

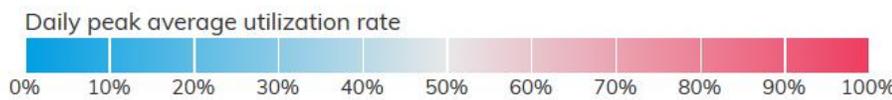
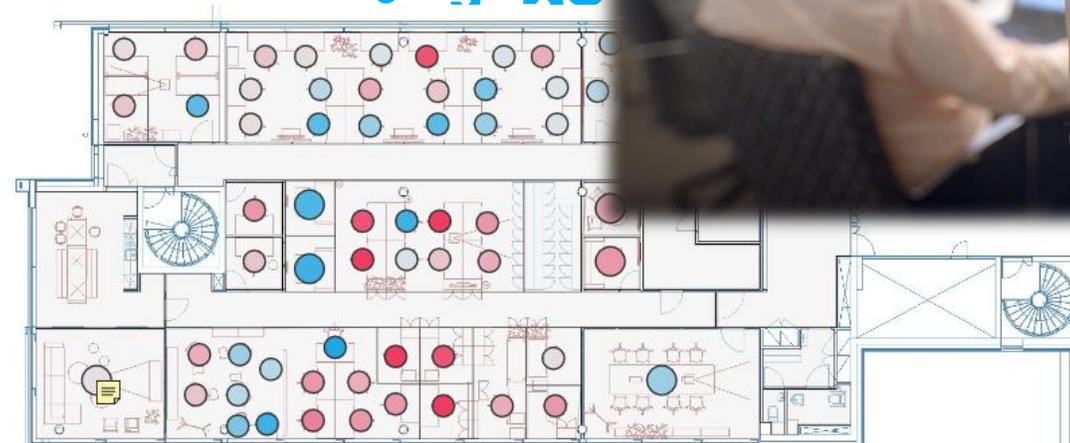
o p t i m a z e

Workplace Review
Global Workplace Insights 2019

Full Report

Table of contents

1. Introduction
2. Modes of Work at the Office
3. Meeting Culture
4. Meeting Spaces
5. Workdesks
6. Density & Space Use
7. About the Review Data
8. Methodology & Terminology



Optimize Workplace Review

Optimize Workplace Review is an annual space utilization benchmark report. Our 5th report provides comparative data to help organizations assess the efficiency of their own space use in comparison to others, to understand connections between space and behavior, and to set targets for developing or defining new office space requirements. It attempts not to evaluate or score workplaces as better or worse, as this depends on the users and their needs.

Not a survey – but observed space use and work culture

Unlike most workplace studies, our results are based on actual employee behavior (gathered at offices by manmade observation and a systematic method using an online, SaaS-based analytics tool). Observations note where and how people work, group sizes, and how much workspaces, desks and other seats are used. Previous studies have also been supplemented with subjective personnel surveys, to enrich the data with the employee experience view.

Global data set

Our 2019 report looks back at observational workplace study results gathered from 17 countries between 2014 and 2018.

It is based on 1792 observational space utilization studies in some 460 buildings, spanning over more than 136,200 workstations and 12,600 meeting spaces with about 88,200 meeting seats. In addition, we observed 54,600 other seat types during a total of 46,400 walkthrough rounds. All together, this resulted in over 7.5 million observations.

Huge waste of space

Shared office seating, activity-based working, flex work policies and workplaces choice are still barely budging the people/workdesk ratio. Companies continue to allocate about one workspace per person regardless of actual utilization data. On average only 55% of all workstations are used during an average workday. Our studies provide strong evidence of an opportunity to consolidate space far more.

Findings

Focus on focus work

Nearly two-thirds (65%) of all knowledge workers surveyed were working solo, doing heads down work. Only 28% of the average worker's time was spent collaborating with others.

Hunt for privacy

Open office spaces drove people to seek out private places to work. Often they camped out in meeting spaces where they conducted phone calls, engaged in distance meetings, and worked on solo tasks. Over a five-year period, our survey found that 25% of meeting rooms were occupied by a single person.

Mini meetings & mismatch with space

Four out of five of all meetings took place with groups of 4 or less. Our survey showed that 29% of all meeting rooms were occupied by only one person. Two-to-four person meetings constituted 51%.

Activity-based workplaces shine

Activity-based offices, which provide great flexibility and a choice-based working environment with an accompanying flexible work culture comes out on top on all metrics.

Core & flex strategy

Fewer large meeting rooms needed

Large meeting spaces were rarely used to their full capacity. Rooms designed for five to eight people were occupied by half that number more than 83% of the time. The larger the meeting space, the lower the utilization rate. We found that meeting rooms designed for nine to fifteen people were occupied by nine to fifteen people only 8% of the time. As a consequence, our study found that over half of all meeting seats were always empty. Meeting seat utilization over the five years of our study was only 19% on average.

Future-proofing workplace strategy

Real estate is the second largest cost in a modern business and yet is often considered a fixed cost rather than a controllable one. However, in increasingly uncertain and changing times, more and more small and large companies are implementing more flexible real estate strategies, in order to shift some fixed costs to variable costs. This is done by a mix of own core space and supplementing with flexspaces with short-term leases or memberships that grant access to coworking spaces or large meeting spaces on a need-basis, with hourly to monthly rates.

Introduction

Optimize Workplace Review 2019

Optimize Workplace Review is a space utilization benchmark report that we have published since 2014. This is the 5th report in order, this time a 5-year lookback, and it aims to provide comparative data to help organizations assess the efficiency of their own space use, discover cost savings potential and analyze their employees' needs and workplace satisfaction. The review keeps evolving every year.

The first space utilization benchmark was conducted in the Helsinki metropolitan area during 2014 and featured a smaller sample of private-sector companies.

The next year, in 2015, the review of space utilization measurement data was expanded to cover all of Finland and to include municipal and governmental offices. The 2015 study covered over 200,000 m² (2,152,782 ft²) of office space in 48 buildings and spanned 177 floor levels. The utilization rate measurement data encompassed a total of 10,269 workstations, of which 59% were in public-sector offices and 41% in the private sector. 732 meeting rooms were also covered in the analysis. A total of 1,277 people responded to the work environment survey.

In the third review, the 2016 data analysis covered 330 observational studies in 111 buildings and 378,900 m² (4,078,445 ft²) around the world collected from 15 countries in three major market regions. The space utilization studies explored the workplaces of more than 23,000 people.

The fourth report in 2018 took a look at the observational workplace study results from 2016 and 2017 gathered from 16 countries.

In it, we took a look at some 846 observational space utilization studies in some 229 buildings, spanning over more than 70,700 workstations and nearly 6,500 meeting spaces with about 42,700 meeting seats. In addition, nearly 25,400 other seat types were observed during a total of 26,000 walkthroughs conducted, with about 30,8 walkthrough rounds made per measurement on average. This made for over 4.28 million observations of seat use. The office floor area covered amount to nearly 860,000 m² (9,246,500 ft²).

We also took a look at the activities at the offices, and at the views of a selected group of workplace survey respondents.

The 2019 report

Using our Optimize software and a standardized, systematic methodology for all data collection throughout the years and across all geographical locations, the Optimize Workplace Review benchmark data now provides a unique glimpse of how office users allocate and use their space.

This fifth report published in 2019 looks at observational workplace study results gathered from 17 countries during the past five years, 2014-2018 in attempt to find trends and generalizations from a larger sample of data than only one year. The 2018 data is naturally available this way too.

The review is based on 1792 observational space utilization studies in some 460 buildings, spanning over more than 136,200 workstations and 12,600 meeting spaces with about 88,200 meeting seats. In addition, we observed 54,600 other seat types during a total of 46,400 walkthrough rounds. All together, this resulted in over 7.5 million observations of how seating capacity in offices is used.

This report attempts to make use of the data collected from numerous customer projects, and is a preliminary attempt to investigate how technology enabled flex work is on the rise, and how this changes our patterns of work, our space needs, and the use of office space and other locations outside the main office.

The theory is, that the new found increased mobility is good for employees as well as cost savings in real estate. Is there then a connection between real estate metrics (such as office type, space density and utilization) and employee experience?

We hope you will find the results and conclusions within this report useful, whether it is to identify points of comparison or to make a case for conducting space utilization studies of your own.

Pontus Kihlman
Executive Consultant, Rapal Oy

Using the Optimaze Workplace Review



This review is intended to provide support and a point of reference and comparison for those who have conducted space utilization studies in their own office spaces. This vast collection of data may also provide a point of reference for various service providers to compare to for office design.

What works for some, does not automatically apply to others. No optimal quick-fix, one-size-solution exists. In other words, we always encourage involvement of personnel to create the best user-based designs that work for your specific workplace and culture. It is important to understand that while averages are great for comparisons, variations may be extremely large. That said, perhaps these statistics can provide some interesting reading and provoke some thoughts in the reader, whether you have already started to measure your office spaces or not.

Note, that the Optimaze tools are widely used also for evaluating utilization in learning environments (classrooms, lecture halls) and other more special building types. These projects are not included in this data review, unless they contain mainly office spaces.

There are many reasons for which organizations conduct space utilization studies. Managers, architects, designers, facilities and real estate professionals, and workplace consultants may encounter one or many of the following needs, while striving to optimize space use and allocation with limited resources:

- The need to create a business case or to bring facts to the table for strategic decision making
- Information for investment planning and CRE portfolio and campus optimization
- Fact-based mobilization and change communication for employees
- Situations when a company is planning a move or conducting a refurbishment of office space, in order to define, plan and allocate spaces through a design program and design brief
- Assessments of pilots of work environment trials before rolling out larger changes

- Continuous tracking and measuring as part of strategic workplace management and continuous improvement
- Evaluations of spaces and their fitness for purpose
- Tracking changes over time
- Highlighting over- and under-use of specific spaces or locations, perhaps in connection with plans for growth, consolidation, acquisitions or mergers
- Investigating the working culture and habits of the organization

When using sensor-based solutions at desks, meeting spaces and other settings, additional benefits from real-time data include:

- Enhancing the employee experience by helping people to search, find (and book) free seats or spaces
- Automated cancelling of room bookings for no-shows, thus freeing up space for others
- Connecting IoT to building automation
- Optimizing FM services, such as cleaning efforts, to spaces that are used the most

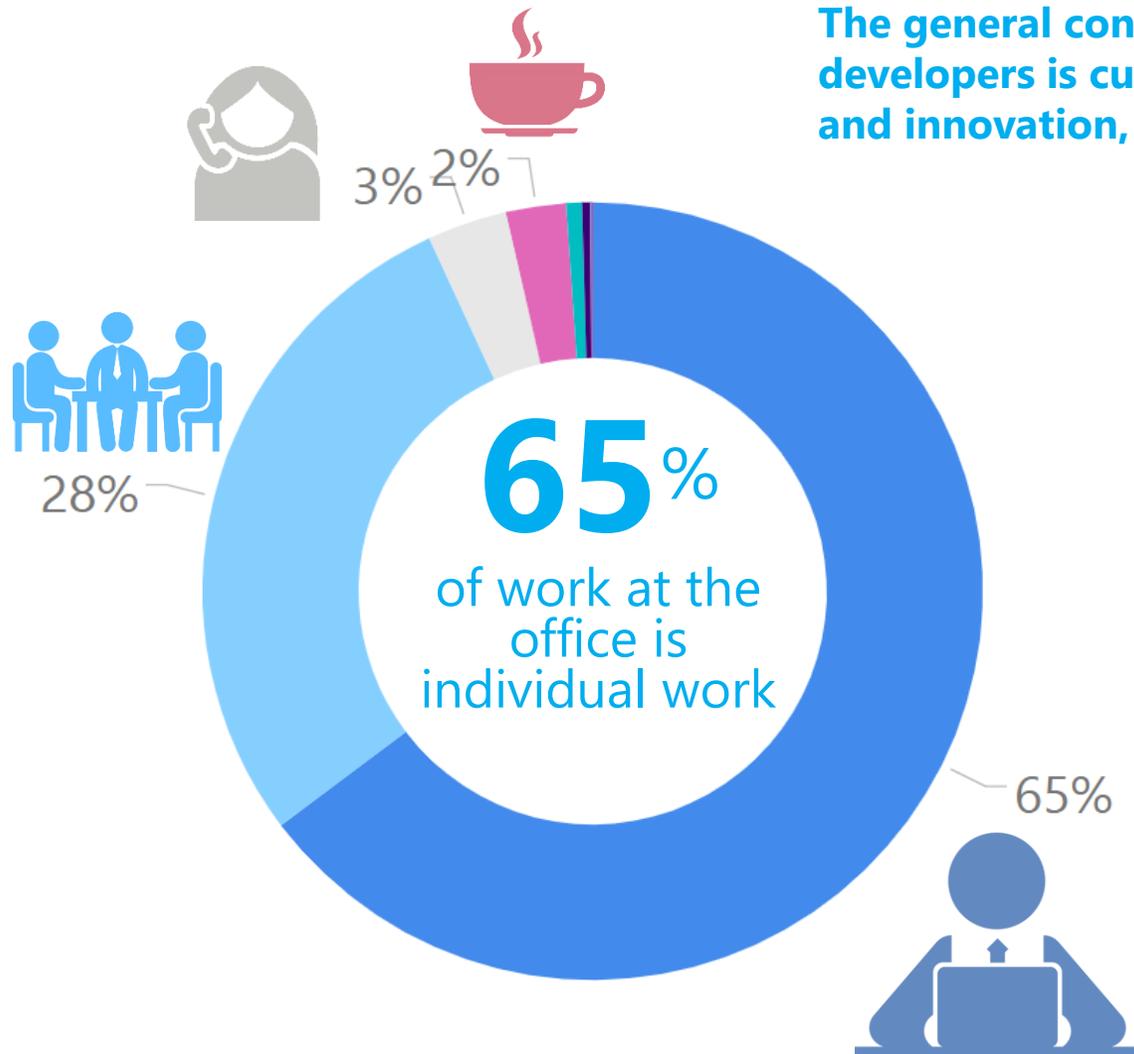
In addition to SaaS-based tools for observational walkthroughs, Optimaze also offers sensor-based solutions for measuring utilization. The data from these measurements are not included in this report, to keep the 5-year lookback on collected data comparable and unified, capturing data such as group sizes and modes of work, which PIR-sensors are not able to record.

Readers are responsible for independently assessing the relevance, accuracy, completeness and best use of the information of this publication.

Readers should be aware that minor variances in methodology, interpretations of definitions and observer errors may have presented some margin for error in the source data, and that averages do not represent the entire picture, as variances may be great. Readers are therefore encouraged to always conduct space utilization investigations of their own space use and space needs, to gather customer-specific data when encountering one or more of the above-mentioned situations.

Modes of Work at the Office

Optimize Workplace Review 2019



The general conversation among workplace developers is currently focused on collaboration and innovation, connecting minds, but....

...have we lost focus on what knowledge work mainly is – work between the ears?

If 65% of work performed is individual work, is an open office layout in support of that mode of work for any and all organizations? Cognitive ergonomics (eg. effects of visual and audible distractions and disturbances) and new discoveries in neuroscience and psychology are areas of increasing interest among experts.

Designing workplaces optimized for brainwork, in all modes of work, is in growing demand.

- Calling
- Chilling
- Collaborating
- Concentrating
- Creating
- Customer service
- Not grouped
- Other / Not observable

How we grouped activities

Calling (or Communicating). One or more people having a telephone conversation or video conference using fixed or mobile technology.

Chilling. One or more people taking a break, socializing informally, chatting and recharging during the workday.

Collaborating. Two or more people working together sharing knowledge/resources, such as in a meeting, classroom training or when solving problems and negotiating.

Concentrating (or Individual work). Focused, heads down work done alone that requires concentration such as reading, thinking, using a laptop, writing notes and reviewing documents. Can be done alone, or among others.

Creating. Manual work and tasks including manufacturing, repairing, cleaning, using machinery such as copy machines.

Customer service. Face-to-face interaction in a service situation taking care of the customer's needs by providing professional, helpful service and assistance.

Other / Not observable. The activity was not categorized or observed.

Office cultures in different regions



Americans appear to be most work oriented, when being observed. They also spend more time calling, compared to other regions.



