

An aerial photograph of the Pittsburgh skyline at sunset. The city is bathed in a warm, orange-red glow. The Allegheny River is visible on the left, and the city's dense urban landscape, including numerous skyscrapers and historic buildings, fills the rest of the frame. The text 'PITTSBURGH RETURN TO OFFICE' is overlaid in the center-left.

PITTSBURGH RETURN TO OFFICE

THE ROAD TO RECOVERY

With the pandemic in the rearview mirror, many firms are looking for a return to normalcy. The number one concern is the low levels of in-person office attendance since the end of lockdowns. This has led to many company initiatives pushing for the Return to Office (RTO). However, employees have been hesitant to return to the office. Some posit this hesitancy is born out of lingering fears for health and safety. Others offer a more grounded explanation: employees have grown accustomed to the conveniences of work at home. To date, these theories are primarily supported by anecdotal evidence and survey data. While these methods offer some insight, they lack the necessary rigor to fully understand the complexities of the RTO movement. We provide a data driven statistical investigation on the behavioral motivations governing the RTO movement. We find that:

- Office attendance has not reached pre-pandemic levels, however, attendance continues to trend upwards.
- In Pittsburgh, there is viable statistical evidence supporting the much talked about “post-Labor Day push.”
- There are statistical differences between the behavior of people who work in the office multiple days a week and the behavior of “hybrid” employees. We find evidence suggesting this discrepancy is linked to the strictness of an employer’s RTO strategy.

THE METHODOLOGY

- All site visit data is sourced from Placer Ai.
- Points of Interest are centered around major office buildings, and when possible, minor office buildings.
 - In many instances, Placer Ai does not have enough data to produce reliable results, or data is confidential. As such, the results of this report are skewed toward the behavior of employees at large office buildings.
- The data is filtered to include people classified as employees and visitors who stay at the property for more than 150 minutes on Monday through Friday. This was done to capture a broader range of work-related activity.
- Building by building data is collected over time and aggregated by submarket.
- Submarkets and employee data sets are analyzed together and separately to uncover employee motivations.
- All labor statistic data is sourced from EMSI.
- All commercial real-estate data is sourced from proprietary data sets.

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THE ROAD TO RECOVERY

**ARE PEOPLE RETURNING
TO THE OFFICE?**



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ARE PEOPLE RETURNING TO THE OFFICE?

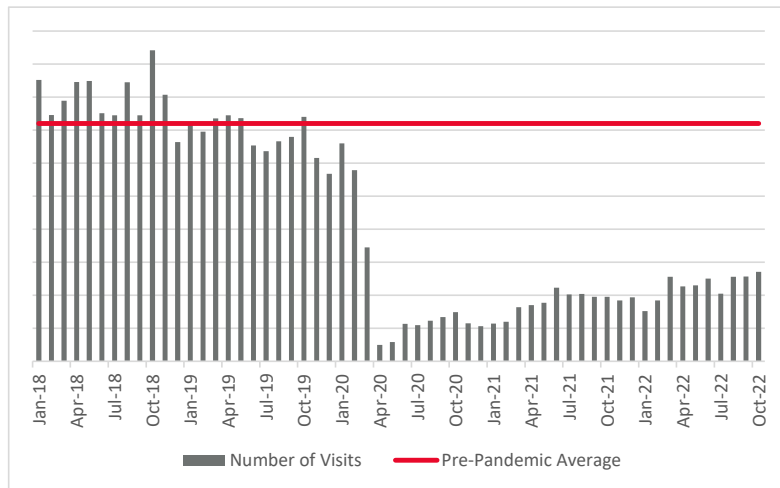
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To understand the behavioral motivations and trends of office workers, it is necessary to understand the actual attendance over time. Office attendance is tracked on a submarket-by-submarket basis in order to uncover any differences in behavioral motivations.

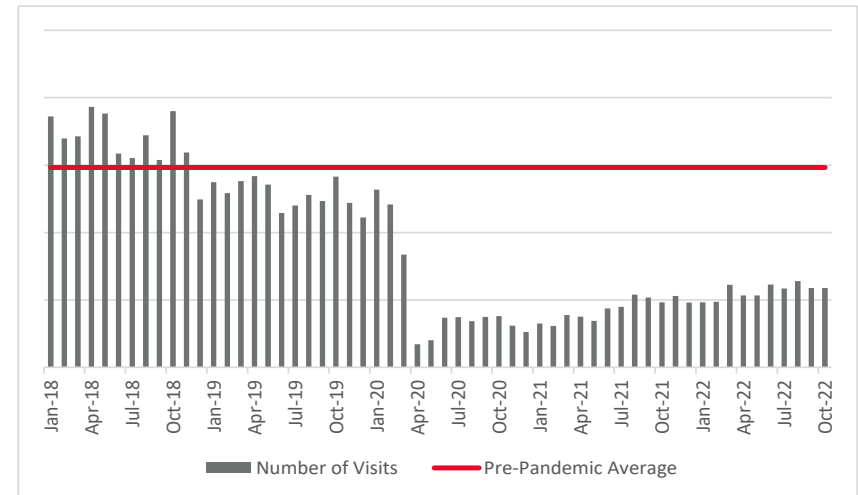
We provide aggregate attendance trends, as well as attendance as a percentage of the pre-pandemic average.

OFFICE ACTIVITY TRENDS

TOTAL EMPLOYEE ATTENDANCE: CBD



TOTAL EMPLOYEE ATTENDANCE: SUBURBS



The above graphs show the aggregate number of visits made by employees on a monthly basis. The data shows attendance trends from January of 2018 to October of 2022. The red line is the pre-pandemic average.

