time spent in/out of the office

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

40%
37%
8%
8%
4%   3%

Time spent at desk

Source: CBRE, September 2015.

Figure 6: Space Utilisation by time of day

- Empty
- In use, not occupied
- Occupied, with collaboration
- Occupied, on the phone
- Occupied

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

8am 9am 10am 11am 12noon 1pm 2pm 3pm 4pm 5pm 6pm

Source: CBRE, September 2015.

Figure 7: Misalignment between perception and reality

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

23%
23%
3%
6%
45%

15%
7%
9%
11%
58%

+8%

Reality
Source: Observation study

Perception
Source: Employee Survey

- Empty
- In use, not occupied
- Occupied, with collaboration
- Occupied, on the phone
- Occupied

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

None ■ Occupied and in use, not occupied*
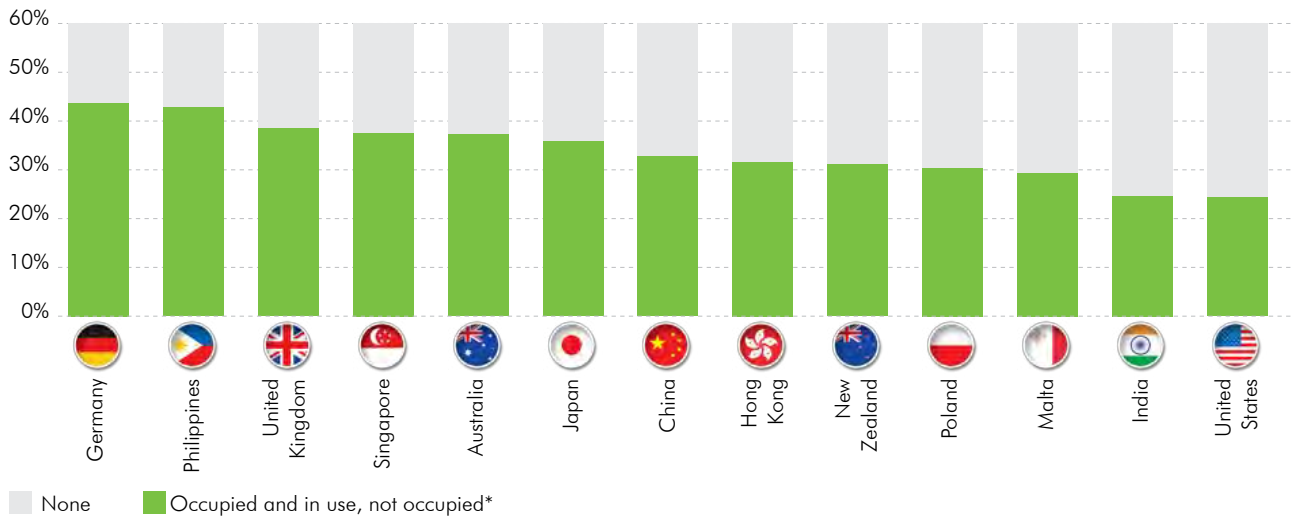
Source: CBRE, September 2015.