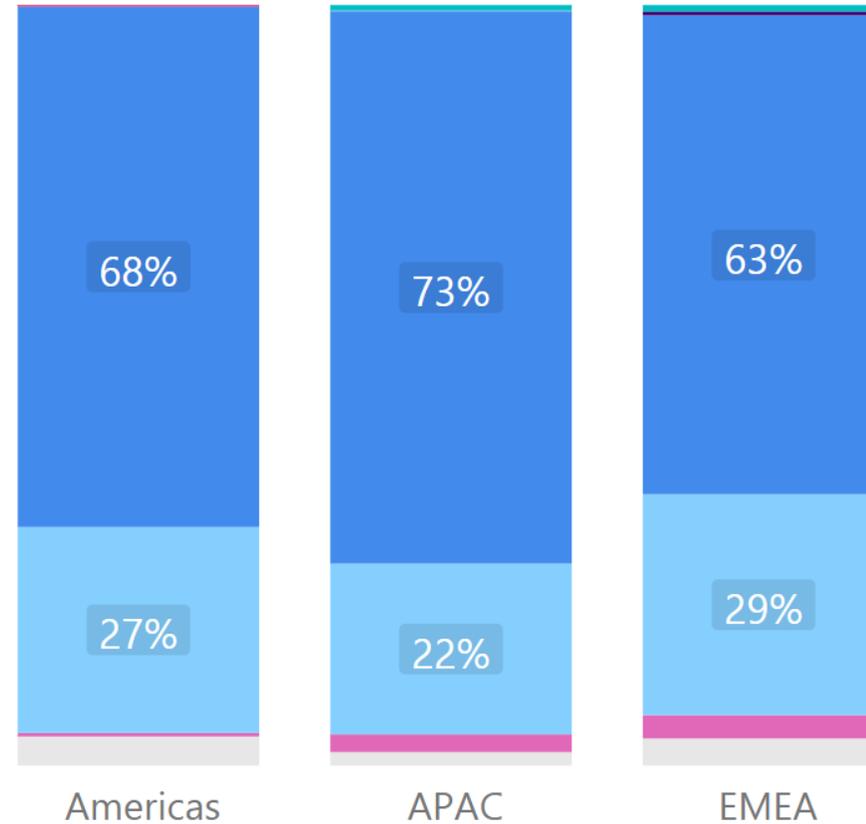
Asian workers appear much more heavily focused on individual work.



Europeans collaborate most. European knowledge workers also take out time to recharge and reset, more than others*.



(*Possibly they are the least affected by the Hawthorne/observer effect: not caring being studied, and not changing their behavior to change the results, essentially feeling trusted)



5-year average

The interests in the effects on productivity from resting, refreshing, socializing, reflecting, taking micro breaks, and practicing mindfulness in the workplace is increasing.

Due to the methodology of trying to capture peak utilization at workdesks, work modes such as coffee and lunch breaks are less represented in the data.

- Calling
- Chilling
- Collaborating
- Concentrating
- Creating
- Customer service
- Not grouped
- Other / Not observable

How and where people work

Open-plan offices make workers *appear less collaborative, particularly by their desks.**

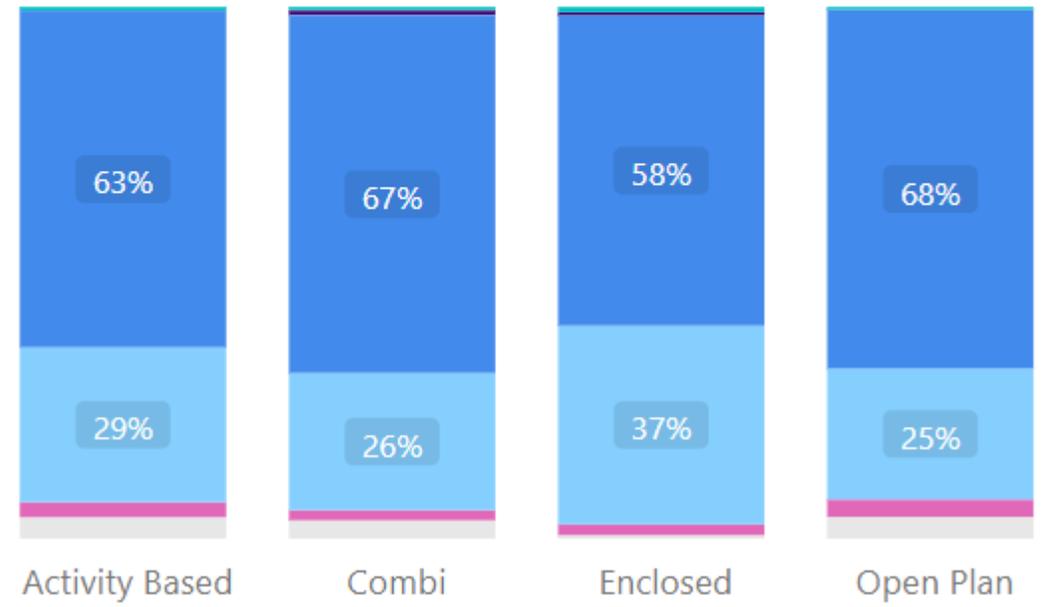
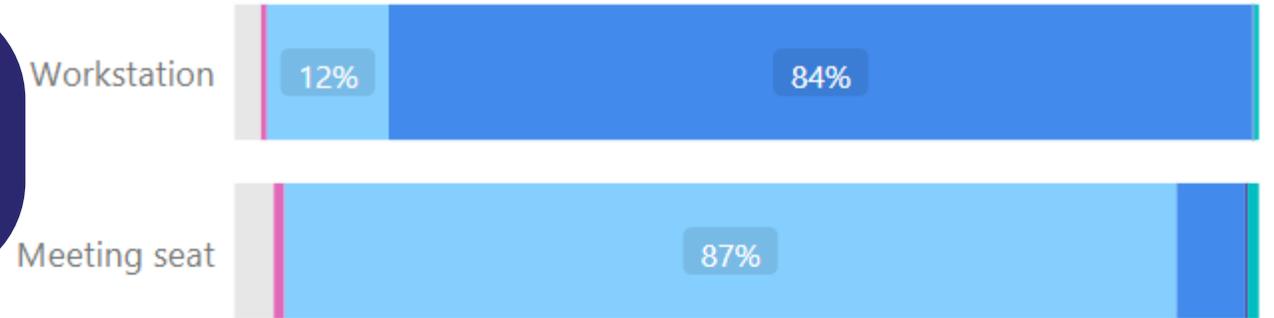
***Collaboration by the desk* was highest for enclosed offices at 20%, lowest in open offices at 9%**.**

***The fewer walls and partitions, the harder it is to visibly observe obvious interaction (as turning around, getting up, or walking over is not required – though often preferred by the surrounding colleagues).**

****The fewer walls and partitions, the less need to schedule separate meetings.**

[Note, that this does not mean that there is less collaboration as a whole in open offices – only that it is harder to detect it by human eye (or socio-metric badges for that matter) as the nature and location of collaboration may have changed.]

- Calling
- Chilling
- Collaborating
- Concentrating
- Creating
- Customer service
- Not grouped
- Other / Not observable



5-year average

Different office types and work settings drives behavior: Solo work in meeting rooms, collaboration at workstations

Key findings

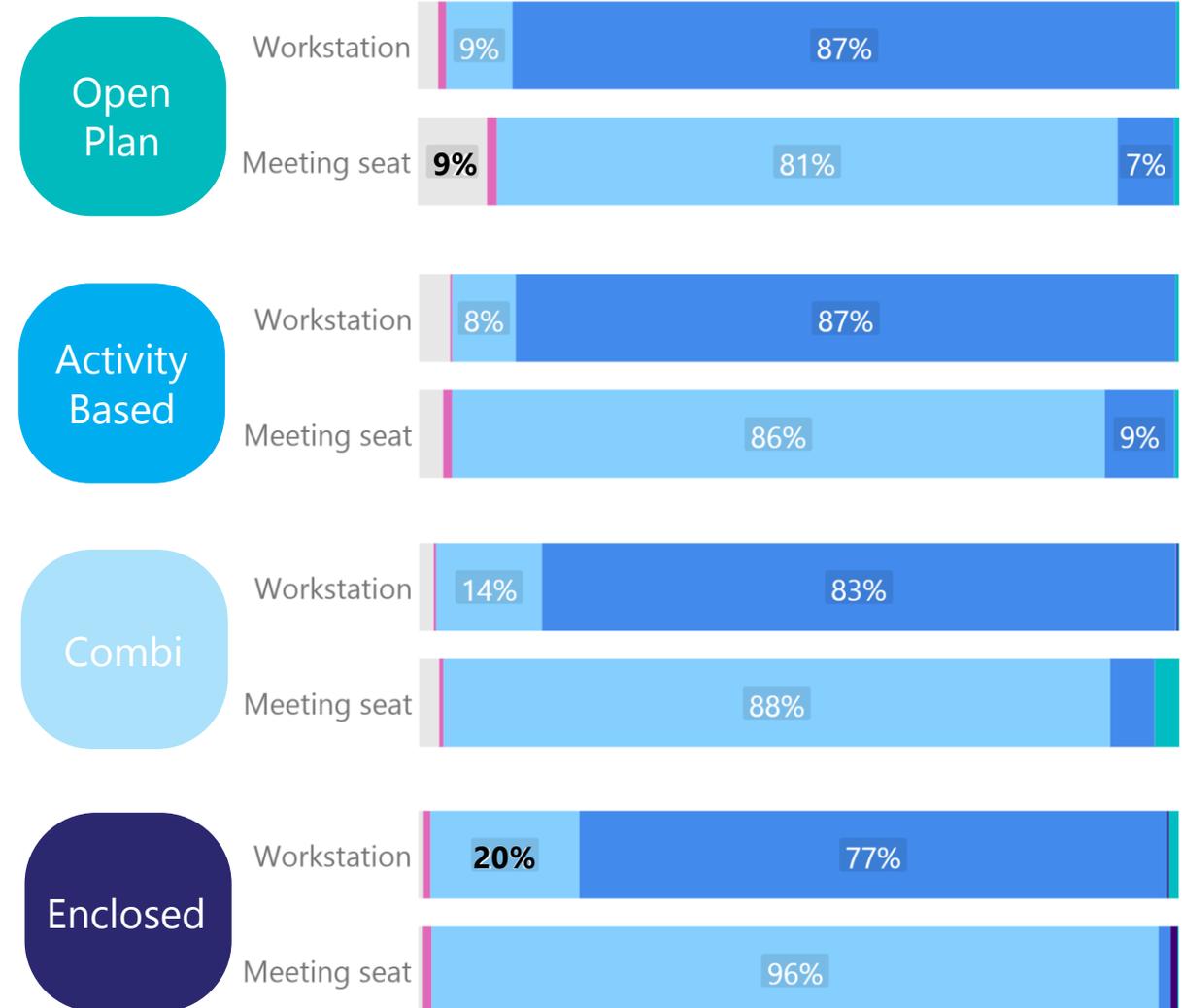
- **Phone calls and video calls in meeting rooms** were held around 9% of the time in Open offices – which stands out from all other office types. This is easily explained by the lack of available phone booths and other spaces that could provide privacy. ABW offices show calls made at the desk 3% of the time, as they provide separate spaces for calls.
- **The rate of concentrated work in meeting spaces and meeting areas is highest in Open and ABW offices**, in addition to work done at workstations.
- **Observable face-to-face collaboration activities by a workstation** (between one or more people) **increases, when more physical barriers such as partitions and walls are introduced.** The exception are activity-based offices, that typically offer small nearby work settings for ad hoc interactions.
- **Enclosed offices** that provide private office rooms for nearly all employees, has the highest degree (20%) of interaction by workstations (in private offices), while **open offices and ABW office types are at half** of that. Combined offices are right in between, as they typically are half open, half enclosed office types.

Open offices drive people to meeting spaces for calls and concentrative individual work.

Open work areas are typically too large, distracting and loud.

5-year average

- Calling
- Chilling
- Collaborating
- Concentrating
- Creating
- Customer service
- Other / Not observable

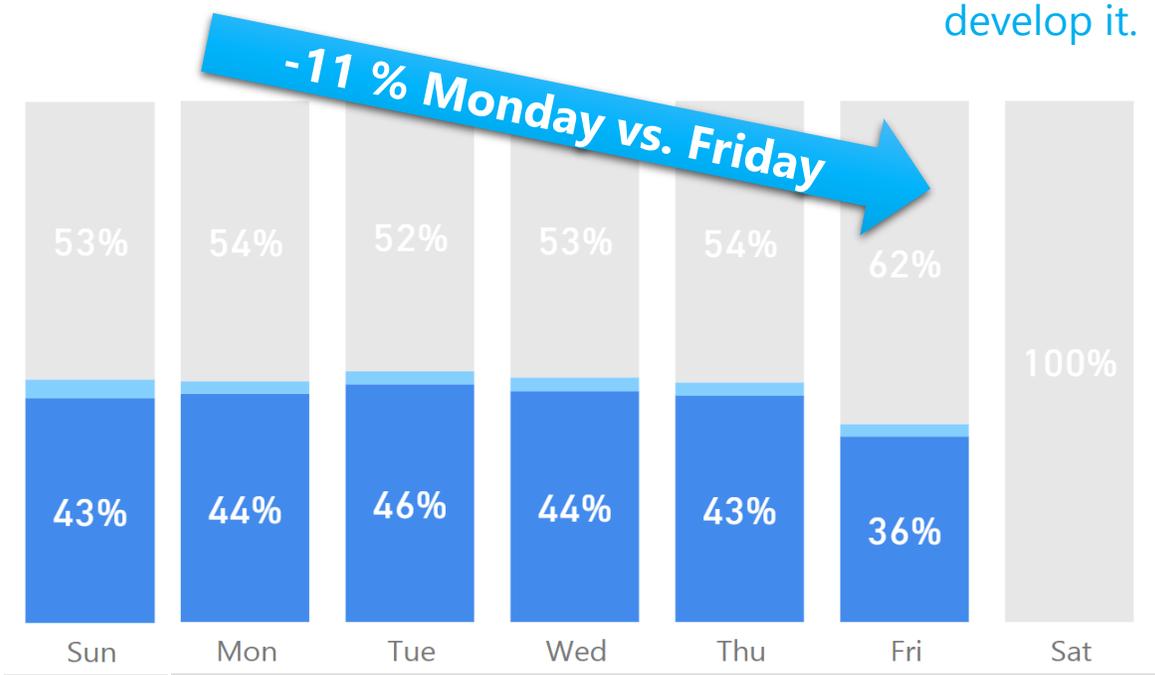
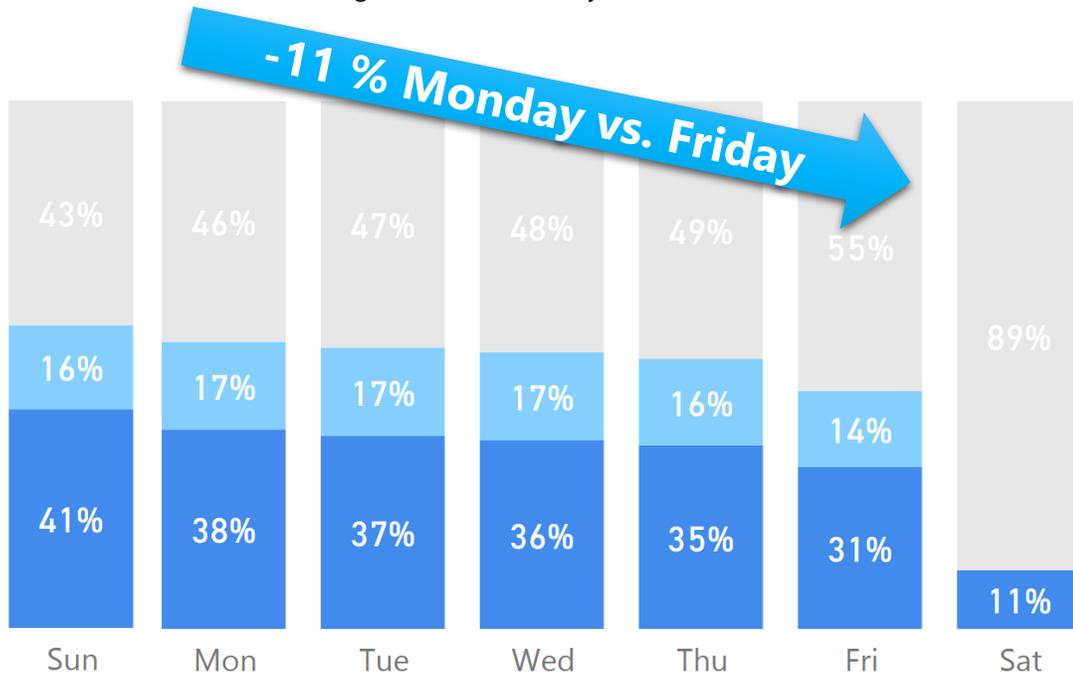


We Mondays!

optimize

How we spend time at the office varies across a typical work week, and has a slight downward trend from the first workday to the last, typically Monday to Friday. The same applies for those countries that observe a Friday-Saturday weekend. The utilization of workdesks and meeting rooms alike drops by 11 percentage points from Monday to Friday. This presents an interesting opportunity to discuss cultural drivers as to why this is. For instance, should weekly planning meetings be held at the end of the previous week, rather than at the start of the starting week, as 'has always been'?