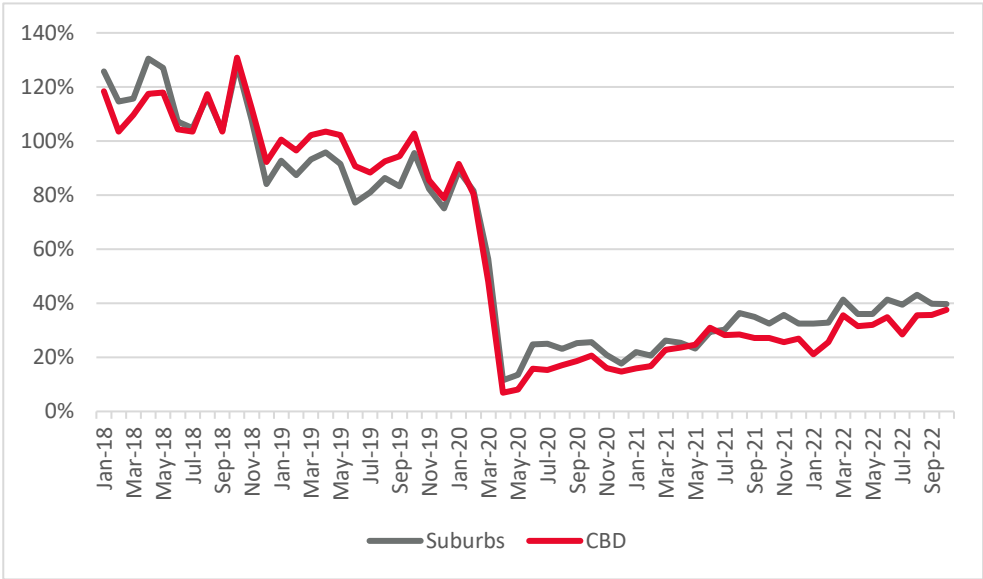
In both the Suburbs and the Central Business District (CBD), the total number of workers in the office dramatically decreased at the onset of COVID-19. Since lockdown restrictions have eased, in-person office attendance has gradually risen, but has not reached pre-pandemic averages. There is no statistically significant difference between the total office attendance trends in the Suburbs and the CBD.

BOTH CBD AND SUBURBS HAVE EXPERIENCED AN INCREASE IN OFFICE ATTENDANCE, BUT REMAIN BELOW THE PRE-PANDEMIC AVERAGE.

THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN CBD AND SUBURBS TOTAL ATTENDANCE.

OFFICE ACTIVITY TRENDS

TOTAL EMPLOYEE ATTENDANCE: PERCENTAGE OF PRE-PANDEMIC AVERAGE



The graph shows monthly office attendance in the Suburbs and CBD as a percentage of the pre-pandemic average. Once again, there was a dramatic decrease in office attendance after the onset of COVID-19. Since the easing of lock-downs, total office attendance in the Suburbs and CBD have followed similar trends: a slow, but steady, recovery. At the end of 2022, office attendance in the Suburbs was 39.7% of its pre-pandemic average. Similarly, office attendance in the CBD was 37.6% of its pre-pandemic average.

SUBMARKET	MOST RECENT VALUE	2022 AVERAGE	POST COVID PEAK / DATE
CBD	37.6%	31.8%	37.6%/ OCT 2022
SUBURBS	39.7%	38.2%	43.1%/ AUG 2022

OFFICE ATTENDANCE IN THE SUBURBS WAS 39.7% OF THE PRE-PANDEMIC AVERAGE.

OFFICE ATTENDANCE IN THE CBD WAS 37.6% OF THE PRE-PANDEMIC AVERAGE.



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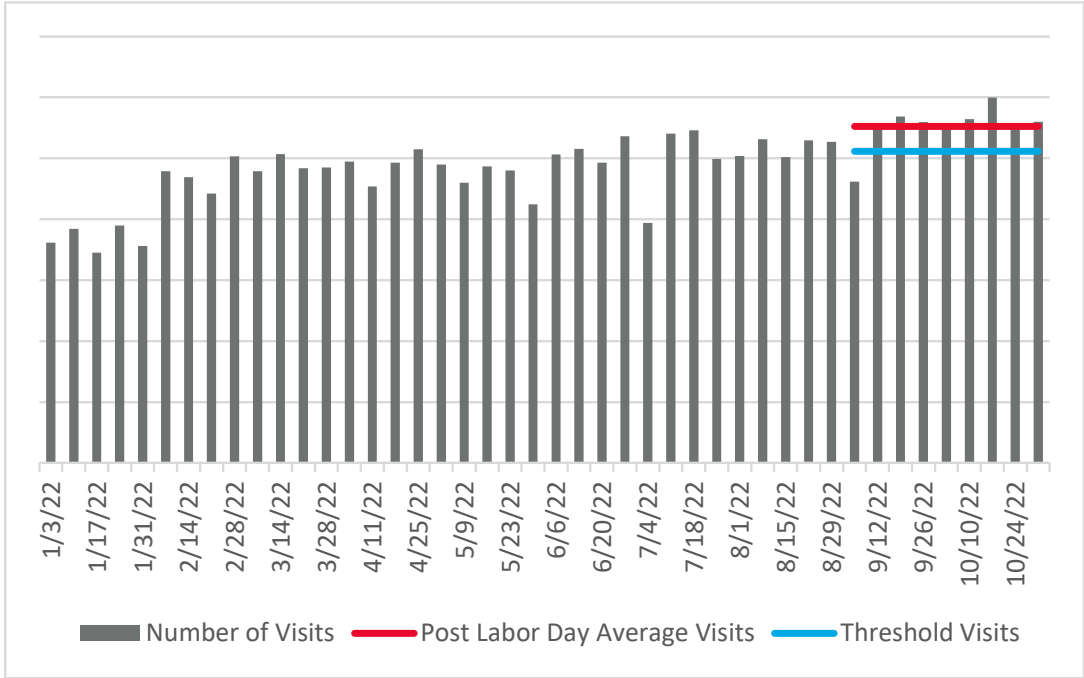
POST-LABOR DAY PUSH

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As the summer months passed, and health and safety concerns waned, employers sought higher office attendance rates. Many pushed an RTO initiative coinciding with students returning to school. It was termed the post-Labor Day push. We test the impact of this post-Labor Day push.