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

None ■ Occupied and In use, not occupied*
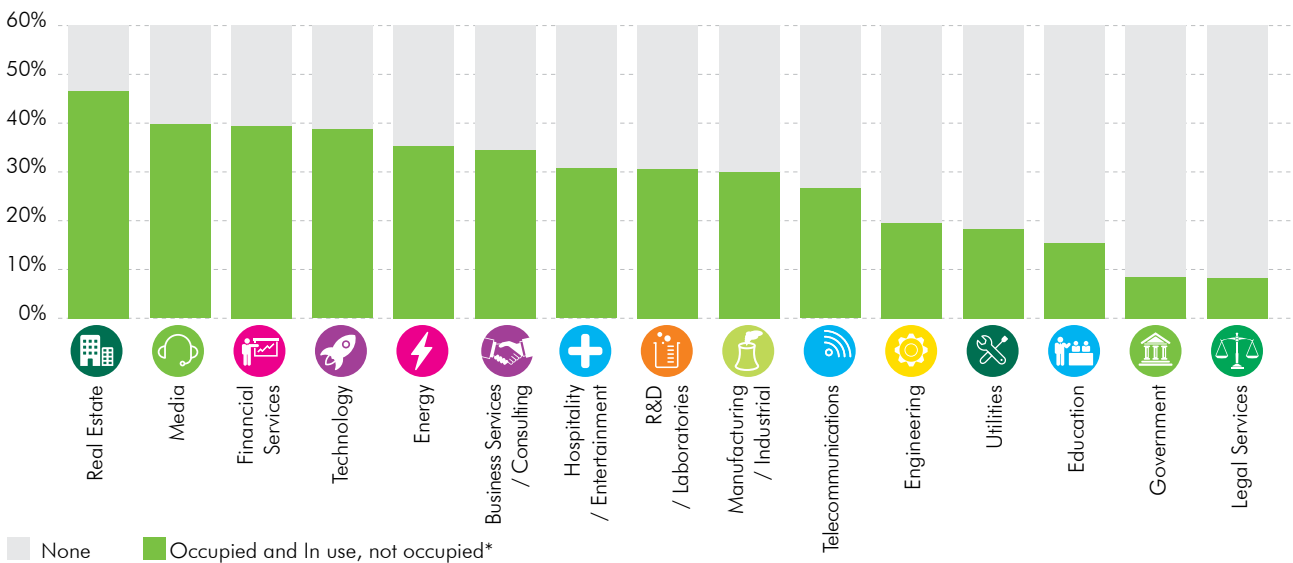
Please note – Real Estate industry data relates to CBRE global offices only.

Source: CBRE, September 2015.

Where the workspace has someone physically present or where no one is physically present at the moment but there 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.

Although the range is just 5% (lowest 27%, highest 32%), the variance across the days of the week is minimal. However, this does not tell us that staff are more collaborative one day versus another, as staff could be collaborating at their desk or elsewhere within and outside the office.

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.

Figure 10: Space utilisation of meeting areas by industry

Source: CBRE, September 2015.
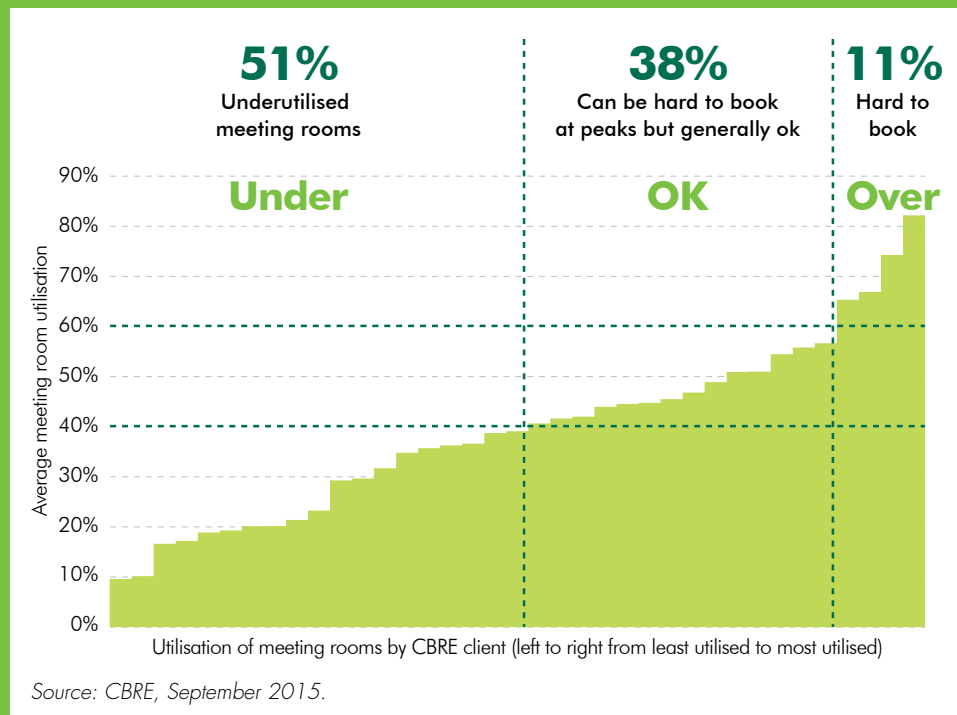
Meetings involving 2-3 people comprised 59% of all meetings observed.

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

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

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.