People are more likely to show up at the office at the start of the week, compared to the end of the week.
By looking more closely at times of office use, you can gain a better understanding of the work culture as well, and how to develop it.



 **Workdesk utilization**

 **Meeting room utilization**

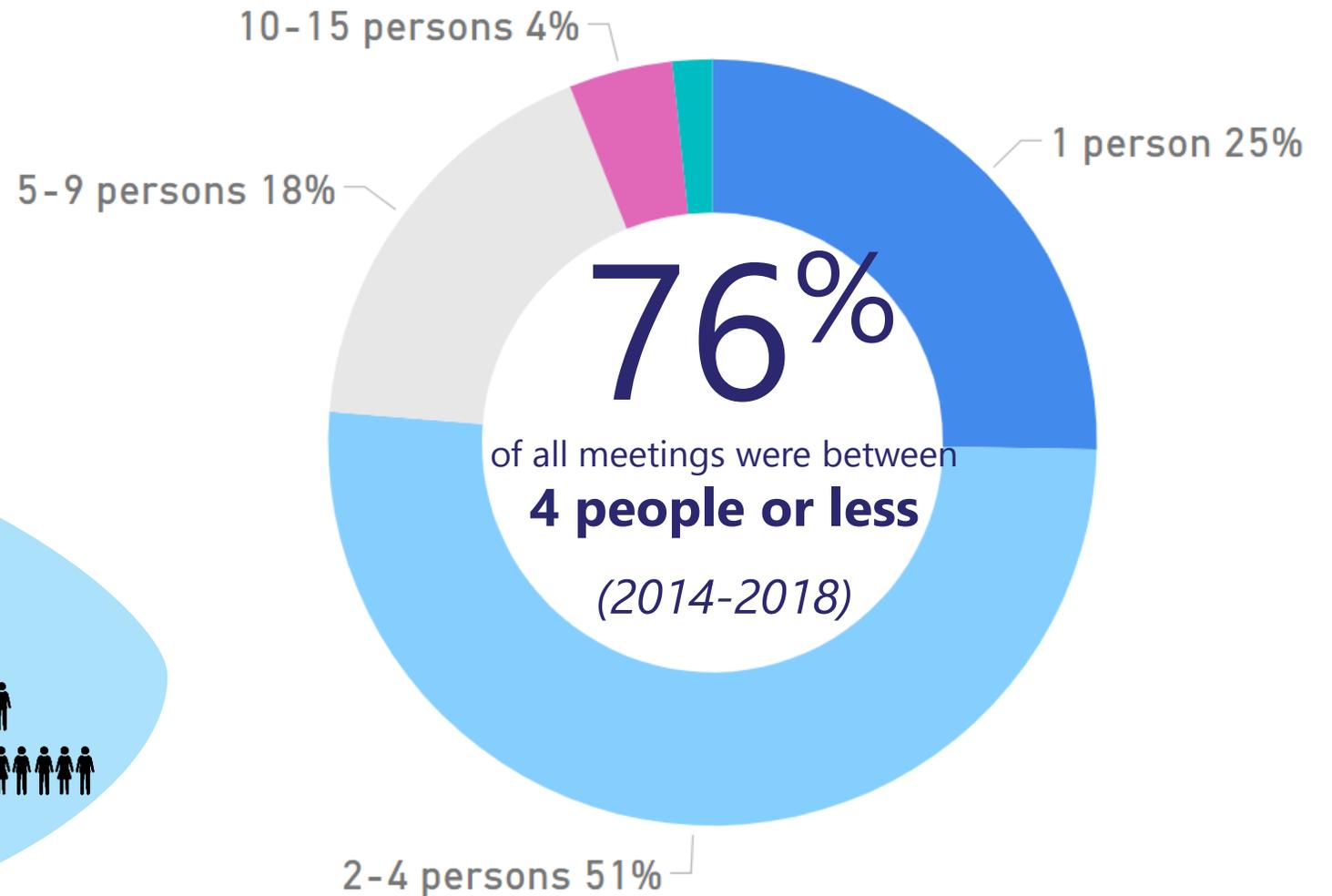
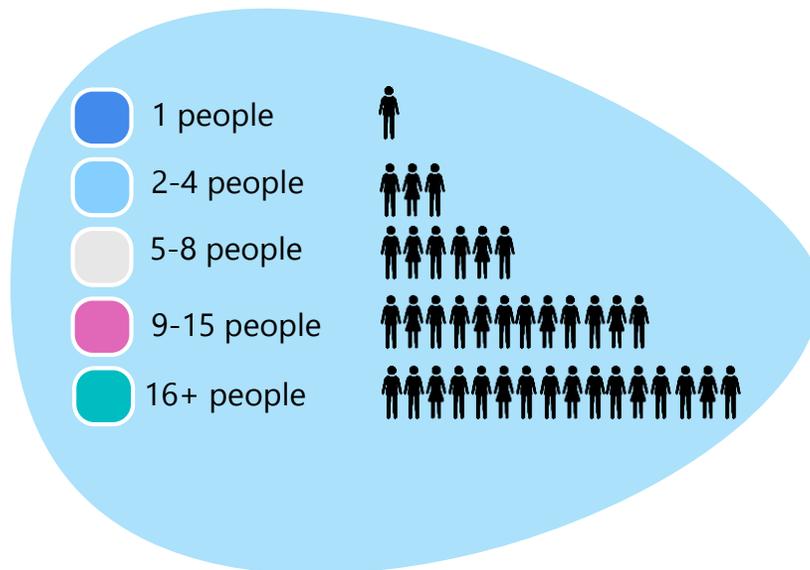
Meeting Culture

Optimize Workplace Review 2019

Physical attendance in meeting spaces

Meeting spaces were occupied by 4 people or less 76% of the time in 2014-2018 on average. Enclosed offices used meeting spaces more frequently for larger meetings, than users of other office types.

The increase of telcos, video conferencing in meetings, quick ad hoc meetings and (to many people's dismay) the rise of open plan offices (that drive people to camp out in meeting spaces where they conduct phone calls and solo tasks) are big drivers for this trend. Rooms for distance enabled meetings are still booked to accommodate all those invited, just in case they all show up on location.



5-year average

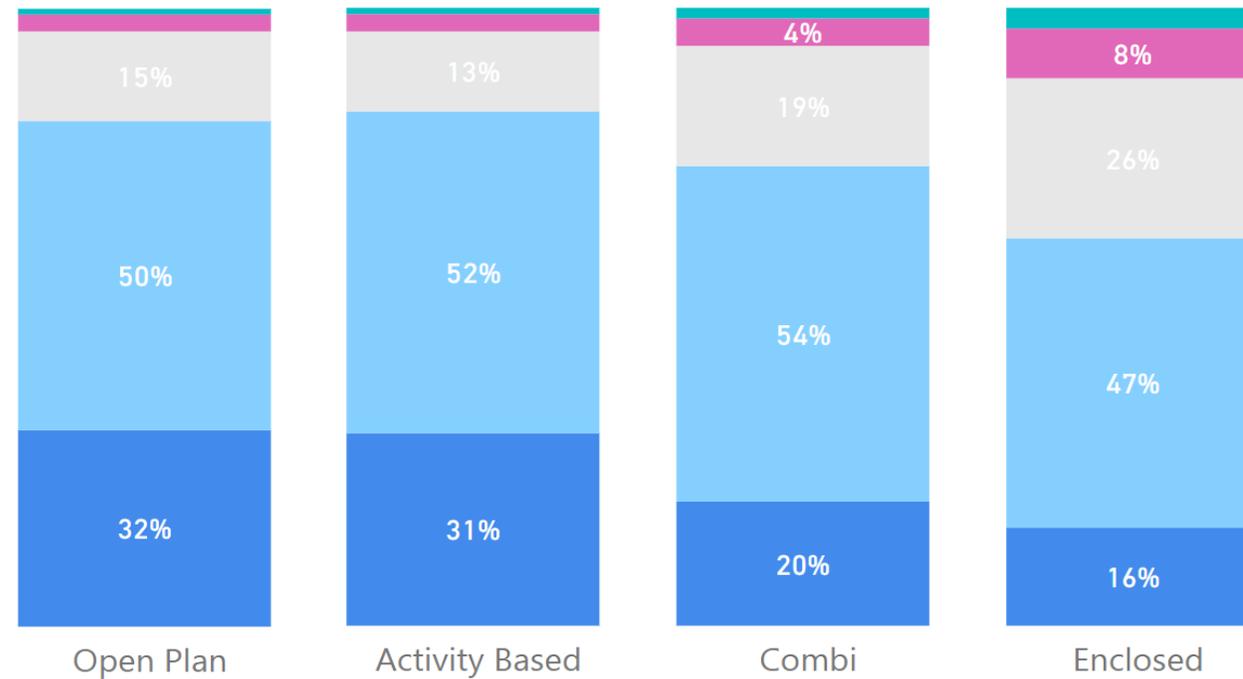
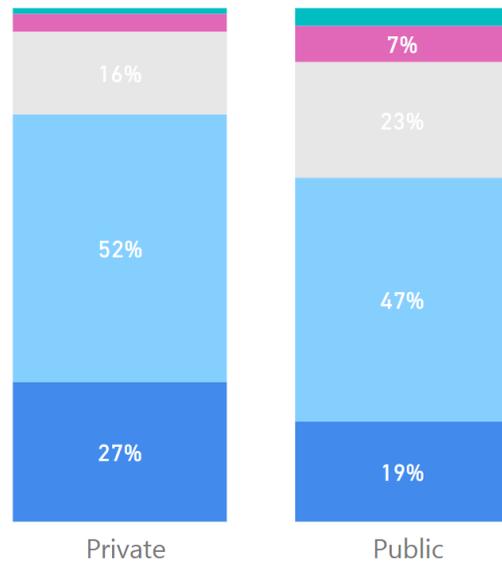
More walls, more large formal meetings

Key Findings

Meeting sizes are largest in enclosed offices, probably partly due to the less agile ways of working.

We can see that **the more walls an office type has, the more formal meetings are held in larger groups in order to meet.**

Meeting sizes tend to be larger in the committee-laden public sector, more than the typically more agile private sector.



Large meetings...

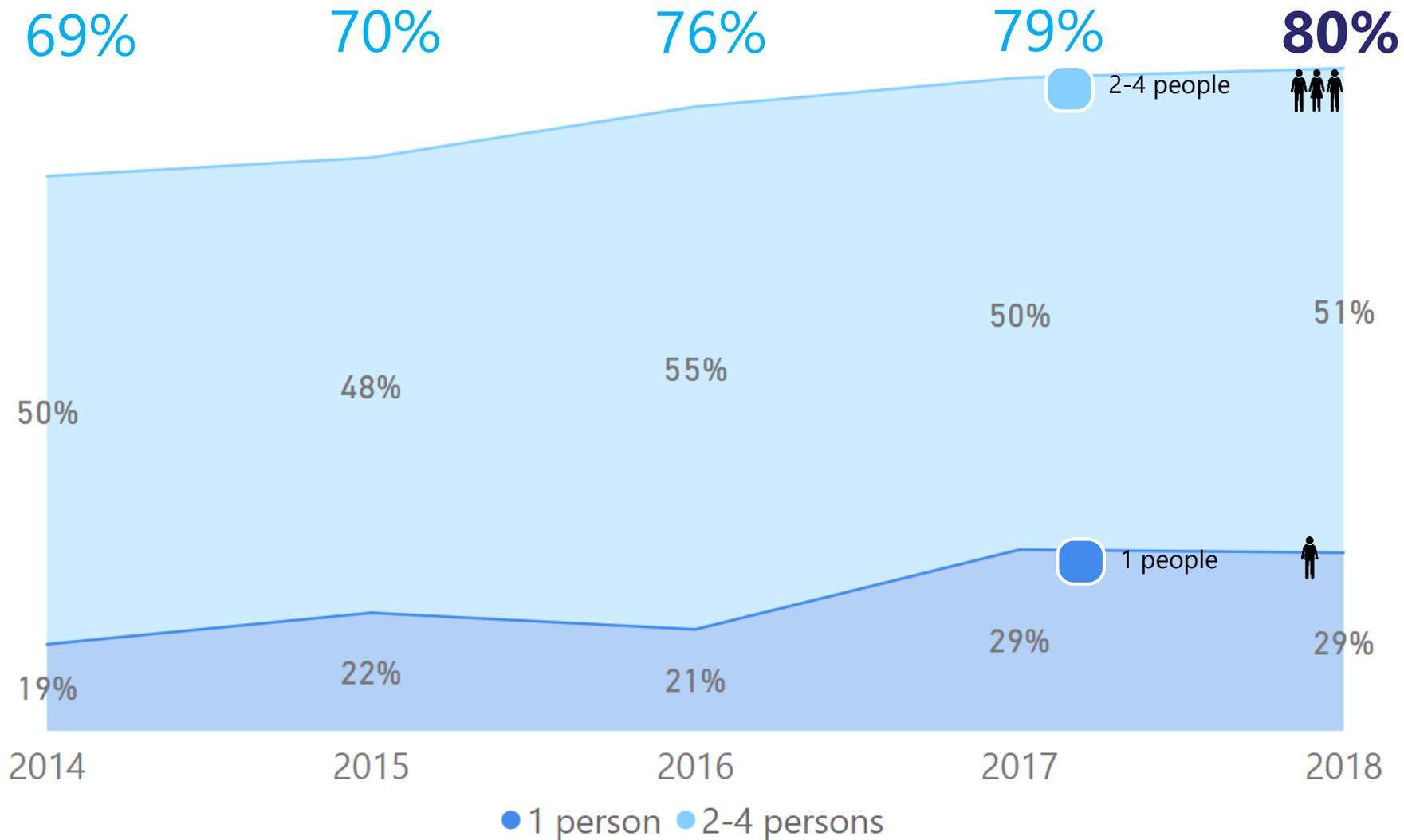
- Require planning and calendar coordination & room booking
- Decrease agility
- Demand more formal meeting procedures



● 1 person ● 2-4 persons ● 5-9 persons ● 10-15 persons ● Over 15 persons

5-year average

On-site meeting sizes keep getting smaller every year



The Digital Workplace has landed at the office - big time

What has happened for communication and sharing information, resulting in an increase in mobility - will next happen to the sharing, finding and managing of office resources. This is will be the next phase of digitalization of the workplace, and it has already begun with introduction of IoT solutions, smart office solutions and employee experience apps.