POST LABOR DAY PUSH

TOTAL OFFICE ATTENDANCE: POST-LABOR DAY



FINDINGS: THE POST-LABOR DAY PUSH OCCURRED.

The number of people who worked in the office At first glance, it looks like weekly attendance increased slightly after Labor Day (9/3/2022). However, this perceived increase could be due to random variation instead of the post-Labor Day push. As such, we employ a hypothesis test (t-test) to compare the visits in each time period. The thresholds visits represents the minimum number of visits needed to be 99.0% confident that the number of weekly visits after Labor Day is greater than the number of weekly visits before Labor Day. Since the average weekly visits post-Labor Day exceeds the threshold visits (see graph), we can be 99.0% confident that more people have been physically in the office since Labor Day. Moreover, since many companies and media outlets pushed the post-Labor Day narrative, we can be reasonably certain that the uptick in office attendance is attributable to said narrative.

SINCE THE ACTUAL VISITS EXCEEDS THE MINIMUM THRESHOLD, WE KNOW MORE PEOPLE HAVE BEEN PHYSICALLY IN THE OFFICE SINCE LABOR DAY.

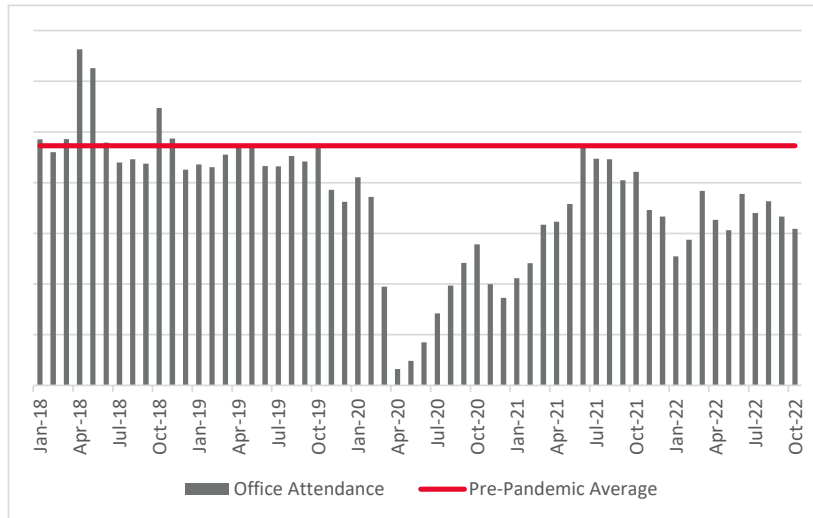
STRICT EMPLOYEES V. GENERAL OFFICE ACTIVITY

We now have enough statistical evidence to confidently assert that more people are working in the office post-Labor Day 2022. But, why? Is this push solely the result of company mandates? Or are employees starved for in office work, and attend on their own accord? We investigate this question by breaking the total data set into subsets.

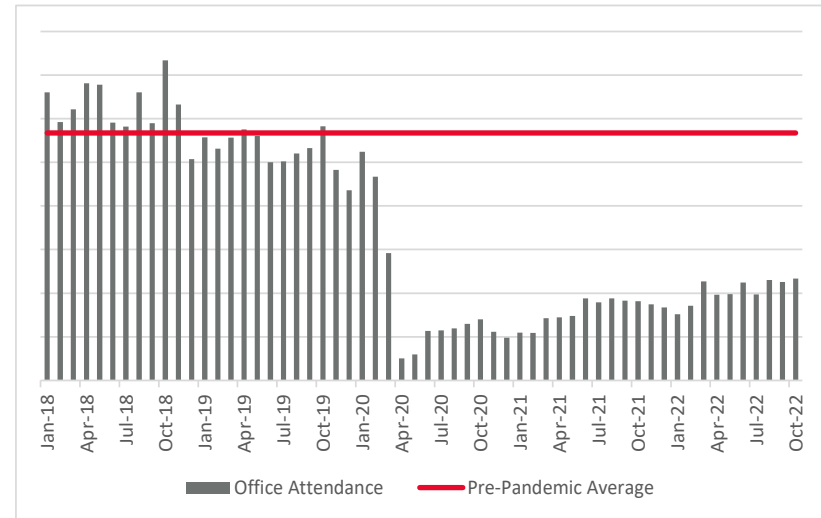
- General Office Activity: Hybrid employees and office visitors. These people are likely unimpeded by strict work mandates. These people are not classified as employees, but visit the property for more than 150 minutes on Monday through Friday.
- Strict Employees: Classifies those that are likely in the office four days or more per week.