Figure 11: Number of Staff in Meetings Observed vs. Actual size of meeting rooms

Source: CBRE, September 2015.
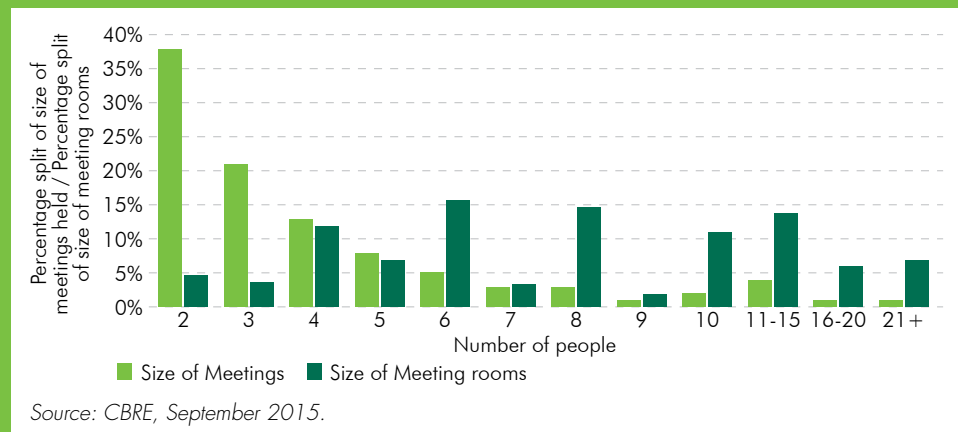
Figure 12: Weighted average size of meeting

Source: CBRE, September 2015.

The larger average meeting size perhaps suggests an organisational culture that is more consensus driven and where decision making power is more centralised.
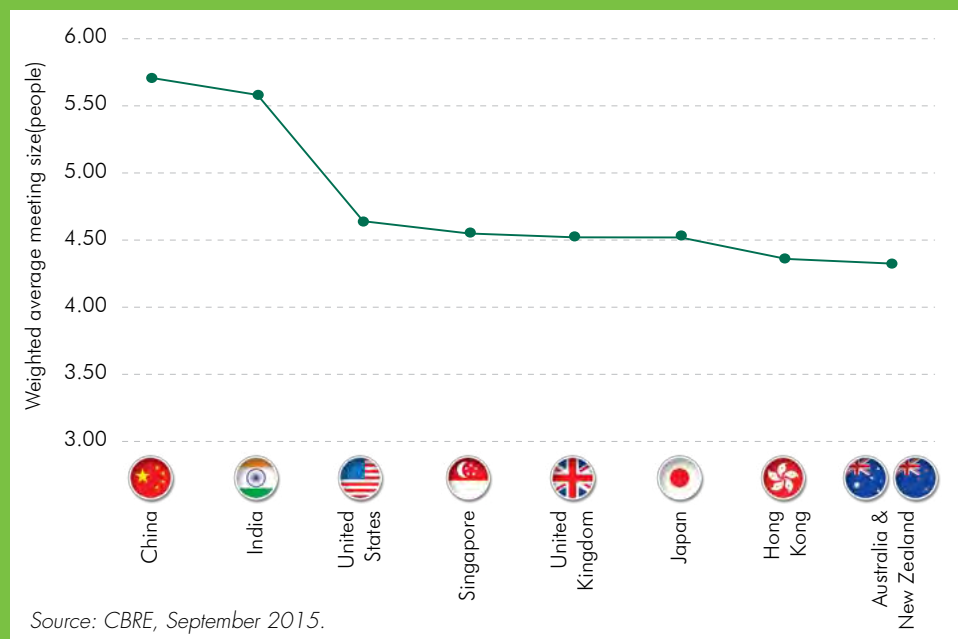
Meeting sizes are largest in China, with 5.7 persons in every meeting compared to Australia and New Zealand, which averaged at 4.3

Graphical representation of the nature of meetings (Western vs. Chinese)