29%

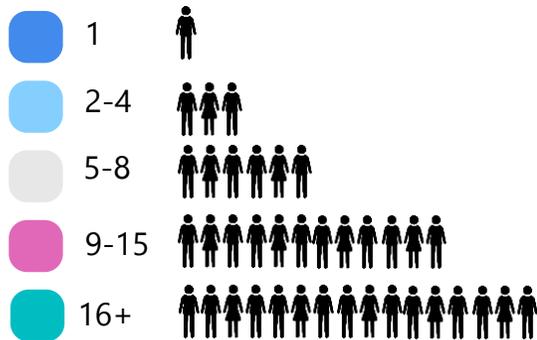
of all meeting spaces in 2018 held **only One Person in the Room.**

Focus on right-sizing meeting spaces

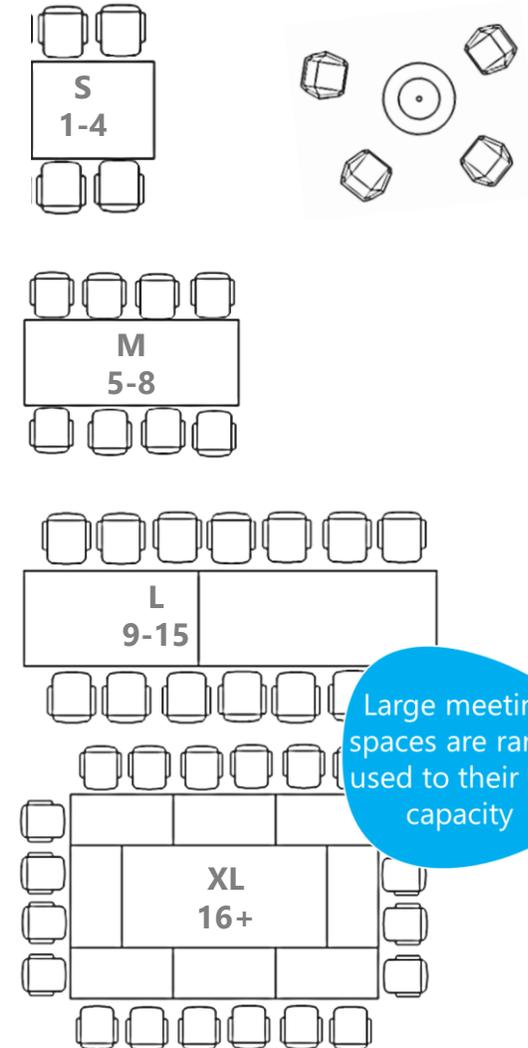
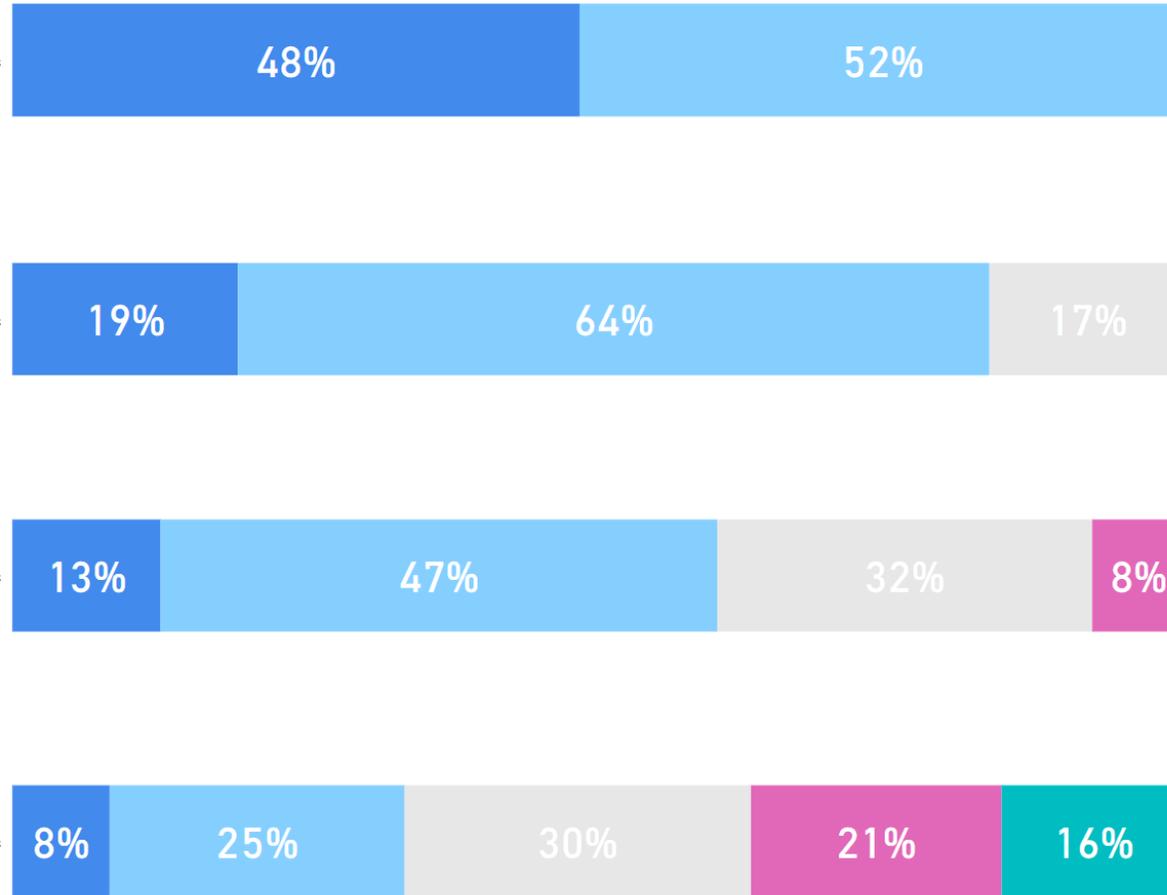
Meeting room mismatch

There is a mismatch between the sizes of meeting spaces, and the sizes of groups that use them. Video conferencing, online and phone meetings may be one explanation as to why there are so many “1 person meetings”. It may also be difficult to book rooms and correctly predict the actual number of attendees in advance.

The lack of quiet spaces for individual focused work in an office with workstations in open areas may also contribute to the use of meeting spaces for individual work, as there are no other options for distraction free settings around. Retrofitted meeting pods and phone booths could mitigate this issue in part.



5-year averages

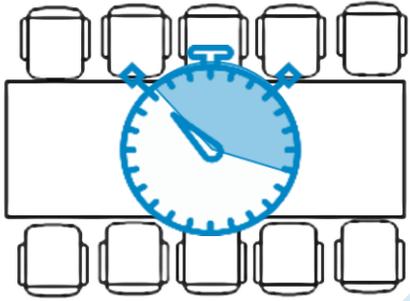


Large meeting spaces are rarely used to their full capacity

Meeting Spaces

Optimize Workplace Review 2019

Meeting Space utilization frequency 2014-2018



21%
of meeting spaces are
**empty at any given
time** across the week
(peaks 2014-2018)

Daily peak occupancy
Meeting spaces

54%

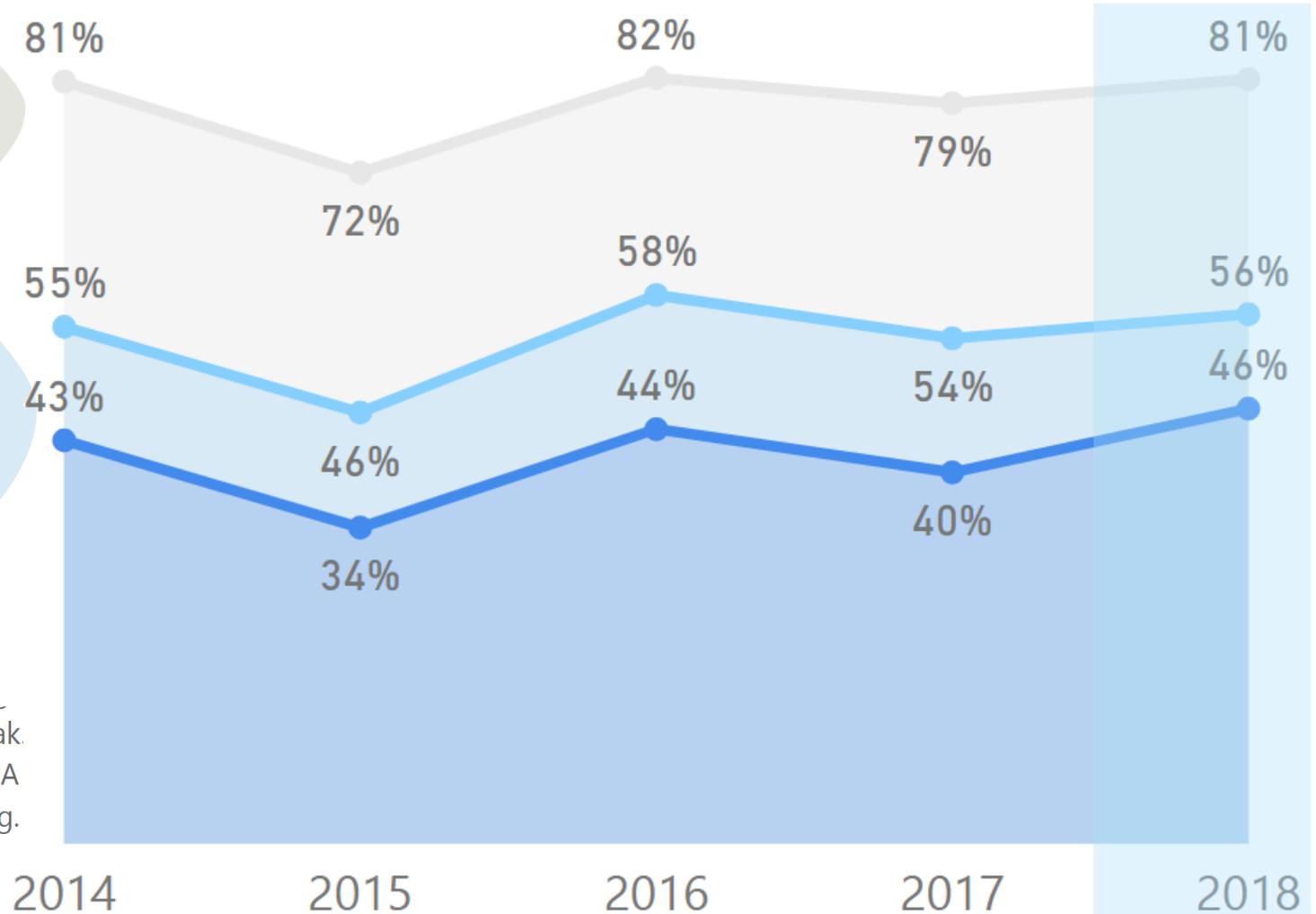
Daily Peak Average
2014-2018.

Meeting spaces'
average occupancy

42%

Average 2014-2018.

- Meeting spaces' Peak.
- Meeting spaces' DPA
- Meeting spaces' Avg.



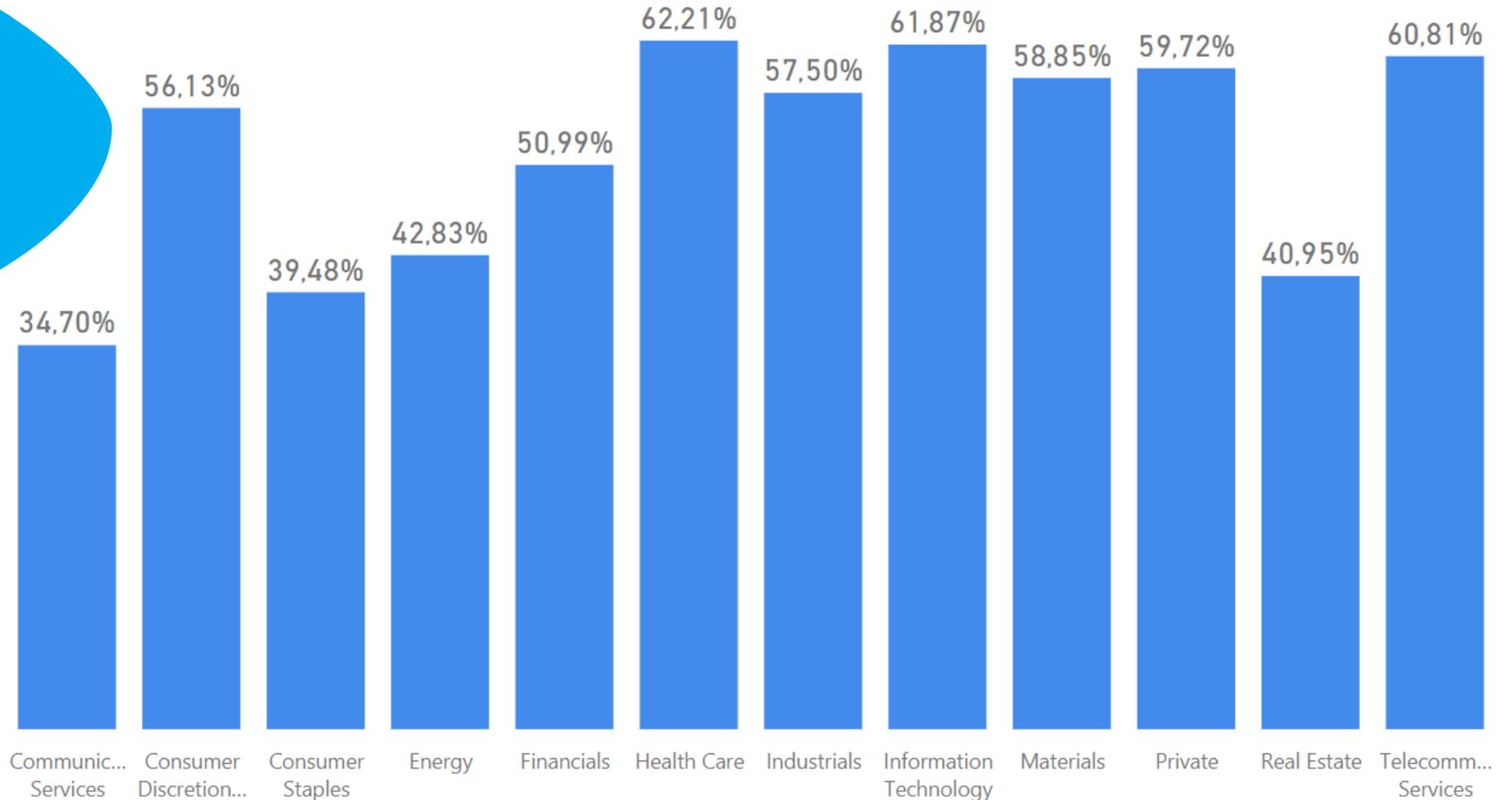
Meeting Space utilization frequency by industry 2014-2018 (DPA)



Meeting spaces, a commercial real estate service designed for communication, is ironically **least in use in the Real estate and Communication Services sectors.**

Daily peak average 2014-2018.

Daily peak average. Average of the peak value for each day. This metric is used here rather than the average utilization across the entire day, as the off-peak hours may skew to show lower values than the actual experience of employees around mid-day. DPA also addresses the differences that can come from differences in frequency of measurements in data collection.



Meeting space utilization by office type – daily peak average (DPA)

The Private Sector uses their meeting spaces more frequently than the Public sector does.

The public sector does not make use of their meeting spaces as often as the private sector. The public sector typically houses more private (enclosed) offices, which often also include personal meeting areas in the same space, used for those quick 1-on-1 meetings.

Key findings

Meeting spaces in activity-based offices are occupied more often (62% of the time) than other office types, eg. enclosed offices (42%).

By comparing the frequency rate of meeting space usage between activity-based offices (62%), and enclosed offices (42%), to the ratio of collaboration as an activity at these meeting spaces (80% for activity-based, 96% for enclosed offices), we can see that in absolute numbers, there is more collaboration encounters taking place in ABW meeting settings than in meeting spaces in enclosed offices.

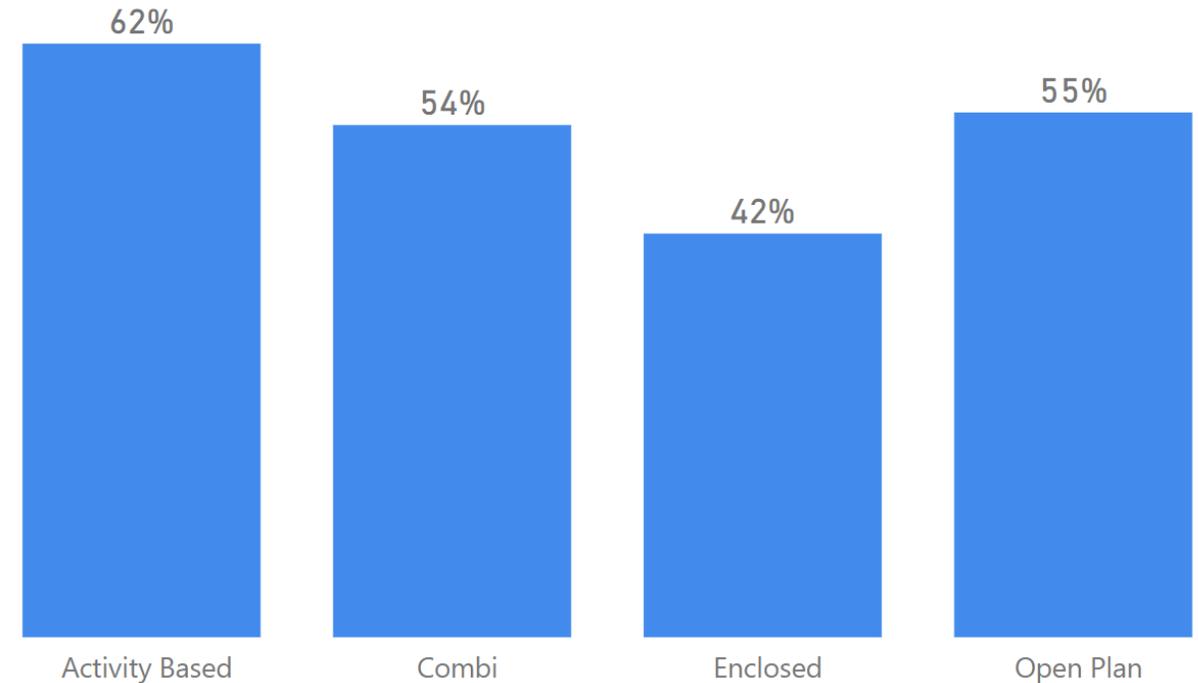
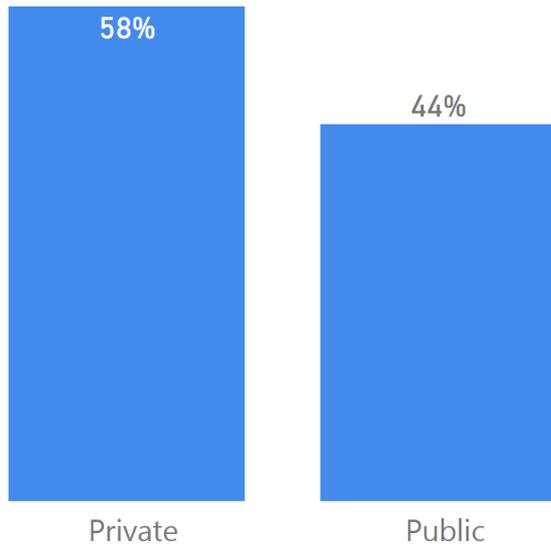
Daily peak average 2014-2018.