AGGREGATE OFFICE ATTENDANCE

GENERAL OFFICE ACTIVITY



STRICT EMPLOYEES

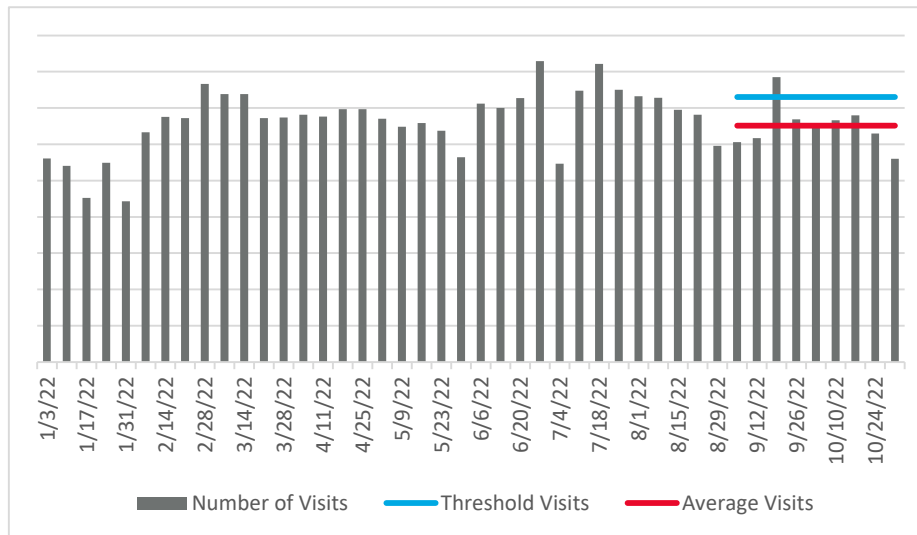


The above graphs show the aggregate monthly visits in the Pittsburgh MSA for the data subsets: Both data sets experienced a dramatic drop in office attendance at the onset of the pandemic. However, the General Office Activity data set has seen a more robust recovery than the Strict Employee's data set. As hybrid workers are counted in the General Office Activity data set, and the hybrid work model was not as prevalent pre-pandemic, it is only natural that the recovery was stronger.

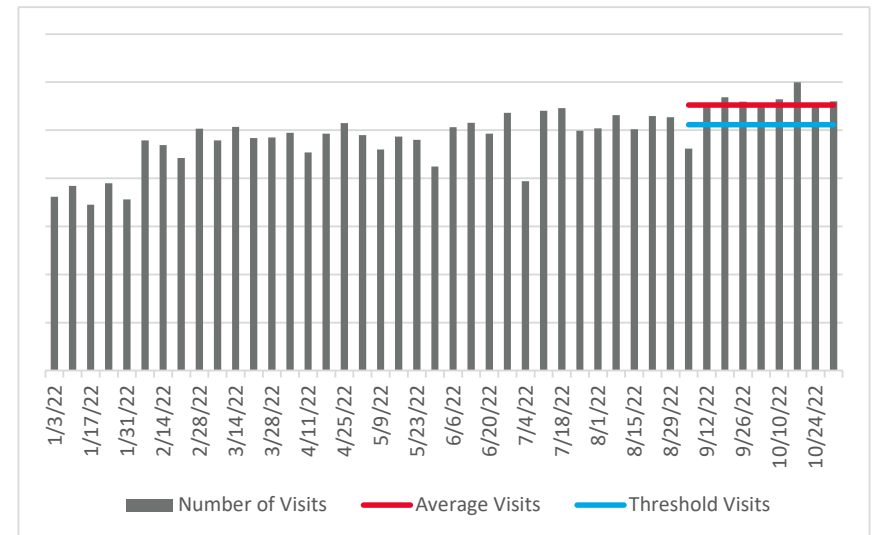
GENERAL OFFICE ACTIVITY HAS RECOVERED CLOSER TO THE PRE-PANDEMIC AVERAGE THAN STRICT EMPLOYEE ATTENDANCE. THIS IS LIKELY DUE TO THE HYBRID WORK MODEL.

POST LABOR DAY OFFICE ATTENDANCE

POST-LABOR DAY: GENERAL OFFICE ACTIVITY



POST-LABOR DAY: STRICT EMPLOYEES



The above graphs show the post-Labor Day push hypothesis applied to the General Office Activity and the Strict Employees data subsets. The same claim as before is applied to the data subsets. The post-Labor Day push was realized in the Strict Employees data subset; however it was not realized in the General Office Activity data subset. That is, there are more Strict Employees since Labor Day 2022, but there has not necessarily been an uptick in General Office Activity.

THERE HAS NOT BEEN AN UPTICK IN GENERAL OFFICE ACTIVITY POST-LABOR DAY. THIS IS LIKELY ATTRIBUTABLE TO THE FLEXIBILITY OF THE HYBRID WORK MODEL.



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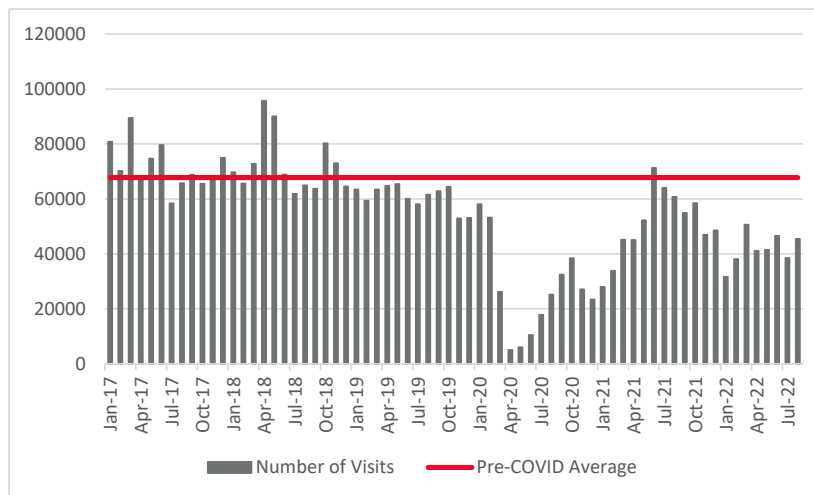
GENERAL OFFICE ACTIVITY