*Please note – Source Yang Liu, http://bsix12.com/east-meets-west/*
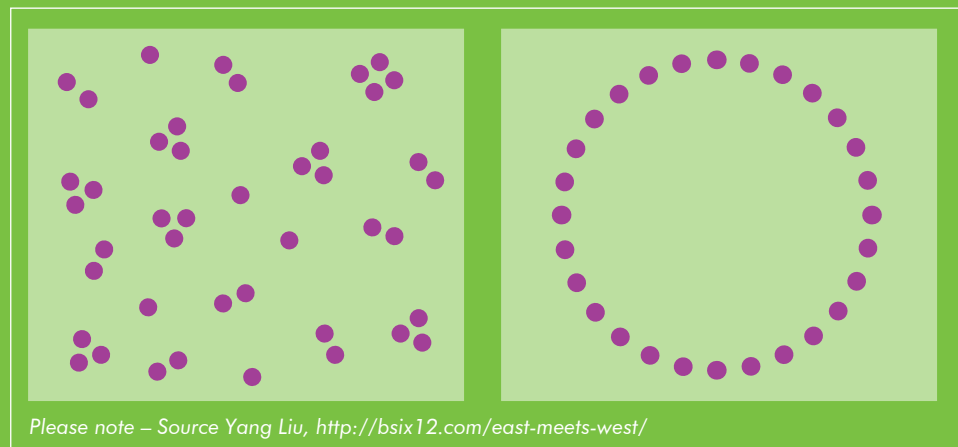
CASE STUDY

A large FMCG organisation was planning to increase the number of large meeting rooms in a new facility tenfold. The move was based on staff feedback and the perception of an inability to book a room when they needed to. However, based on further analysis, it was found that, for a large percentage of the time, people were booking rooms and not turning up to use the room.

This was a behavioural issue that was addressed through suitable education and / or smarter meeting room booking solutions. The final solution increased large room quantities threefold and avoided a potentially large amount of misplaced capital investment.

Figure 13: Meeting room utilisation
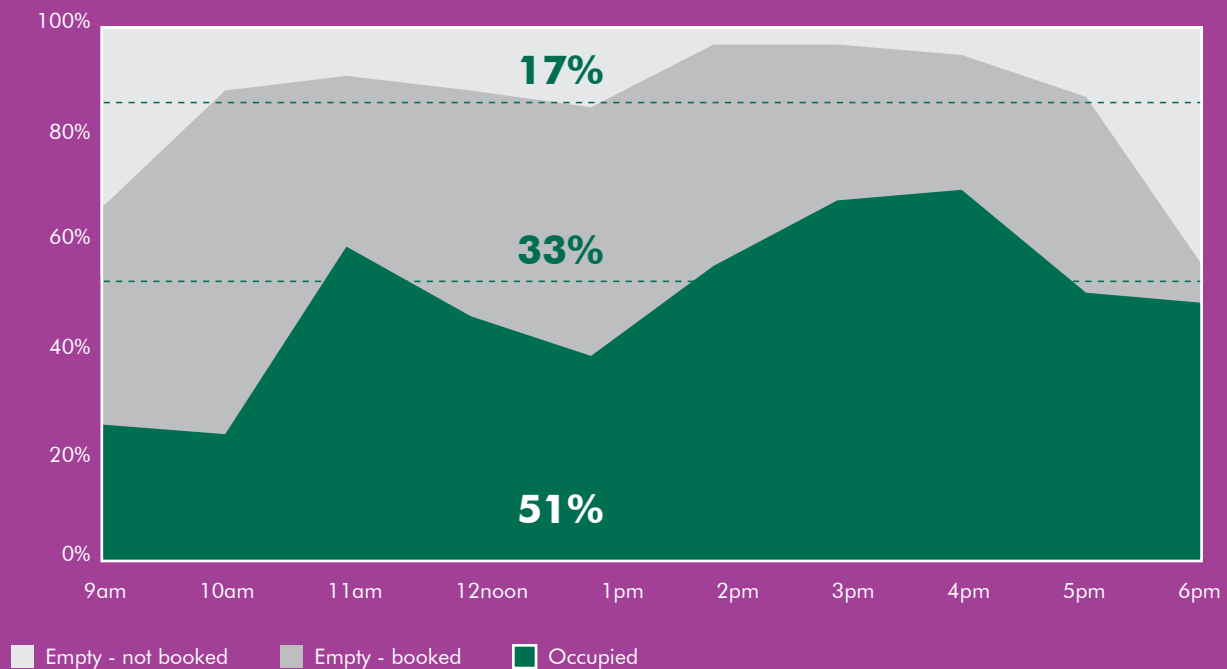
Source: CBRE, September 2015.

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.