Daily peak average. Average of the peak value for each day. Design decisions that utilize data for calculating desk-sharing ratios should use average daily peaks to build in a buffer and to create a solution that has some overflow capacity.

5-year daily peak average



Highest use of meeting spaces are found in **Open and ABW**



Meeting space utilization frequency - by space size

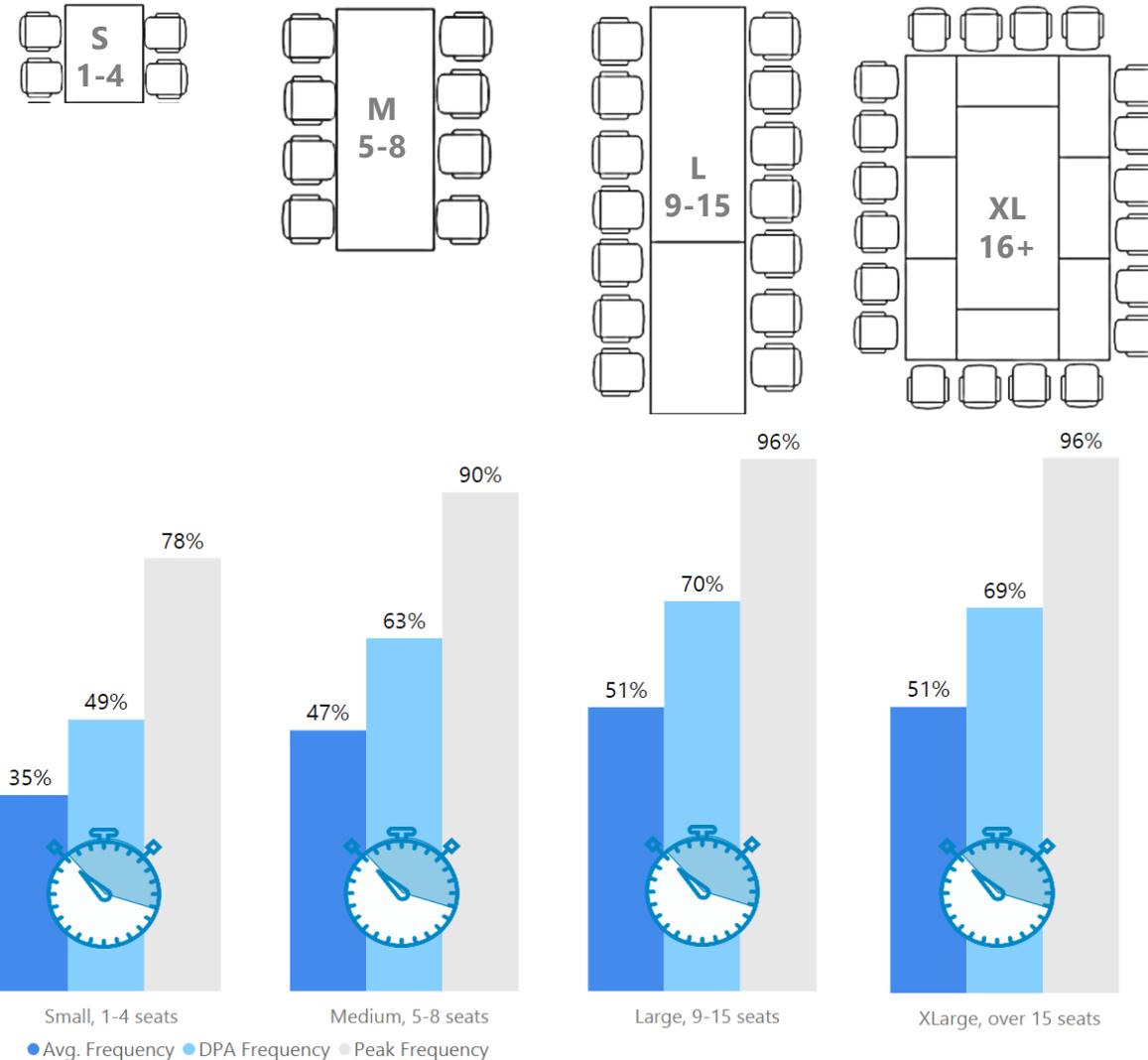
Key findings

By segmenting meeting spaces into categories of size, we can analyze the utilization frequency of meeting spaces a bit deeper.

The statistics then tell us that larger meeting spaces are used to a much higher degree than smaller ones.

This can be the result of a few different factors:

- There are typically fewer large and extra large meeting spaces available than there are small ones, and are therefore shared more
- Larger meeting spaces are often more versatile, flexible and equipped for different uses than small ones, and thus attract more users
- Smaller meeting spaces are limited to hosting small groups, but large spaces are not limited to only large groups
- Meeting rooms are often booked based on the number of maximum people (potentially) attending, just in case. Thus ending up not using it to full capacity.



Key

Average. Average value of use from all walkthrough observations throughout the measurement period. Most commonly used for benchmarking purposes and making business cases for change.

Daily peak average. Average of the peak value for each day. Design decisions that utilize data for calculating desk-sharing ratios should use average daily peaks to build in a buffer and to create a solution that has some overflow capacity.

Peak. The single highest observed utilization or frequency rate during the measurement period. Reversely used for estimating how many seats or spaces at least are free at any time.

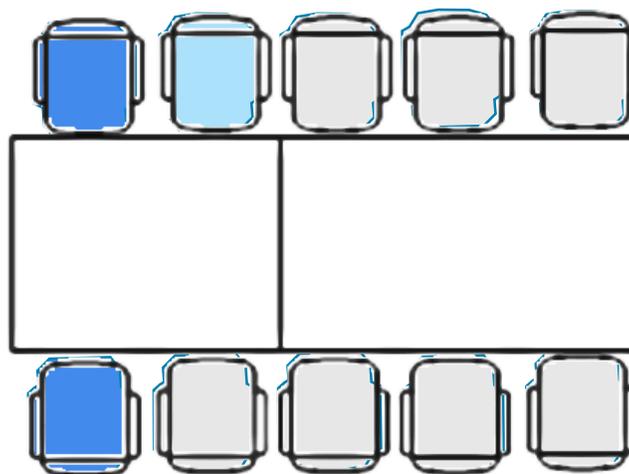
5-year average

Utilization rate of meeting seats – capacity in focus

Key takeaways

The average utilization of meeting seats is very low, as a direct consequence of increasingly smaller meetings. The usage of meeting seats sits squarely around twenty percent, and even at peak use, about half of all meeting seats are not being used. This is a huge potential waste.

It would therefore seem that offices in general should investigate in more detail what sized meeting spaces they really need, and how many. In other words, "rightsizing" meeting spaces could be one way to support current meeting cultures better.

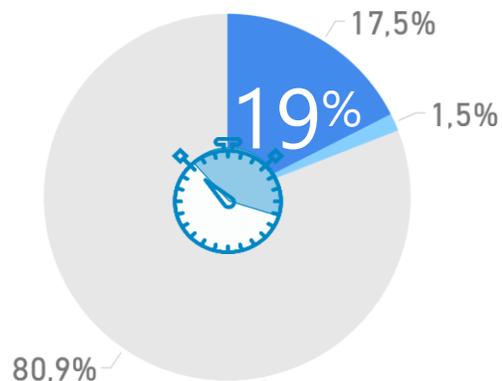


51%

of meeting seats are always empty

...based on peak utilization rates (49%) 2014-2018.

2014-2018 Average utilization



27%

Daily peak average utilization rate

2014-2018.

The daily peak average in different offices types varies very little: only between 25%-28% (2014-2018).

The 2018 data

Avg Utilization	DPA Utilization	Peak Utilization
20,42 %	26,30 %	46,71 %

Workdesks

Optimize Workplace Review 2019

Utilization rate of workdesks, 5-year averages

How to read the numbers

Work desks are either in use (37%) or temporarily unoccupied with signs of life (18%) each day at an **average of 55%** of the time. We call this "average utilization rate".

The "daily peak average" of desk utilization rates was 60%, which is the average of the highest observed value for each day. This metric is more telling, as the off-peak hours may skew to show lower values when looking at the average utilization across the entire day. DPA also addresses the differences that can come from differences in frequency of measurements in data collection. Using DPA, it doesn't matter if your data is based on observations made 2, 3, 4 or 8 times a day, or continuously by sensors – it looks at the pain points of each day.

ALL OFFICE TYPES USE WORK STATIONS
ON AVERAGE JUST AS MUCH: **55%**

27,5%
of all workstations were
empty at any given time

5-year average workstation utilization rate



● Occupied ● Reserved ● Empty

In our 2016 observational study we found that assigned seats had a higher daily peak utilization rate (62%) than shared seats (41%), as they are typically used in work cultures that have not implemented desk sharing and flex programs to a wider part of the organization.

Based on the peak utilization rate, 27,5% of all workdesks were always empty. This means in practice, that workplaces have a lot of desks that could either be shared and used by more employees, or be reduced.

60%
of desks were in use
during daily peak times
(DPA 2014-2018)

Change in workdesk utilization over time 2014-2018

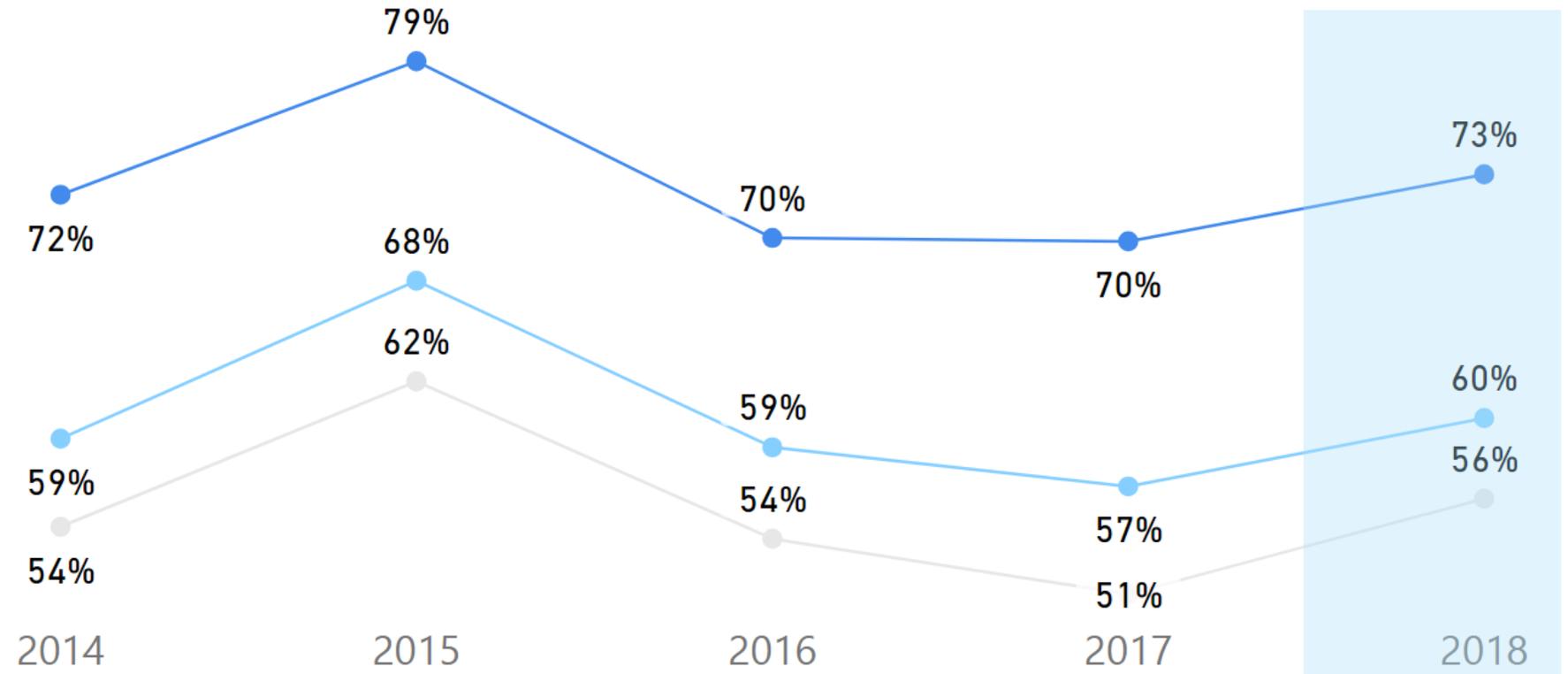
Yearly change

The yearly changes for utilization rates are barely noticeable when looking at averages, and indicates that change is slow overall. However, this does not hold true when comparing the same workplaces over a period of time where workplace development has taken place. Pre- and post occupancy studies as well as continuous monitoring and improvement can show great advances in utilization rates on an organizational level.

Statistics and averages that include all benchmark data from varying sample groups, are not the same as organization or office specific KPI's that can track causal before-after metrics and trends. For this reason, it is of utmost importance to realize the importance of gathering your own office and company specific data on a continuous basis, thus enabling evidence-based workplace management and office design.



- Workstations' Peak Utilization
- Workstations' DPA Utilization
- Workstations' Average Utilization



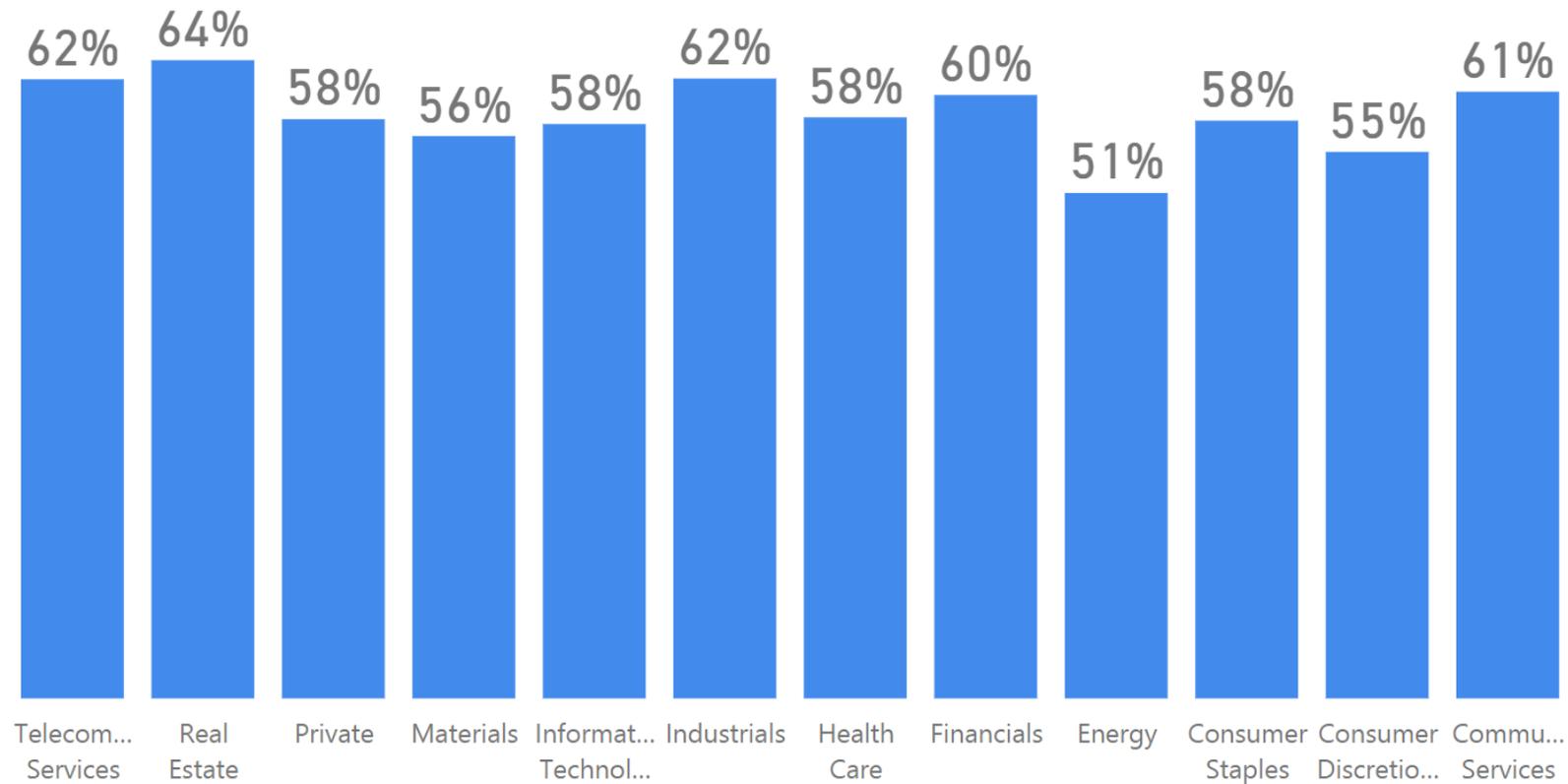
Workdesk utilization rate – sector comparisons

Next: going beyond benchmarking use

The Daily Peak Average of workstations is around 60% regardless of sector and industry. This comparison between industries show that there is perhaps more to learn in other areas through benchmarking (such as optimal work station design solutions, for industry specific processes and tasks, and degrees of focus needs) than through comparisons of utilization rates within your industry.