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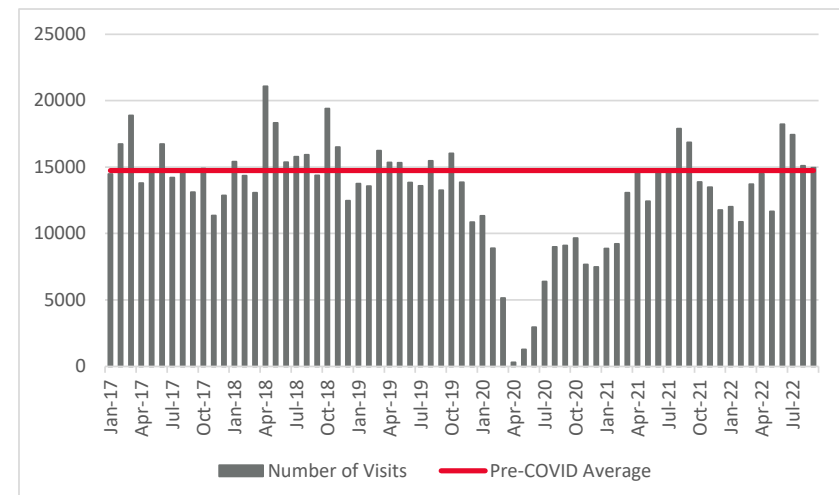
We now know there is a difference in the attendance trends of the General Office Activity and Strict Employees data sets. We believe Strict Employees' behavior is explainable by company mandates and industry requirements. The underlying motivations of a person in the General Office Activity remains ambiguous. Why did these people not follow the post-Labor Day push? Is there a difference between behavior on a submarket-by-submarket basis? What follows is a high-level investigation of the General Office Activity subset.

GENERAL OFFICE ACTIVITY AGGREGATE OFFICE TRENDS

CBD HYBRID WORKERS



SUBURBS HYBRID WORKERS



The above graphs show the aggregate monthly General Office Activity visits in the Suburbs and CBD. As previously mentioned, we have reason to believe hybrid employees are captured in this data set. Both submarkets experienced recovery back or close to the pre-pandemic average. However, while General Office Activity attendance in the suburbs remained at the pre-pandemic average, CBD attendance trailed off in 2022.

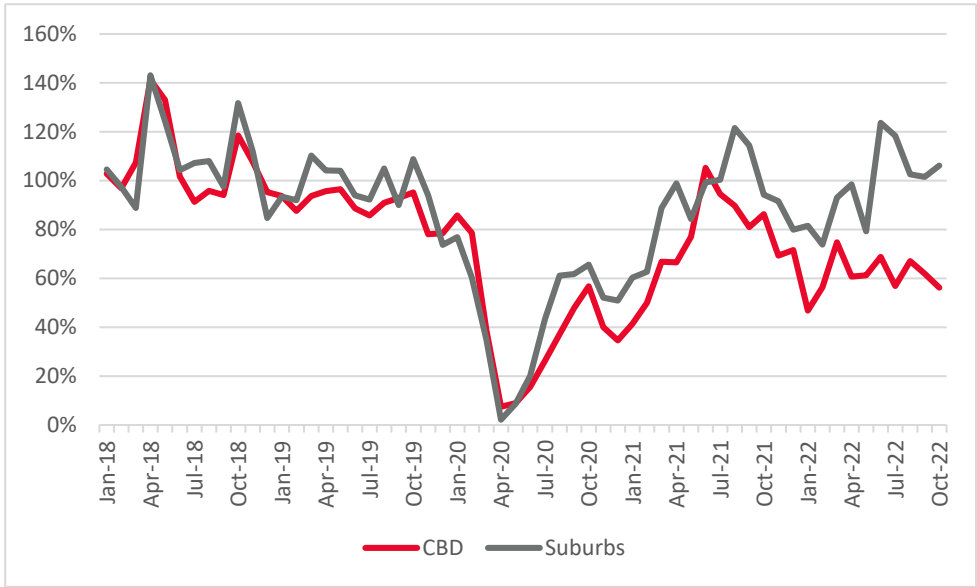
CBD AND SUBURBS HAVE EXPERIENCED
AND INCREASE IN GENERAL OFFICE
ACTIVITY.

GENERAL OFFICE ACTIVITY IN THE CBD
SUBSTANTIALLY LAGS PRE-PANDEMIC
AVERAGES.

GENERAL OFFICE ACTIVITY IN THE
SUBURBS IS ON PAR WITH PRE-
PANDEMIC AVERAGES

GENERAL OFFICE ACTIVITY AGGREGATE OFFICE TRENDS

HYBRID WORKERS: PERCENTAGE OF PRE-PANDEMIC AVERAGE



The graph shows the trends of CBD and Suburban General Office Activity as a percentage of pre-pandemic average attendance. Similar to the aggregate office attendance trends, both submarkets experienced a recovery on par with pre-pandemic averages. However, as of late, the attendance patterns of CBD workers have fallen well below pre-pandemic average. Specifically, General Office Activity attendance in the CBD is 61.0% of the pre-pandemic average.

SUBMARKET	MOST RECENT VALUE	2022 AVERAGE	POST COVID PEAK / DATE
CBD	56.2%	61.0%	105.2%/ JUN 2021
SUBURBS	106.1%	97.8%	123.6%/ JUN 2022



GENERAL OFFICE ACTIVITY IN THE SUBURBS HAS RETURNED TO PRE-PANDEMIC LEVELS.



GENERAL OFFICE ACTIVITY IN THE CBD HAS NOT REACHED PRE-PANDEMIC LEVELS.