Options	Cost	Scalabiltiy	Accuracy	Granularity	Invasiveness	Work profiling	Reporting Speed	Acceptability	Description
WHAT ORGANISATIONS ALREADY HAVE									
Swipecard or security data Incoming (and outgoing if available) data from security card access is used to inform presence by individuals.	Good	Good	Poor	Poor	Good	Poor	Moderate	Good	Prone to inaccuracy due to tailgating, the data may not be readily available, and no detail of desk usage.
IP/PC/VOIP/THIN client monitoring The use of hard-wired and wireless data ports to detect presence and activity.	Poor	Good	Moderate	Moderate	Poor	Moderate	Moderate	Good	Lack of PC processing activity does not equate to zero activity plus no data collected on non-desk spaces.
PHYSICAL STUDIES									
Body count or "bed check" Individuals walk around noting attendance. ONLY recorded on paper. Can record a variety of data, some planned, other unplanned.	Moderate	Moderate	Poor	Poor	Moderate	Poor	Poor	Good	Cheap and cheerful but cannot be used for workstyle profiling or detailed analysis of work patterns. Prone to observer errors.
Paper based observations Individuals walk around noting attendance and different work activities on a floor-plan or spreadsheet from which it can be analysed and visualised.	Moderate	Moderate	Moderate	Good	Poor	Poor	Poor	Good	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.
Electronic observation studies 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.	Moderate	Poor	Good	Good	Poor	Poor	Good	Good	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.
MOBY (CBRE Proprietary mobility profiling tool) Electronic observation method.	Moderate	Good	Good	Good	Moderate	Good	Good	Good	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.)

● Good   ● Moderate   ● Poor

Options	Cost	Scalability	Accuracy	Granularity	Invasiveness	Work profiling	Reporting Speed	Acceptability	Description
TECHNOLOGY CAPTURE									
People counters 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.	Poor	Moderate	Poor	Poor	Good	Poor	Moderate	Good	Covers a wide area of space or entrances so no detail of desk usage available or of work activities.
Passive Infrared (PIR) sensor systems Receivers mounted to the under side of chairs and throughout the office to detect employee presence through infrared sensors.	Poor	Moderate	Good	Moderate	Moderate	Poor	Moderate	Good	Expensive to set up but cost-effective for long-term monitoring; occupancy rather activity data only.
People tracking 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.	Poor	Poor	Poor	Moderate	Poor	Good	Poor	Poor	Unreliable as sensors not always carried by occupants; considered obstrusive and privacy infringement.
Passive WiFi tracking Uses Wi-Fi signal from devices and routers to triangulate user position.	Poor	Good	Moderate	Moderate	Moderate	Poor	Moderate	Moderate	Easily scalable. However, potentially inaccurate if people have not turned on WiFi or conversely have more than one device. Also can not show utilisation by teams. Potentially intrusive as raises data privacy concerns.
LED light sensors Motion sensing LED track lights that can 'heatmap' space.	Poor	Good	Moderate	Moderate	Moderate	Poor	Moderate	Moderate	Emerging technology that is currently being explored by organisations.