5-year daily peak average



BOTH PUBLIC AND PRIVATE SECTORS USE WORK STATIONS JUST AS MUCH.

Sector	Utilization Rate
Private	60%
Public	61%

Density & Space Use

Optimize Workplace Review 2019

People (FTE) per workdesk ratio in 2018

Regional and temporal differences

Based on 5-year observational data from our space utilization measurements, the average **headcount per workdesk ratio** is 0,98 – which means that organizations have on average more workdesks available than there are people. **Overbooking has however been clearly on the rise in 2018 for ABW (1,19) and Open office (1,14) types, raising the total average hc/seat ratio to 1,1 in the last year.**

Regionally the ratio differences vary between 0,92-to-one in the Americas, to nearly one-to-one ratios in Central Europe and the Asia-Pacific region, Africa, Middle-East and the Nordic countries.

Region People/Workstation

Americas	0,92
APAC	0,98
EMEA	0,99
Total	0,98

Employees per desk in different office types

Office type People/Workstation

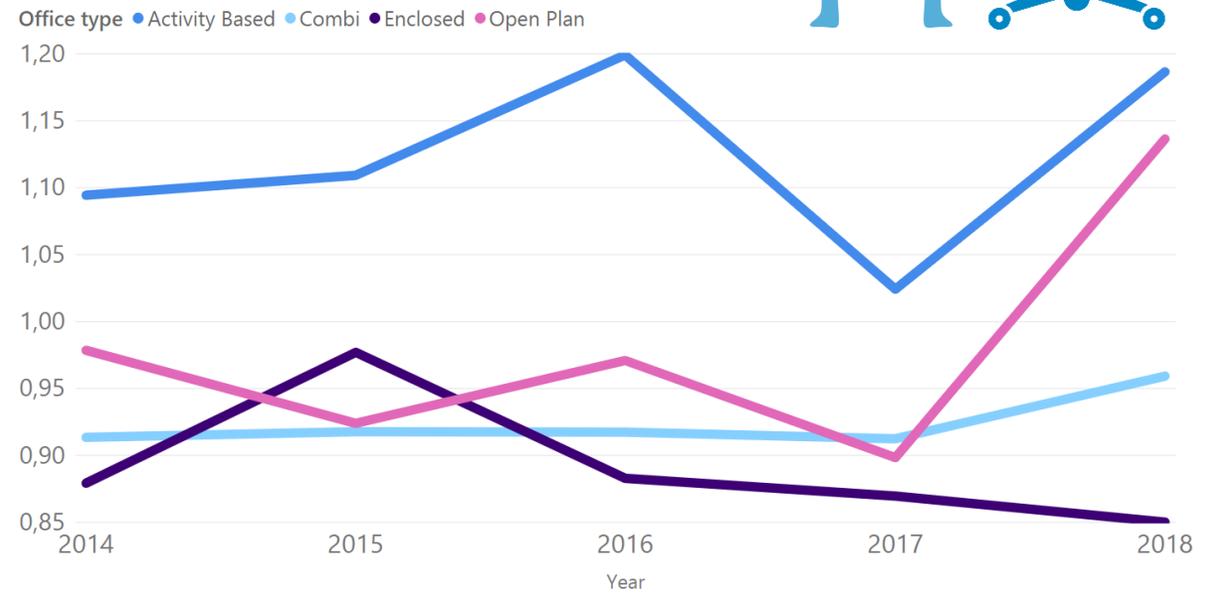
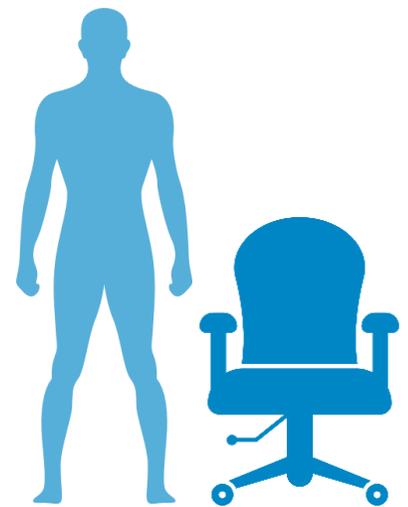
Activity Based	1,12
Combi	0,92
Enclosed	0,92
Open Plan	0,94
Total	0,98

The differences between office types are more clear: traditional enclosed offices have a ratio of 0,92 people/seat, whereas the newer **Activity-Based offices that often promote desk sharing, have a ratio of 1,12 people/workdesk.** For 2018 the differences were more clear at 0,85 (Enclosed) vs. 1,19 (ABW) respectively.

However, when comparing the utilization rate of workdesks, both office types are still relatively close to one another, due to the flex work policies often applied at Activity-Based offices. Desk sharing policies in Activity-Based offices enable overbooking of workdesks, while flex work policies keep utilization rates in check.

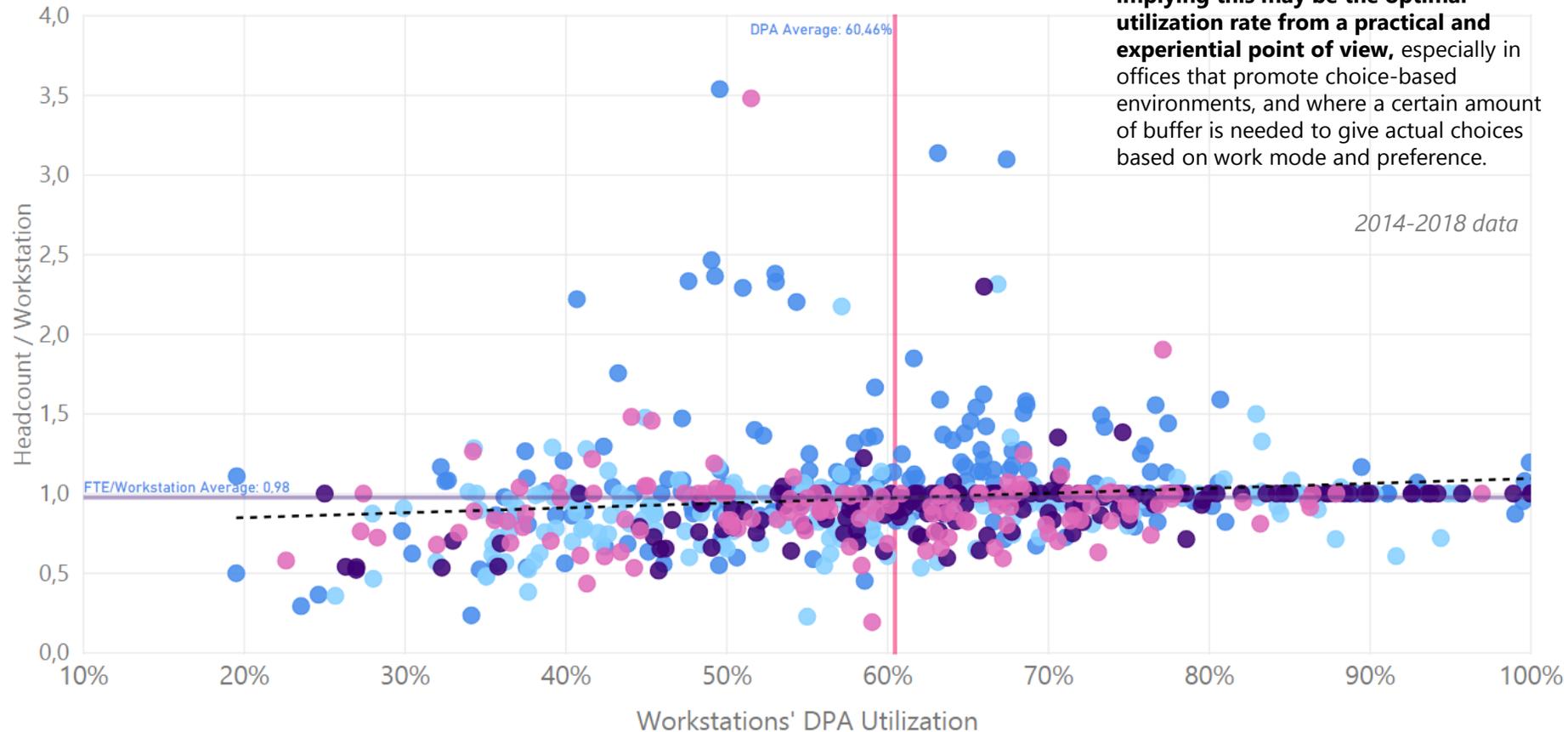
Companies still allocate around one person per desk, though the ratio is on the rise.

1,1
people /
workdesk
2018 data only



Utilization & the people-per-workdesk ratio

Office type ● Activity Based ● Combi ● Enclosed ● Open Plan



Key takeaways

The distribution of daily peak utilization revolves mainly between 50-70%, implying this may be the optimal utilization rate from a practical and experiential point of view, especially in offices that promote choice-based environments, and where a certain amount of buffer is needed to give actual choices based on work mode and preference.

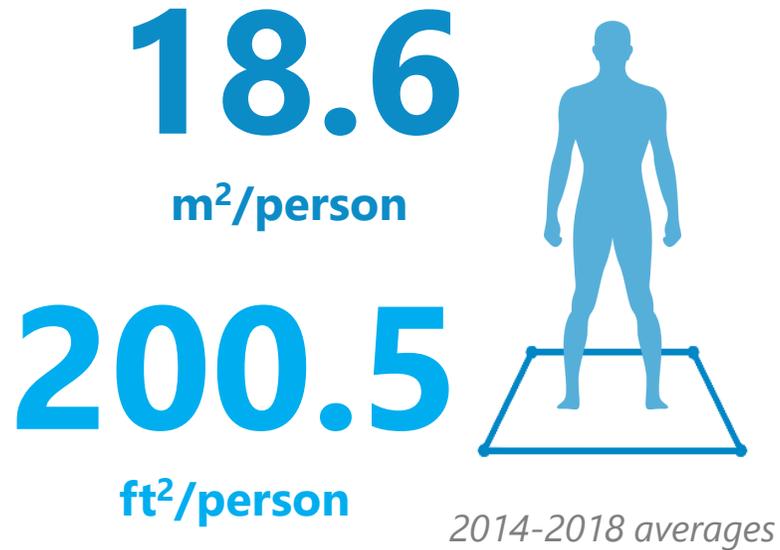
High headcount/seat ratios do not imply higher desk utilization. A ratio of 1.2 - 1.5 is a good point to start being more efficient, while staying between 35-85% utilization.

The following graph shows us how different offices (by type) are distributed in relation to their DPA utilization rates, and their people-per-workdesk ratios. As we can see, there is a clear trend that offices currently allocate roughly one seat per person, regardless of office type and utilization rate (flat horizontal distribution near 0.98). In fact, there are some clear outliers that deviate from the main group. Some activity-based and combi offices with up to 3.5 people per seat are still at DPA utilization rates of about 50-60%. In terms of efficiency, they reach the same utilization as offices with as low ratios as 0.5 – 1.0.

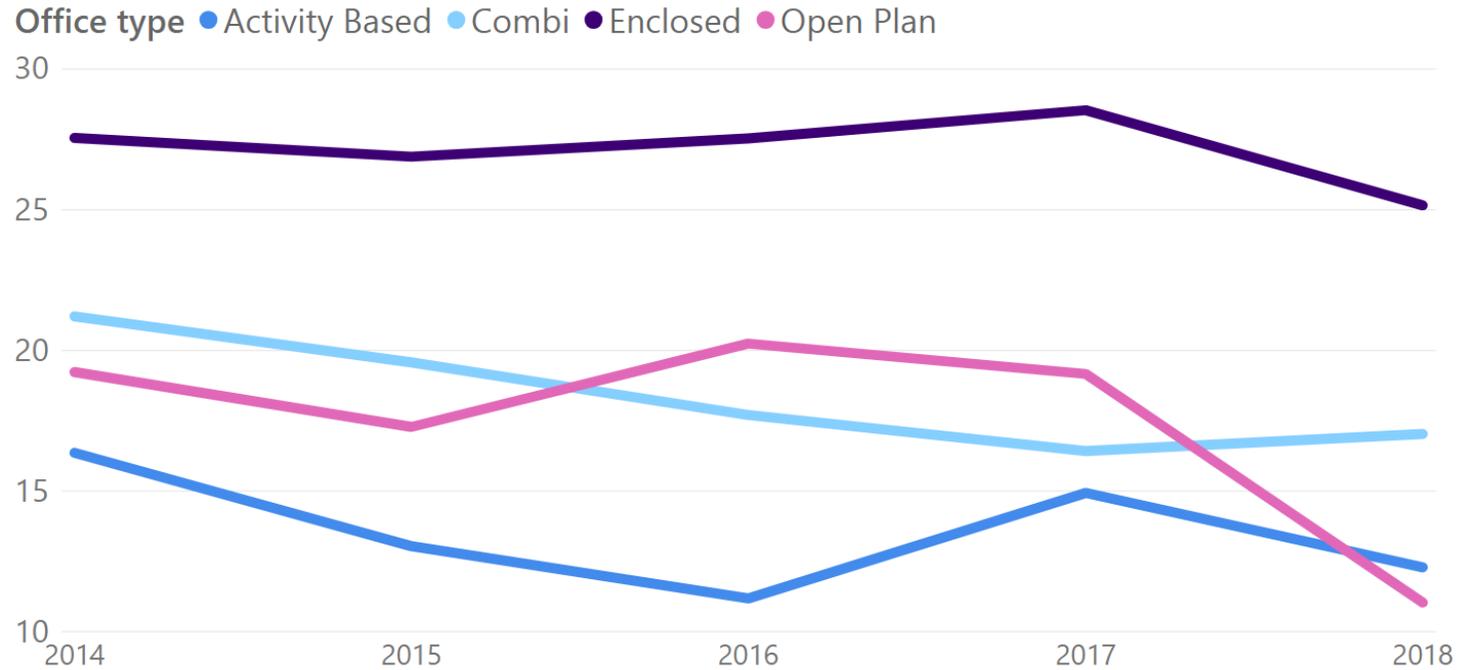
Enclosed offices are almost without exception at a 1.0 hc/seat ratio or less, as is the case for most open offices as well, with some exceptions from 2018 observations.

We can also see from this graph, that **offices that have a desk utilization rate over 80%, are all nearing the 1:1 ratio, implying there is little mobility, flex work or choices for work settings** in these organizations.

2014-2018: Dynamic workplace density



Office type	Area/FTE (m2)	Area/FTE (ft2)
Activity Based	13,09	140,92
Combi	17,77	191,26
Enclosed	27,24	293,17
Open Plan	18,26	196,57
Total	18,63	200,54

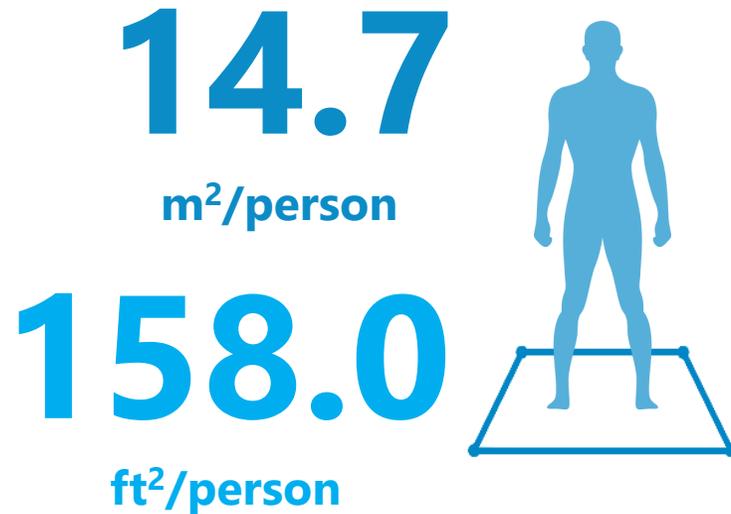


Private	Area/FTE (m2)	Area/FTE (ft2)
Private	16,54	178,07
Public	25,26	271,91
Total	18,63	200,54

Activity-Based offices are absolutely the most efficient in their space use, when looking at 'dynamic workplace density', i.e. space allocated per office user.