THE ROAD TO RECOVERY

MOTIVATIONS OF GENERAL OFFICE ATTENDANCE



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THE IMPACT OF COVID-19 & THE VALUE OF FLEXIBILITY

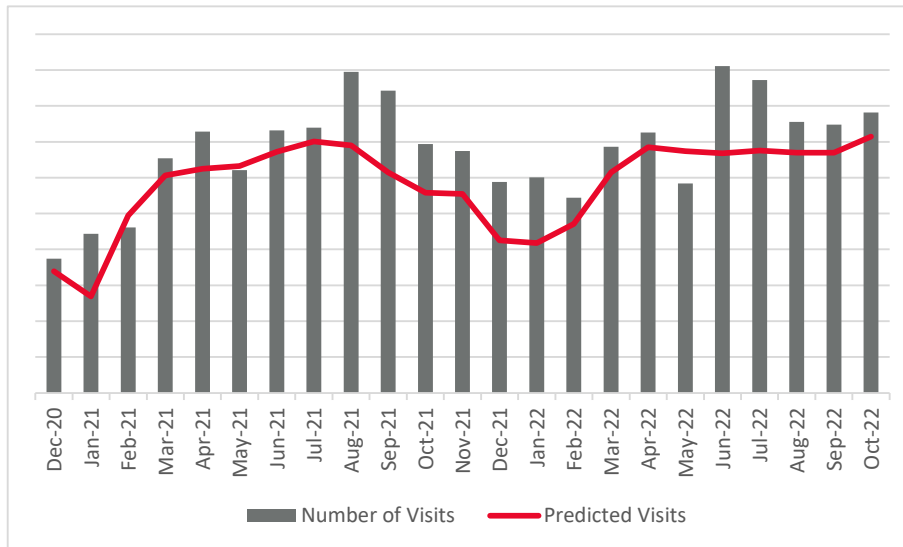
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We now know that there exists a fundamental difference in General Office Activity post pandemic between the Suburbs and the CBD. This was not the case for total office attendance (i.e. not for strict employees). Why is this true? Is the population density in the CBD causing workers, who have a choice, to remain virtual for health and safety reasons?

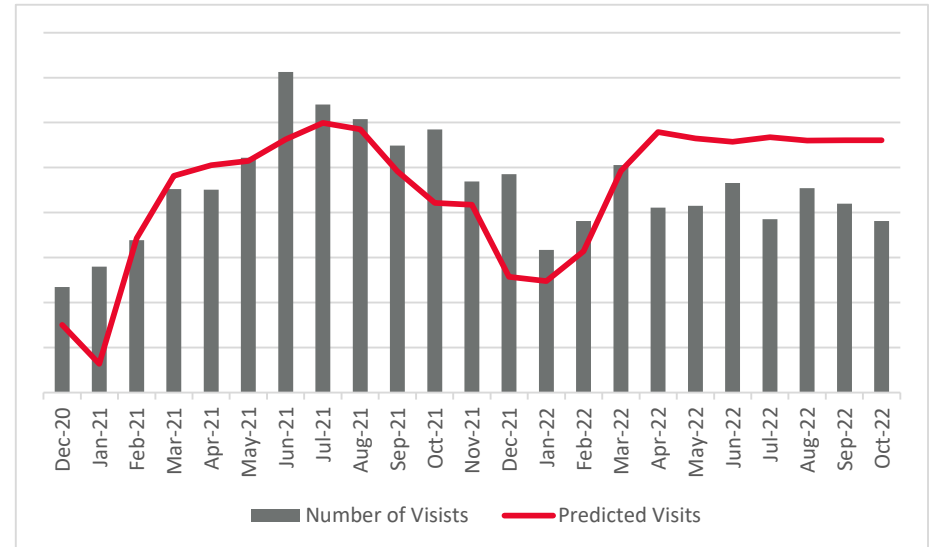
Perhaps COVID-19 no longer plays as substantial of a role in office attendance trends. If so, what is preventing hybrid employees from returning to the office? Is convenience a primary motivator?

THE IMPACT OF COVID-19

SUBURBS COVID RELATIONSHIP



CBD COVID RELATIONSHIP



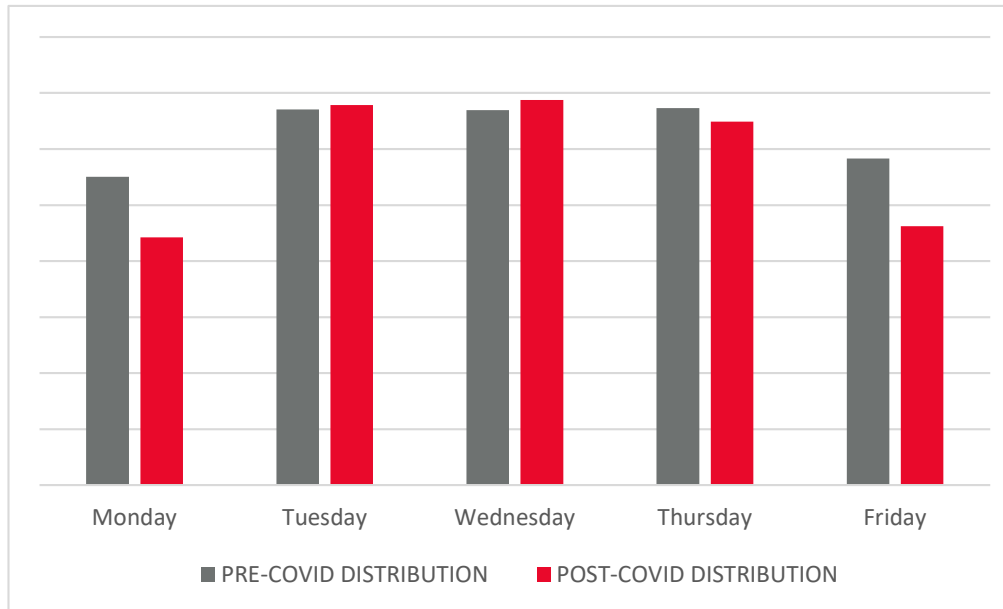
The above graphs show the aggregate General Office Activity attendance in the Suburbs and the CBD. The red line shows what the number of visits should be, given the historical impact COVID-19 has had on office attendance. Starting in April of 2022 there is a significant gap between the predicted visits and actual visits, in the CBD. Moreover, actual office attendance is below the predicted number of visits. As such, it is evident that COVID-19 is not the only factor determining office attendance.