● Good ● Moderate ● Poor

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*
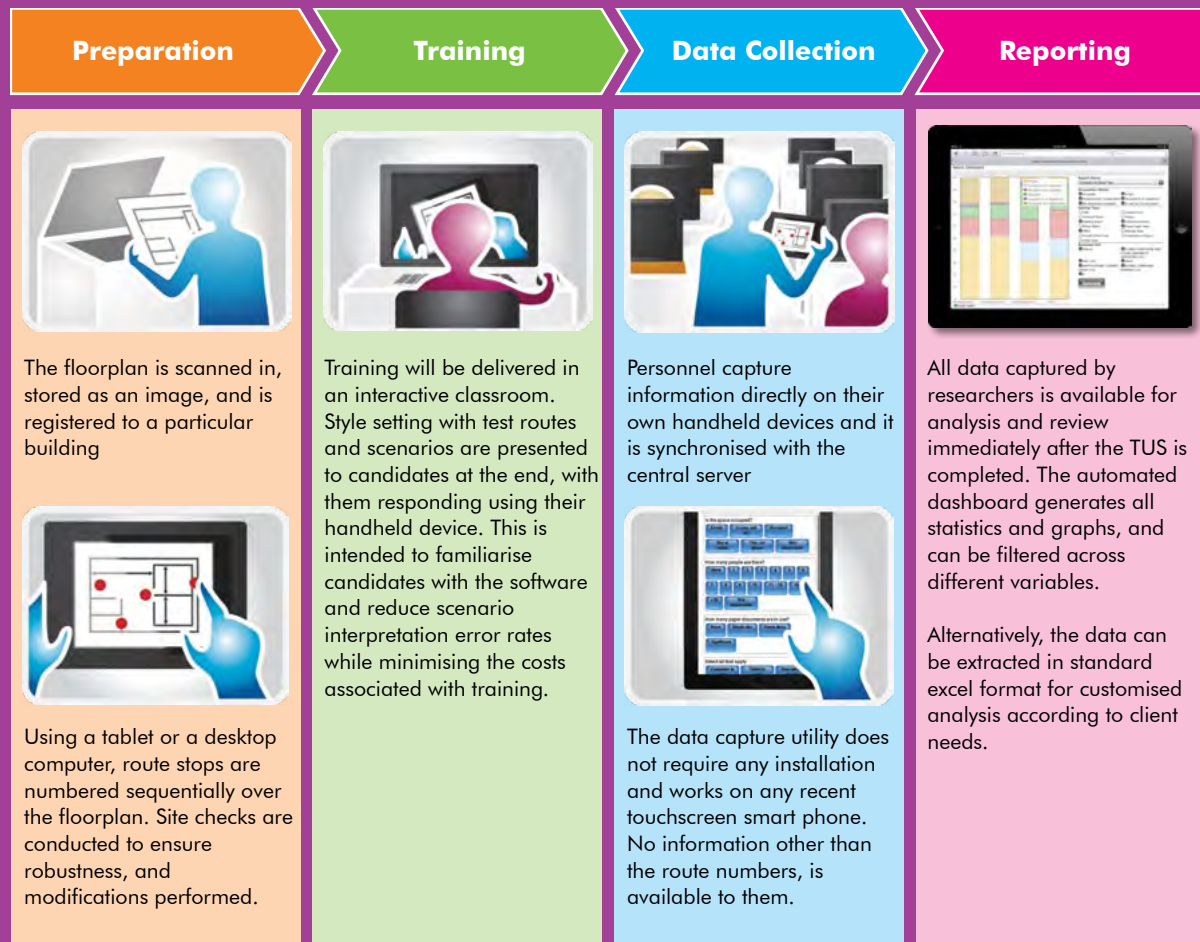
Source: The WCO Guide to: Utilisation and Occupancy Studies, April 2013 (edited by CBRE April 2015)

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	Training	Data Collection	Reporting

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 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.

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.

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.
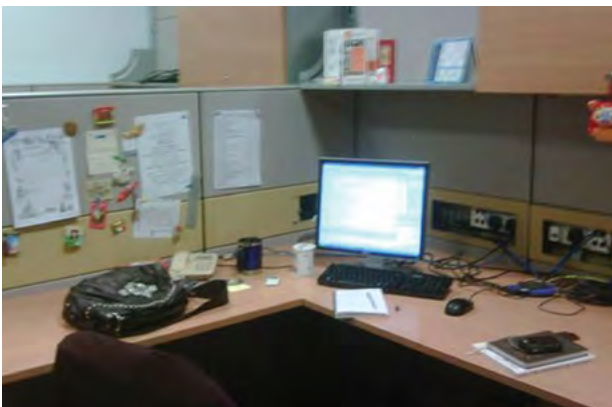
This space is in use but temporarily unoccupied
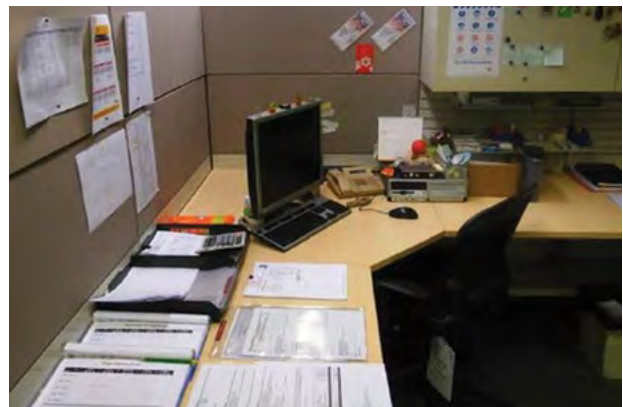
This space is not in use (empty)