Dynamic workplace density in 2018: office space per person



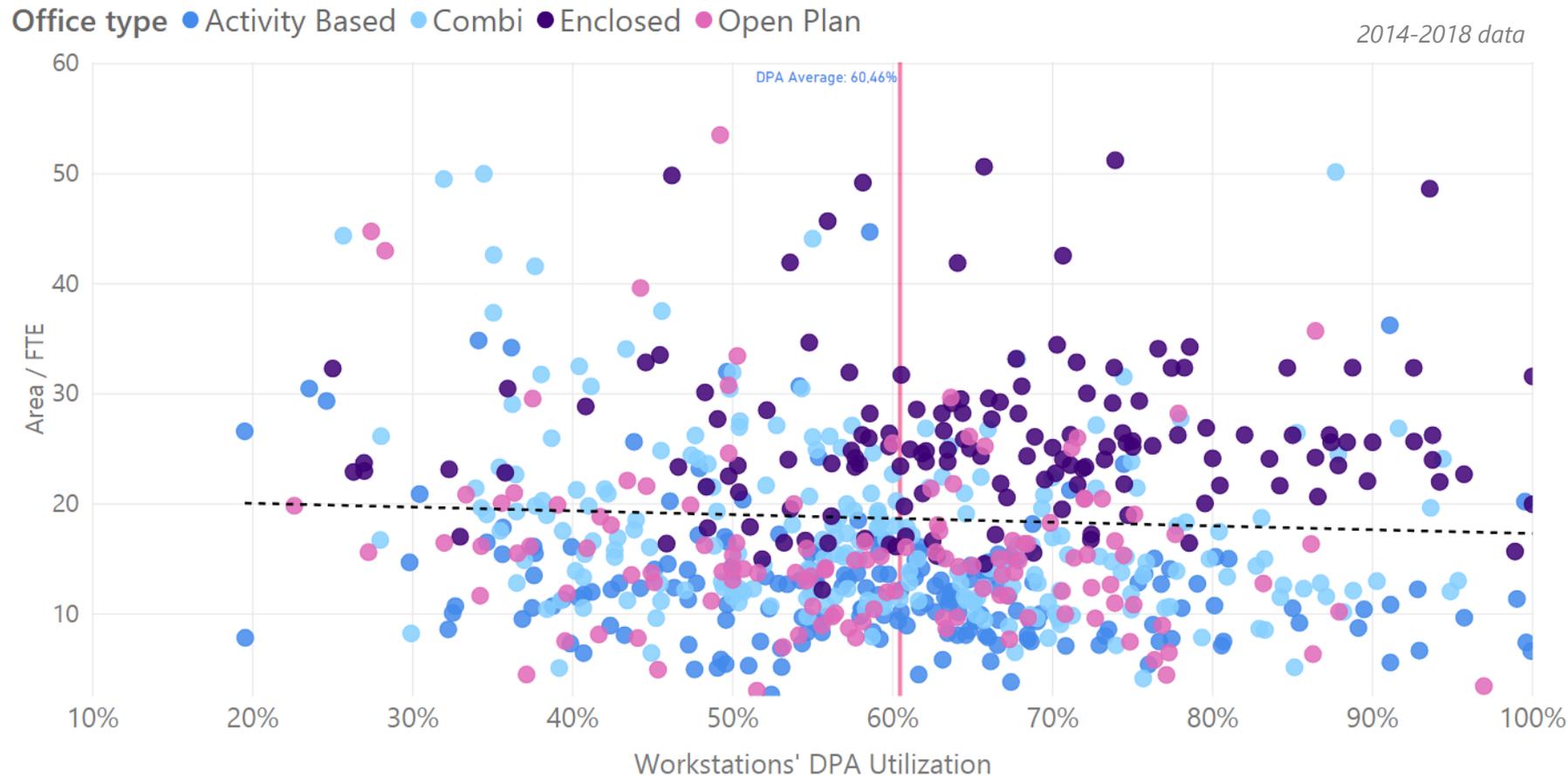
2018, based on 76 measurements that includes both headcount and area information

Office type	Area/FTE (m2)	Area/FTE (sqft)
Activity Based	12,29	132,28
Combi	17,03	183,31
Enclosed	25,16	270,81
Open Plan	11,04	118,81
Total	14,68	158,06

Looking at the public sector employers with an average of 22,15 m²/person compared to 12,94 m²/person in the private sector, it is clear that the public sector has a different approach when it comes to allocated vs. shared desks, preferred office types, and the implementation of flex work policies. It is however important to note, that government spaces often consist of historical, old (and at times protected) buildings, which explain their less flexible spaces.

Private	12,94	139,31
Public	22,15	238,43
Total	14,68	158,06

Space-per-person is hard to correlate with utilization



Key takeaways

“Shotgun distribution” – what can it tell us? At first glance, we found no clear correlation between utilization rates of desks and dynamic density, i.e. how much office space is allocated per full-time employee. We find no support to a hypothesis that people would spend more time at the office if there only was more space available. Nor the opposite.

However, when looking at the dots on the map more closely, where their color indicate the office type, we can see that **enclosed offices (dark blue) are nearly all allocating 20 square meters per person or more** – with only a slightly higher utilization than the average. Likewise, **nearly all Activity-based offices (bright blue) allocate 20 square meters per person or less** – with a similar spread horizontally.

A slight correlation between dynamic density and desk utilization can be detected statistically, though not visually very obvious. The variance is so great depending upon the amount of flexible working and activity-based working arrangements that have been implemented.

Static workplace density, 2014-2018

Key takeaways

Based on the data from the 2014-2018 space utilization measurements, the average office space area per workdesk ratio is typically 17.6 m² / seat (189.2 sq.ft /workdesk). This metric remains fairly constant from one year to the next in our studies, depending more on what locations have been studied that year, than on a change in trends of space use.

Office net floor area per workstation varies strongly between office types.

In general terms, the most space-efficient office type is the activity-based office, with 13.8 m² (149 sq.ft) of office space available for every workdesk, dropping to 12,4 m² in 2018. More notable however is the clear drop in space allocated per desk for open offices and enclosed offices, as you will see on the next page with a graph showing yearly comparisons.

Efficiency and productivity are not the same thing. Note, that a large number of (potentially) excess desks make this metric look good on paper, in terms of efficient space use, but is not necessarily functional. It is important to note that better space efficiency does not imply improved productivity at work. See section on activities, and the amount of focus work.

The least efficient space use can be found in enclosed offices, where 24.0 m² (258.7 sq.ft) of floor area is available per workstation.

By comparison, activity based offices provide less than 60% of floor area per workstation than enclosed offices.

The reasons behind these differences are likely to be fairly straight forward:

- Enclosed offices have a lot of walls that take up room and make floor area less flexible to furnish, thus creating a lot of wasted space
- Private office rooms often include small personal meeting areas and extra visitor seats in addition to workstations
- The paper use culture is more often found in enclosed offices, requiring extra space for cabinets for storage
- Activity based offices have typically adopted increased mobility, desk sharing and less paper, which in turn shows up as smaller desks and thus smaller space requirements.

About the numbers

Note that this metric is not the area used by a single workstation. This metric includes all the usable area in the office, including corridors and supporting spaces.

17.6
m²/workdesk
189.2
ft²/workdesk



2014-2018 data

Office type	Area / Workstation (m2)	(sq.ft)
Activity Based	13,80	148,50
Combi	16,80	180,86
Enclosed	24,04	258,74
Open Plan	15,90	171,16
Total	17,58	189,19

Static workplace density, 2018

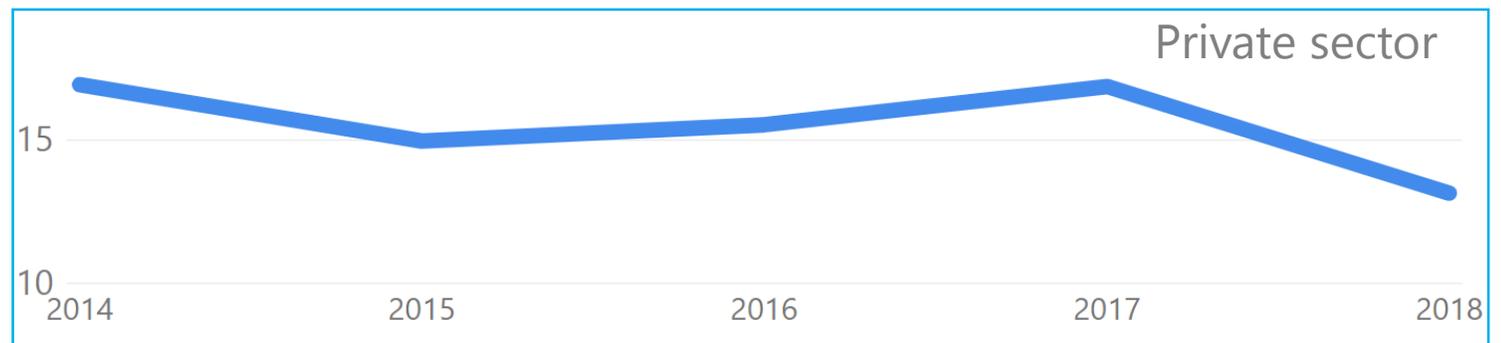
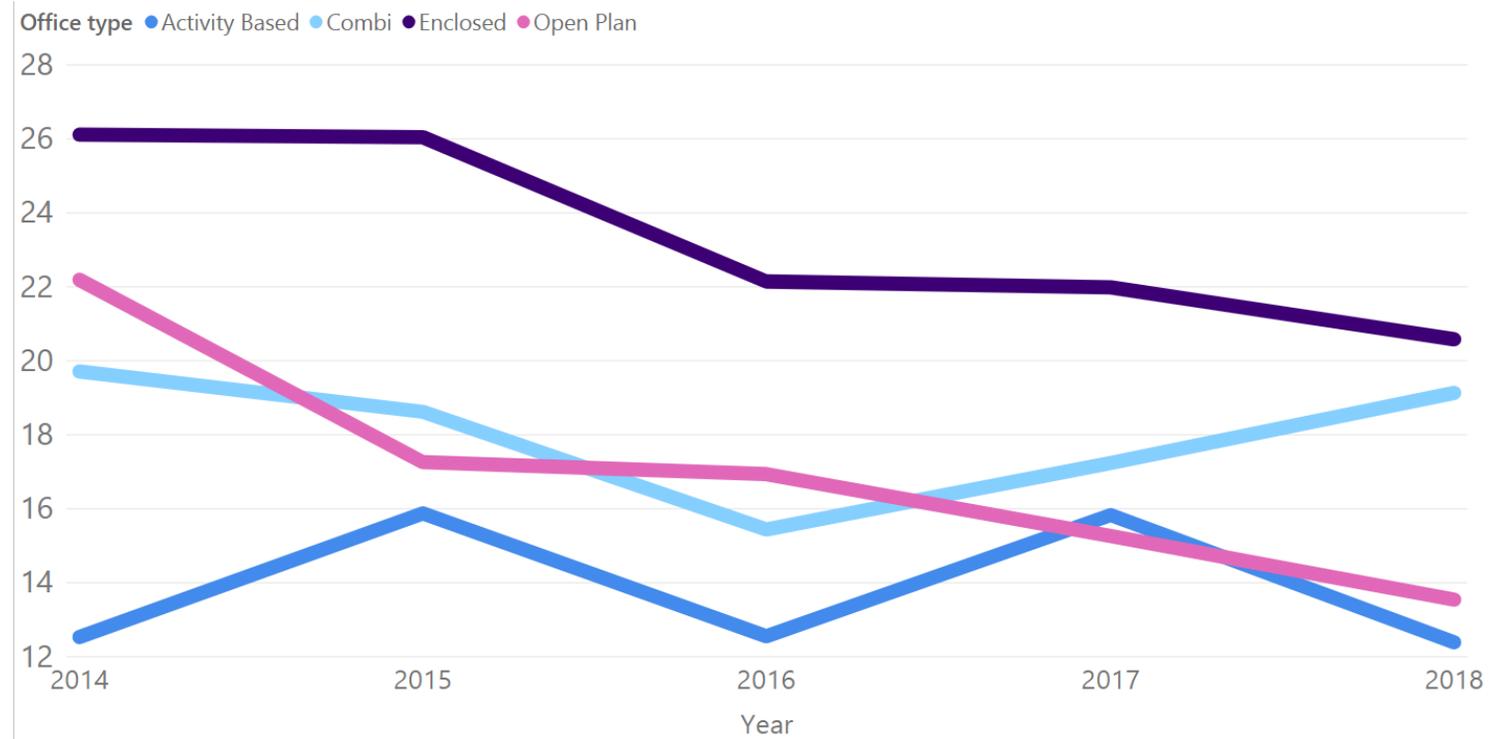


14.6
m²/work seat

156.8
ft²/work seat

2018, based on 264 measurements

Office type	Area/Workstation (m2)	(sq.ft)
Activity Based	12,39	133,36
Combi	19,13	205,94
Enclosed	20,58	221,55
Open Plan	13,54	145,78
Total	14,57	156,87



Static workplace density vs. desk utilization



Key takeaways

We did not discover any link between available office space per workdesk, and utilization of the desks in question. In other words, static space density does not directly affect how much time people spend at their desks. There is however a clear division between activity-based offices and enclosed offices when observing the spread of the two types on the chart.

Overall, around half of all workplaces appear to place themselves between 50% and 70% of desk utilization, while dimensioning their office spaces between 8m² and 25m².

About the Review Data

Optimize Workplace Review 2019

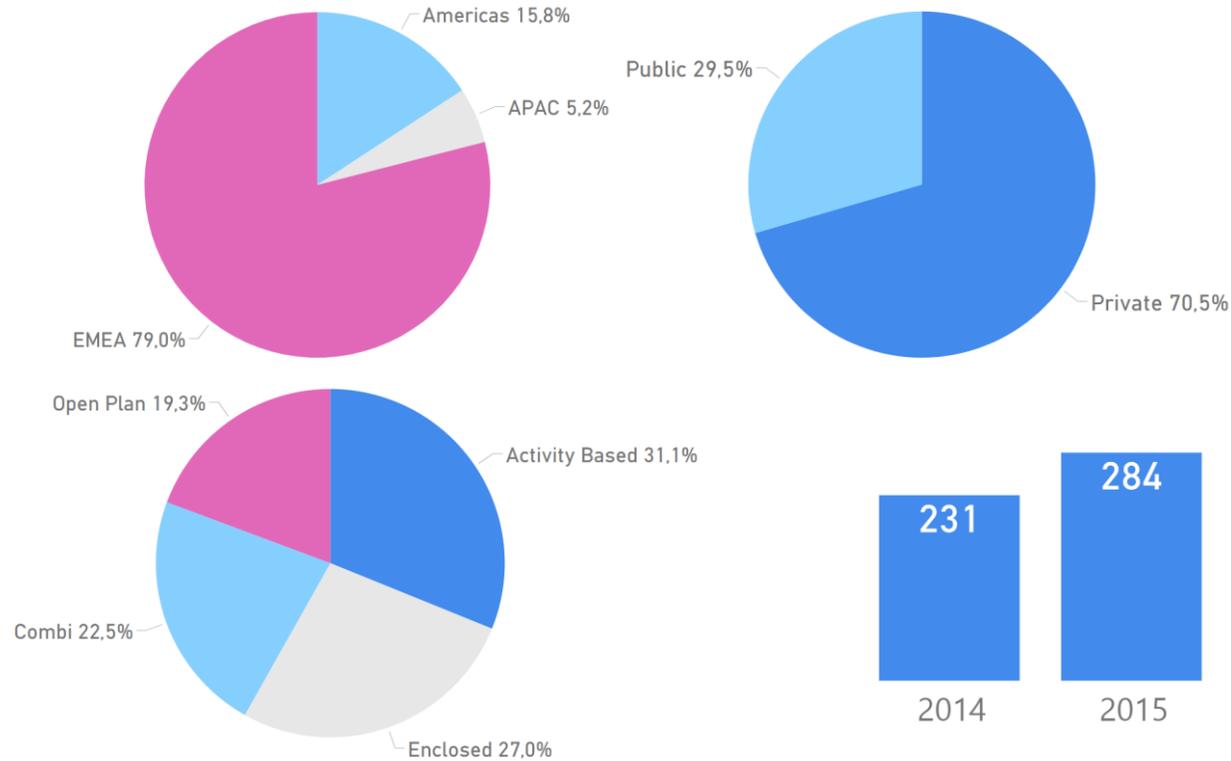
A look at the included data 2014-2018

The data gathered for this 2019 report takes a look back at the observational workplace study results from **2014 to 2018** gathered from **17 countries**.