GENERAL OFFICE ACTIVITY IN THE CBD WAS INITIALLY INFLUENCED BY COVID-19, BUT THE RELATIONSHIP HAS WEAKENED.

GENERAL OFFICE ACTIVITY IN THE SUBURBS IS IN LINE WITH EXPECTED LEVELS, GIVEN CURRENT COVID-19 LEVELS.

WEEKDAY DISTRIBUTIONS

GENERAL OFFICE ACTIVITY BY WEEKDAY



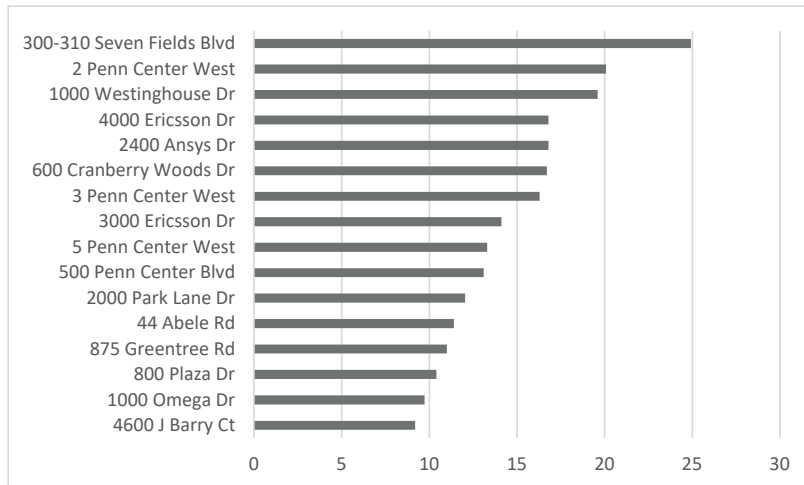
The graph shows General Office Activity trends by weekday. Before the pandemic, attendance by weekday was approximately uniform, albeit slightly less on Monday and Friday. After the pandemic, General Office Activity attendance on Mondays and Fridays decreased disproportionately. Since the virality of COVID-19 is independent of the day of the week, it only reaffirms the theory that COVID-19 is not the only factor motivating office attendance trends. Moreover, since the days disproportionately affected bookend the weekend, it is likely that convenience is a primary motivator. That is, employees may find it more **convenient** to work from home at the beginning and end of the work week.

GENERAL OFFICE ACTIVITY PRE-COVID WAS APPROXIMATELY UNIFORM ACROSS WEEKDAYS.

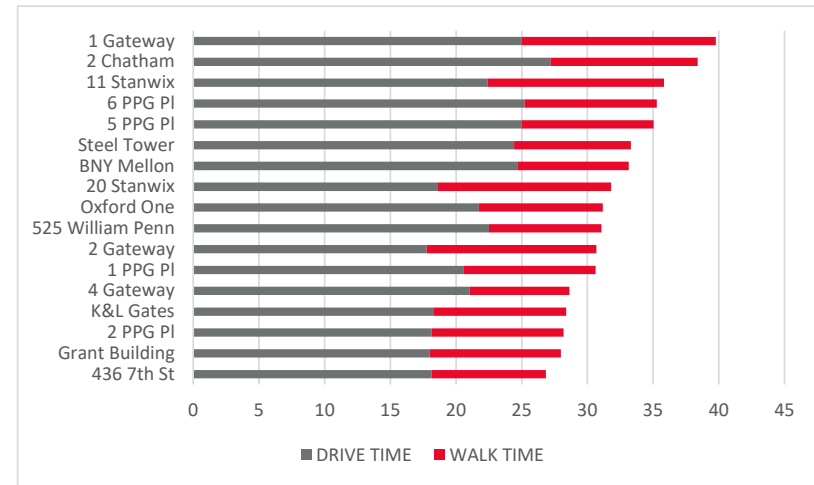
GENERAL OFFICE ACTIVITY POST-COVID DECREASED DISPROPORTIONATELY ON MONDAYS AND FRIDAYS.

A CITY OF COMMUTERS

SUBURBS TO SUBURBS: ONE WAY COMMUTE



SUBURBS TO CBD: ONE WAY COMMUTE



The above graphs detail the average one-way commute time for employees traveling from the Suburbs to a building of interest. The left graph groups employees traveling from a suburban home to a suburban office. The right graph groups employees traveling from a suburban home to a CBD office. The one-way commute for people working in the suburbs is substantially less than that of people working in the CBD. Specifically, the average one-way commute for suburban employees is 12.9 minutes, while it is 31.7 minutes for employees of the CBD. Recall that General Office Activity has had a longer lasting and stronger recovery in the Suburbs than the CBD. Moreover, recall that people in the General Office Activity data subset are likely free to choose whether to physically go into the office. A substantially longer commute time could possibly be an explanation for this difference between Suburban and CBD office attendance. If so, this further supports the claim that hybrid employee motivations are governed by convenience. Now consider the fact that 92.7% of all CBD employees commute. Of these commuters, 66.7% commute from the suburbs. As such, the average one way commute time for 61.8% of CBD workers is over half an hour. This gives context to why the CBD has not experienced the same recovery as the Suburbs.

92.7% OF ALL CBD OFFICE EMPLOYEES COMMUTE, OF THESE COMMUTERS, 66.7% COMMUTE FROM SUBURBS TO THE CBD.

THE AVERAGE ONE-WAY COMMUTE TIME FOR SUBURBS IS 12.9 MINUTES. WHILE THE AVERAGE ONE-WAY COMMUTE TIME FOR THE SUBURBS TO CBD IS 31.7 MINUTES.