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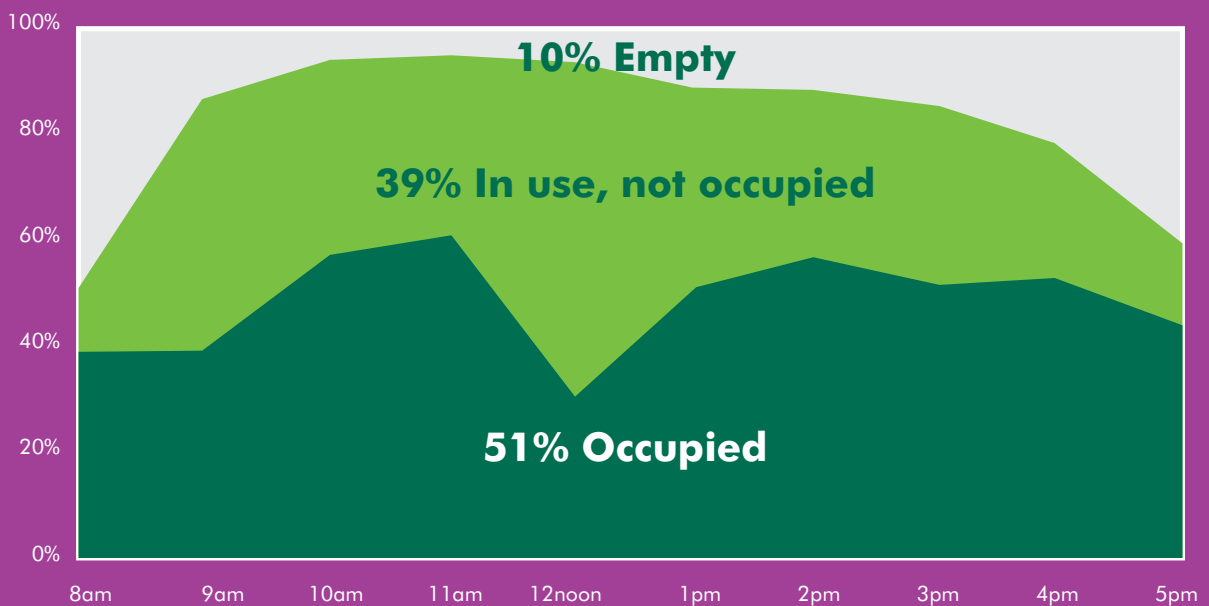
Empty or underutilised space within this organisation was reduced from 32% to 10%, allowing the organisation to utilise their space much more efficiently.

Figure 15: Space utilisation pre-and post implementation

Before

32% Empty

24% In use, not occupied

44% Occupied

After

10% Empty

39% In use, not occupied

51% Occupied
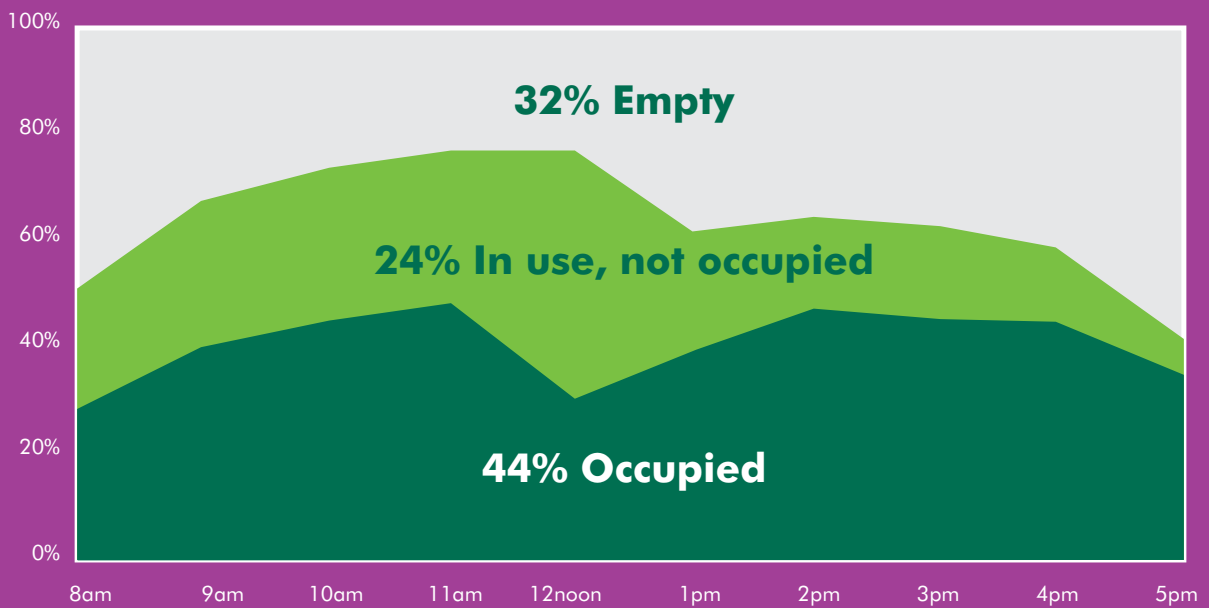
Source: CBRE, September 2015.