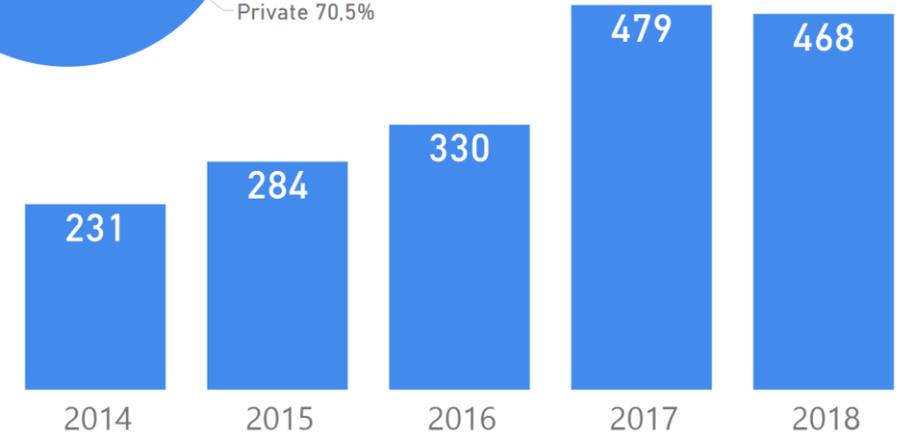
In it, we take a look at some 1792 observational space utilization studies in some **460 buildings**, spanning over more than **136,000 workstations** and nearly **12,600 meeting spaces** with about **88,200 meeting seats**. In addition, over **54,600 other seat types** were observed during a total of **46,400 walkthroughs** conducted. This makes for over **7.5 million observations** of seat use in the past five years.

THE RESEARCH DATA

- 17 countries, 2014 to 2018
- 1792 workplace studies
- 460 buildings
- 136,160 workstations
- 12,590 meeting spaces
- 88,193 meeting seats
- 54,631 other seat types
- 46,378 walkthrough rounds
- 7,505,720 observations
- floor area 1,834,966 m² (19,751,409.6 ft²). 1.8 million m2/ 19.8 million sqft



The number of walkthrough measurements represented in the dataset per year



Office type	# Measurements	# Workstations	# Meeting spaces	# Meeting seats	Measured area	# Other capacity types	# Observations made	# Walkthrough rounds	# Buildings
Activity Based	558	59 067	6 049	37 932	653 346	26 624,00	3 415 092	14 741	122
Combi	404	30 159	2 211	18 227	534 087	13 411,00	1 531 984	10 396	140
Enclosed	484	20 977	1 882	16 179	381 376	5 958,00	949 241	11 360	177
Open Plan	346	25 957	2 448	15 855	266 157	8 638,00	1 609 403	9 881	130
Total	1 792	136 160	12 590	88 193	1 834 966	54 631,00	7 505 720	46 378	460

Methodology & Terminology

Optimize Workplace Review 2019

The process

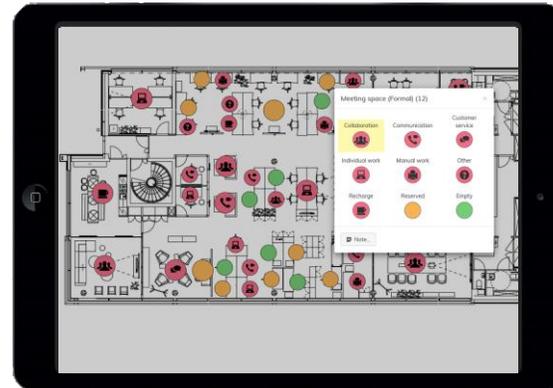
Space utilization measurement using Optimize software is a method for observing actual work environment utilization rates. During a 2-week measurement period, measurers perform walkthrough observations at least twice a day, noting how many people are using the workdesks and meeting rooms at the time.

During a measurement, one can also **observe activities**. This allows learning about what kind of work people do in different types of work settings, meeting rooms and other spaces.

There are three stages of a measurement: preparation, performing walkthroughs, and viewing results. Training is given to all people conducting observational studies in order to ensure that interpretation and gathering of the data is systematic and coherent.

Walkthroughs are done at a pre-scheduled time during estimated peaks. Walkthroughs should be performed at the same time every day: at least one in the morning and one in the afternoon. During a walkthrough, the observer marks the status of each seat or location as either occupied, reserved or empty.

Automatically reported results are used to provide detailed, up-to-date information on seat utilization and space needs.



Interpretation of seat use

Occupied: There is someone at the seat or desk. If activities are observed and someone is at the seat, the activity that best describes what a person is doing is also recorded.

Reserved: No one is at the seat, but there is clear evidence that someone has been using the seat recently. For example, a jacket, coat, or briefcase has been left at the seat, the computer monitor is on and the screen saver hasn't come on yet, or a fresh food or beverage item is on the desk.

Empty: No one is at the seat, and there is no clear evidence that someone has been using the seat.

Overuse. If there are more people at the seat than the capacity, the observer can enter overuse. E.g. if the capacity of a meeting room is six and there are eight people in the room, the observer should log an overuse of 2.

Advantage of observing

There are many methods for measuring utilization. The electronic observation method using Optimize has the following benefits:

Great scalability and flexibility: the method quickly scales to as many observational points as you wish on a floor plan, and can be used in any kinds of spaces (offices, education, laboratories, parking buildings etc.) This brings agility and ease-of-use: all you need is connectivity, a tablet and the software with a graphical interphase

High granularity: the level of detail in terms of specific spaces, work activities, seat types, space types and occupying organizations can be achieved at moderate costs, as no installations are needed to set up the study, no investment in hardware

Acceptability vs. invasiveness: the acceptance of an observational study with a human interface can be much higher by clients, when compared to any type of electronic surveillance that may be perceived as 'big brother watching'.

Intangible insights: by observing, you have the ability to collect information regarding work activities and the cultural 'dna', the use of technology and much more.

Terminology & Definitions

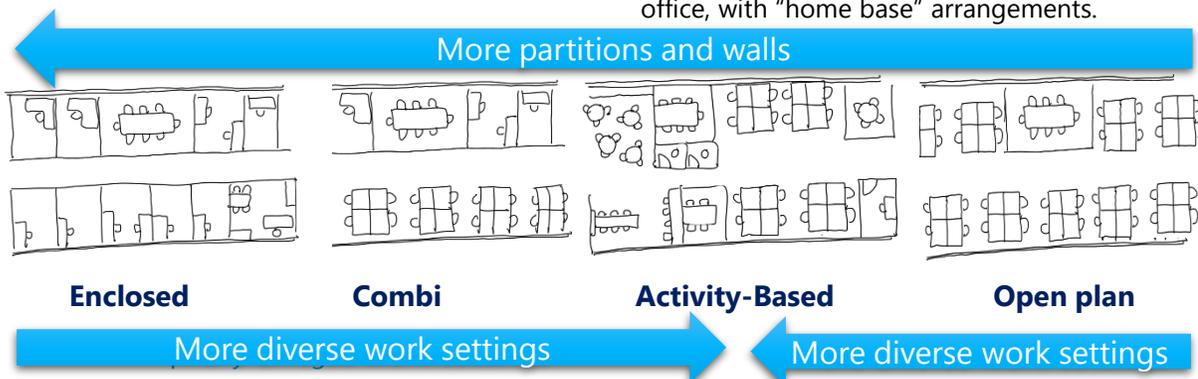
Office types

Enclosed Office: An office type that predominantly houses workstations enclosed by four walls. The space can be assigned to individual workers and can accommodate from one to more than five visitors. Also called cell-office. There are some meeting rooms, but some may have meeting space also in their own rooms.

Open Plan Office: The open plan office is mainly defined by employees sharing a common workspace where many workstations are situated within the same open area, sometimes separated from each other by dividers and file storage cabinets. No or few enclosed rooms exist apart from meeting rooms. Both landscape open offices and open offices with cubicles are in this category.

Combi-Office: An office type that is a combination of open plan offices and enclosed offices. Some workers have rooms, others sit together with others in an open plan layout. Traditionally, rooms are assigned based on rank, rather than need, worker profile or work task.

Activity-Based Office: An office type that takes the combi-office one step further, by introducing a diversity of spaces, places and furniture that are available to anyone based on the task at hand. Spaces are used and reserved (sometimes assigned) based on each employee's own role, preference and current work task. No universal blueprint exists for Activity-Based offices – each one should be tailored to the needs of its users. Neighborhood-based Choice Environments (NCE) is a variant of the ABW office, with "home base" arrangements.



Work settings

Workdesks function as a person's primary work seat. Work can be categorized as assigned or shared workdesks. Assigned workdesks are assigned to be used by a specific person; shared seats are those which a group of people have the right to use. Work seats are typically found in connection to a desk, forming a workstation with or without separations from others in the form of walls, dividers and file storage space.

Temporary seats, such as drop-in seats or laptop bar seats, are chosen as the location for a particular task or period of time. These would not be assigned to a person as his or her primary work seat.

Meeting seats, primarily located at meeting spaces, are those seats that are used by groups of people temporarily working together.

Meeting space: Collaborative area, often a space enclosed by four walls and typically able to accommodate from two to more than 16 people. A meeting space can also be placed in an open space. This report groups meeting spaces into small, medium, large and extra large spaces.

General

Workplace or Work environment : a platform that comprises of the physical office workspace and other locations including furniture, amendments and services; technologies and resources used for work; as well as the social environment that include colleagues, teams, bosses, agreements, rules and policies that enable a person to perform their work.

Flex space (or drop-in location): an offsite location between home and the office, eg. a shared office hub, coworking space or hot-desking space, often available by the day, hour or month through memberships or short-term leasing of a chair, desk or room.

Net floor area: Used in this review as the area on a floor that has been assigned to occupant groups or functions. It is calculated by subtracting secondary circulation, restricted areas, interior encroachments and occupant void areas from plannable area (the portion of the floor enclosed within the face of interior encroachments). Bearing structures and shafts are excluded. This area is used to measure space assigned to tenant personnel, furniture, equipment support areas and common support areas.

Employee experience

Satisfaction. A survey metric of how satisfied respondents are with their work environment overall (in relation to their expectations).

Effectiveness. A survey metric of how well respondents feel their work environment supports and facilitates their work.

Autonomy. A survey metric of how well respondents feel their workplace policies support working flexibly within and outside the office.

Wellbeing. A survey metric of how good respondents feel in their work environment overall.

Identity. A survey metric of how well respondents feel their work environment supports a sense of belonging, community and professional pride.

Inspiration. A survey metric of how well respondents feel their work environment supports being creative and innovative in their work.

Security. A survey metric of how well respondents feel information security and issues of restricted access have been taken care of.

Utilization metrics

Capacity. The maximum number of places there are for people to perform activities such as working and learning, usually defined by the number of seats provided or space available per person. Used as 'the mirror' that utilization is compared to.

Utilization rate. Share of seat capacity that has been occupied or reserved (multiplied by the reserved multiplier).
E.g. if during two walkthroughs a meeting room is utilized 5/10 and 0/10, the utilization rate is 25 % (5/20).

Frequency rate. Share of work setting (eg. room) count that has been occupied or reserved (multiplied by the reserved multiplier) by at least one person.
E.g. if during two walkthroughs a meeting room is utilized 5/10 and 0/10, the utilization rate is 50 % (1/2).

[Note that terms used for these metrics vary between different sources. The terms used here are defined for the purposes of interpretation of the results presented within this review report.]

Calculation method

Average. Average value of use from all walkthrough observations throughout the measurement period. Most commonly used for benchmarking purposes and making business cases for change.

Peak. The single highest observed utilization or frequency rate during the measurement period. Reversely used for estimating how many seats or spaces at least are free at any time.

Daily peak average. Average of the peak value for each day. design decisions that utilize data for calculating desk-sharing ratios should use average daily peaks to build in a buffer and to create a solution that has some overflow capacity.

Reserved multiplier. The weight given to reserved capacity or count when calculating the utilization rate or frequency rate. If the multiplier is 1, reserved capacity or count is fully included in the rate. If 0, only occupied capacity or count is included in the rate. *In this review, the multiplier 1 has been used.*

Examples of Activities

Concentrating (or Individual work). Focused, heads down work done alone that requires concentration such as reading, thinking, using a laptop, writing notes and reviewing documents. Can be done alone, or among others.

Collaborating. Two or more people working together sharing knowledge/resources, such as in a meeting, classroom training or when solving problems and negotiating.

Calling (or Communicating). One or more people having a telephone conversation or video conference using fixed or mobile technology.

Creating. Manual work and tasks including manufacturing, repairing, cleaning, using machinery such as copy machines.

Chilling. One or more people taking a break, socializing informally, chatting and recharging during the workday

Customer service. Face-to-face interaction in a service situation taking care of the customer's needs by providing professional, helpful service and assistance

Commuting. People moving from one place or space to another.

A note of caution

When interpreting the collected data, it is important to understand the risks involved when drawing conclusions. Correct interpretations are crucial when using the data going forward. Every utilization study has certain risks that may affect the quality of the data as a whole. The same applies to comparative studies such as this report. Here are a few:

Data collection

Errors made by the observer: One of the largest risks with utilization studies involves interpretation of how and when seats are being used, and the proper training of observers to ensure that they understand the difference between empty seats and temporarily unoccupied seats (the desk is taken by someone, but the user is temporarily away from the seat). The same risk for error comes up when observing activities of the occupants of seats and spaces. This is why a comprehensive and consistent training in measurement and observation is always provided as part of our measurement projects.

Calculation methods

Peaks, averages and daily peak averages: It is crucial to understand the different uses for different calculation methods. Averages can be treacherous if used for dimensioning in a refurbishment project. They should mainly be used for comparison purposes, such as establishing a baseline to compare to, like in this benchmark.

Averages are good for making an argument or case for change, whereas design decisions that utilize data for calculating desk-sharing ratios should use average daily peaks to build in a buffer and to create a solution that has some overflow capacity.

At the same time, peak utilization (the single highest observed use during the measurement period) can act as a way to recognize how much unused capacity there is available at any given time – which can either be seen as a waste of space, or a potential for further growth of users.

Reporting differences

Reporting differences: Some utilization studies only include the time people are physically at their desk and report this as the utilization rate. This is often the case, especially when using automated systems and sensors to make observations. In truth, a lot of the time seats are not free but only temporarily unoccupied, as employees move around inside the office building and between spaces. Making calculations based on only head counting would be a crude mistake. This is why the Optimaze Active tool with its standardized methodology for observing and recording reserved seats allows for marking and calculating utilization rates that include situations where seats are unoccupied but taken.

Utilization or frequency rate: keeping up with the use of seats versus the use of work settings that provide many seats (such as a meeting space) can be tricky. Careful attention to terminology and definitions should be given!

Logical fallacies

Correlation isn't causation, and correlation isn't always meaningful

Before reading too much into the findings in this report, understanding that *correlation does not imply causation* and knowing the difference is vitally important. The findings in this report are NOT the result of causational studies, that gather data under controlled circumstances and variables to prove that one thing causes another. Saying that one office type leads to higher productivity categorically, would thus be a wrong conclusion to make based on this data, as it could be and probably is dependent on many other things as well.

In this report, we try to discover indications of relationships between different factors by attempts to find correlation between them. Even these potential findings should be read with a healthy dose of criticism; just because two trends seem to fluctuate in tandem, doesn't necessarily prove that they are meaningfully related to one another.

In other words, *this report does not answer questions of "why?". It is a comparative study*, that compares data over time, place, office types and other variables. Correlations between different factors may or may not be meaningful.

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If you are interested in doing your own workplace studies, please follow the links for further information.

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Rapal's tools and services are aimed at supporting clients and its partners in analyzing and optimizing better working environments that can boost wellbeing, productivity and cost efficiency. This review of observational data was prepared by Rapal Oy's Workplace team based on 2014-2018 data collected through the use of its space utilization measurement tool Optimize, by permission of its end clients.

We hope you the reader will find the results and findings within this report useful, whether it is to find points of comparison or to make a case for conducting space utilization studies of your own.

Information contained herein, has been obtained from materials and sources believed to be reliable at the date of publication for the purposes of comparison and benchmarking. While we do not doubt its accuracy, we have not verified it and make no guarantee, warranty or representation about it especially for design purposes. Readers should be aware that minor variances in methodology, interpretations of definitions and observer errors may have presented some margin for error in the source data, and that averages do not represent the entire picture, as variances may be great. Readers are therefore encouraged to always conduct space utilization investigations of their own space use and space needs, to gather customer specific data.

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