THE ROAD TO RECOVERY

RETURN TO OFFICE OUTLOOK

OUTLOOK

At the conclusion of this analysis, we know that:

- People are returning to the office, albeit slowly and in smaller quantities than the pre-pandemic level.
- Overall, there was a post-Labor Day push for RTO. However, it was only realized in the strict employee data subset, implying an outside force is the root cause (e.g. company mandates).
- The General Office Activity data subset did not experience a post-Labor Day push for RTO. Moreover, unlike the Strict Employee data subset, there is a difference in attendance trends between the Suburbs and the CBD.
- COVID-19 is not the only factor restricting in-person work. Rather, convenience is the primary motivator, evidenced by the weekday distribution and average one-way commute time.

Essentially, employees are returning to the office, but not entirely on their own accord. Rather, an exogenous force (e.g. company mandates) are needed to encourage in-person work.



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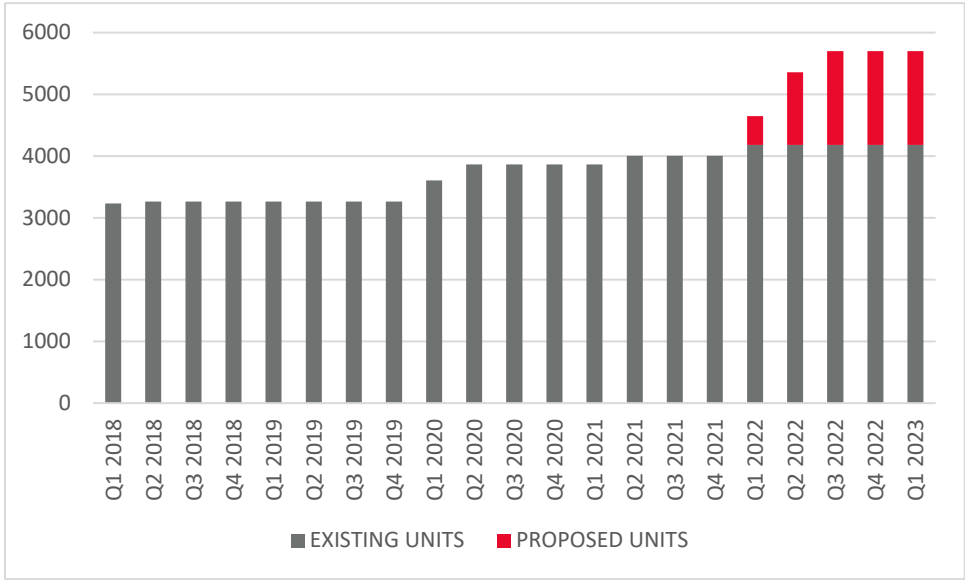
THE FUTURE OF THE OFFICE

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We have now established a concrete, statistical link between employee attendance and the strictness of an employer's RTO policy. That is, when given a choice, employees choose what is most convenient (i.e. working remotely). However, that is not to say that this will always be the case. The primary cause of low office attendance is the convenience virtual work offers. Most notably, it eliminates long commutes. But what if more people lived closer to work? This would also cut down on the commute time, removing one of the largest obstacles facing the RTO movement. In such a case, we could see more workers returning to the office on their own accord.

THE ROLE OF MULTIFAMILY

CBD: MULTIFAMILY INVENTORY



With the upcoming planned multifamily developments in the CBD, the behavior of currently virtual employees could change drastically. In 2022, there were over 1,500 apartment units proposed for construction. More apartments lead to more residents in the CBD. This would drastically cut down the commute time for said people. With a major inconvenience removed, more employees may return to the office on their own accord. To the left is a graph showing the potential change in the CBD’s apartment inventory.

NOTABLE OFFICE CONVERSION PROJECTS

ADDRESS	DEVELOPER	# OF UNITS	STATUS
401 LIBERTY AVE	HERTZ INVESTMENT	300	PROPOSED
305 WOOD ST	CITY CLUB APARTMENTS	215	PROPOSED
707 GULF ST	RUGBY REALTY	215	PROPOSED



IN 2022, 1,518 APARTMENTS WERE PROPOSED IN THE CBD. MORE APARTMENTS LEADS TO MORE RESIDENTS. THIS COULD REDUCE THE CONVENIENCE BARRIER HINDERING OFFICE ATTENDANCE.



THE ROAD TO RECOVERY

RETURN TO OFFICE APPENDIX

THE ROAD TO RECOVERY

THE GLOSSARY

- **CENTRAL BUSINESS DISTRICT (CBD):** Center city Pittsburgh. From “The Point” to I-579.
- **GENERAL OFFICE ACTIVITY:** A person Placer Ai cannot definitively classify as an employee of the building, but given the characteristics of the visit, likely is partaking in business related activity. Likely includes many hybrid work model employees.
- **GREATER DOWNTOWN:** Communities inside Pittsburgh city limits minus the CBD.
- **OFFICE ATTENDANCE:** Strict employees plus general office activity.
- **POST LABOR DAY:** Defined as the weeks following Labor Day 2022.
- **PRE-PANDEMIC:** Defined as Jan 2017 – Feb 2020.
- **RETURN TO OFFICE:** Employees returning from remote work to in-person work at the office.
- **STRICT EMPLOYEE:** A person Placer Ai can definitively classify as an employee.
- **SUBURBS:** Communities outside the Pittsburgh city limits, and inside the Pittsburgh MSA.
- **VISITS:** When a persons phone registers being inside a point of interest (POI).
- **THRESHOLD VISITS:** The minimum number of visits needed to be 99.0% confident that more people have been physically in the office after Labor Day.
- **PREDICTED VISITS:** The Number of expected visits if COVID-19 were the only factor affecting office attendance. Calculated using a linear regression model.

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