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.

BIBLIOGRAPHY

- Traditional versus Open Office Design, A Longitudinal Field Study, Environment and Behavior May 2002 vol. 34 no. 3 279-299 *http://eab.sagepub.com/content/34/3/279#cited-by*

- The Physical Environment of the Office: Contemporary and Emerging Issues, International Review of Industrial and Organizational Psychology 2011, Volume 26 *http://onlinelibrary.wiley.com/doi/10.1002/9781119992592.ch6/summary*

- Steelcase 360, The Privacy Crisis *http://www.steelcase.com/insights/articles/privacy-crisis/*

- Workspace satisfaction: The privacy-communication trade-off in open-plan offices, Journal of Environmental Psychology, Volume 36, December 2013, Pages 18–26 *http://www.sciencedirect.com/science/article/pii/S0272494413000340*

- Stress and open-office noise. Evans, Gary W.; Johnson, Dana, Journal of Applied Psychology, Vol 85(5), Oct 2000, 779-783. *http://dx.doi.org/10.1037/0021-9010.85.5.779*

For more information about this regional major report, please contact

RESEARCH

Henry Chin, Ph.D.
Head of Research, Asia Pacific
+852 2820 8160
henry.chin@cbre.com.hk

Jonathan Hills
Director, Asia Pacific
+852 2820 2881
jonathan.hills@cbre.com.hk

BUSINESS LINE

Peter Andrew
Head of Workplace Strategy
Asia Pacific
+65 6326 1677
peter.andrew@cbre.com.sg

John Ip
Senior Consultant
Workplace Strategy, Asia Pacific
+852 2820 6582
john.ip@cbre.com.hk

Andrew Marshall
Director
Workplace Strategy, Asia
+65 9171 3862
andrew.marshall@cbre.com

AUSTRALIA

Matt Strudwick
Director
Workplace Strategy, Pacific
+61 432 842 362
matt.strudwick@cbre.com.au

CHINA

Reed Hatcher
Senior Director
Occupier Consulting, China
+86 2124011313
reed.hatcher@cbre.com.cn

HONG KONG

Lisa Cameron
Director, Workplace Strategy
+852 2820 1419
lisa.cameron@cbre.com.hk

INDIA

Sumit Arora
Associate Director
Consulting
+91 124 4659817
sumit.arora@cbre.co.in

JAPAN

Chinatsu Kaneko
Director
+080 9804 5533
chinatsu.kaneko@cbre.co.jp

SINGAPORE

Gaurav Charaya
Associate Director
Workplace Strategy
+65 6229 1131
gaurav.charaya@cbre.com.sg

For more information regarding global research and activity, please contact:

Nick Axford, Ph.D.
Global Head of Research
+44 20 7182 2876
nick.axford@cbre.com

Richard Barkham, Ph.D., MRICS
Global Chief Economist
+44 0 20 7182 2665
richard.barkham@cbre.com

Henry Chin, Ph.D.
Head of Research, Asia Pacific
+852 2820 8160
henry.chin@cbre.com.hk

Neil Blake, Ph.D.
Head of Research, EMEA
+44 20 7182 2133
neil.blake@cbre.com
Follow Neil on Twitter: @neilblake123

Spencer Levy
Head of Research, Americas
+1 410 951 8443
spencer.levy@cbre.com

Follow CBRE