

The Fiscal and Economic Impact of Walter E. Washington Convention Center Conference Attendees on the District of Columbia

Current Trends and Prospects for Years 2020 to 2022

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I. Introduction

Business travelers, as a segment of the tourism industry, are an increasingly important component of the national and local economies for four key reasons. First, there is the rising number of trade shows, conferences, business and networking events taking place where business professionals need to be present to meet clients and other business associates in person.¹ Second, hotels often rely on business travel because it tends to be steadier year-round and more predictable than leisure travel as many business events are organized well in advance. Third, many business travelers often visit the same area frequently. And fourthly, many business travelers tend to extend their business trip by one or more days in order to explore and enjoy their business destination.² And because these trends are expected to continue into the foreseeable future amidst the growing national economy, the business travel industry is estimated to grow nationally from \$1.3 trillion in 2016 to \$1.7 trillion in 2021.³

In 2017, the District of Columbia attracted 22.8 million visitors to the city.⁴ Approximately, 41 percent of these visitors came to the city primarily for business and 59 percent came to the city primarily for leisure. Being unable to account for all business travel into the District, this study analyzes the economic and fiscal impacts of conference attendees of the Walter E. Washington Convention Center (WEWCC). More specifically, this study assesses the effect of WEWCC conferences on annual city hotel tax revenue and projects convention center conference attendance and resultant citywide hotel spending for the coming years of 2020 to 2022.

Convention center conference attendees are a small but important subset of business travelers to the District of Columbia because of the essential role they play in the success of the 2.3 million-square-foot publicly financed WEWCC and the adjoining 14-story 1,175 room convention center hotel. In 2017, over 455,000 conference attendees (the highest on record) visited the WEWCC and spent an estimated \$116 million in hotel spending which in turn generated over \$16.8 million in hotel tax revenue (7.8 percent of total citywide hotel tax revenue). Total spending in the city by WEWCC conference attendees could be at least \$464 million according to the U.S. Travel Association.⁵

¹ "How and Why Hotels Should Make Business Travelers Their Priority". <https://www.oaky.com/blog/how-and-why-hotels-should-make-business-travelers-their-priority>

² Research commissioned by Booking.com. <https://ir.bookingholdings.com/static-files/b9f649fa-4df8-4210-a498-db7a1b988f4>

³ Business Travel News <https://www.businesstravelnews.com/Management/Business-Travel-Spend-Through-2021>

⁴ 2017 Visitor Statistics. Destination DC. https://washington-org.s3.amazonaws.com/s3fs-public/2017_washington_dc_visitor_statistics_-_destination_dc.pdf

⁵ These figures exclude air travel. https://www.ustravel.org/system/files/media_root/document/Research_Fact_Sheet_Domestic_Travel.pdf Travelers in 2018 tended to spend 25 percent of their travel budget on lodging. The District of Columbia is ranked the fifth most expensive city to visit for business travelers in 2019. https://www.businesstravelnews.com/uploadedFiles/9_Microsites/Corporate_Travel_Index/Corporate_Travel_Index_2019/US_Diem/2_USPerDiemsRanked.pdf

Compared to years 2005 to 2013, the average yearly conference attendance at the convention center for years 2014 to 2016 was down 6.1 percent even as hotel spending rose by 24 percent. This result stems largely from the growing role of medical conferences at the WEWCC. Whereas medical conferences attendees used to account for 43.1 percent of all annual conference attendees at the convention center, they now account for 50.9 percent of all attendees and are responsible for 68.8 percent of hotel spending by all conference attendees. Given the national and local trends for business travelers and the hospitality industry, the relatively new convention center hotel, and the existing convention center conference bookings for years 2020 to 2022, it is possible that city hotel spending by all conference attendees at the WEWCC can match or even exceed that of 2017 in the coming years.

II. Data

This study uses three types of data. First, hotel sales tax data for each hotel in the city are used to assess the hotel activity on a monthly basis for years 2005 to 2016. Second, WEWCC conference booking data for large conferences for years 2005 to 2022 from Destination DC are used to relate all conference data (dates, number of conference days, number of registered attendees, number of requested hotel rooms) to the monthly hotel tax data.^{6 7} And third, citywide hotel data (citywide average daily hotel room rates (ADRs) and occupancy rates) from Smith Travel Research (STR) are used for years 2005 to 2018. All hotel sales tax data, hotel room rate data and hotel spending estimates are adjusted for inflation and put in terms of 2019 dollars. The primary study period is from 2005 to 2016.

Walter E. Washington Convention Center Conference Data

For years 2005-2016, 322,000 conference attendees on average visited the city annually⁸, contributing an estimated average of \$7.1 million in hotel tax revenue per year. But, the annual average has been trending downward as shown by the red dotted trend line in Figure 1. And while the number of annual conferences reported for the study period has also trended down, as shown by the red dotted trend line in Figure 2, STR reports that the citywide ADR⁹ has been increasing at an average of 2.1 percent annually. For the study period, there has been 261 conferences at the convention center and consequently 4 million hotel room nights in the city respectively. In 2016, there were 19 conferences and approximately 400,000 corresponding hotel room nights. These room nights accounted for a mere 4.6 percent of the city's total room demand for the year (Figure 3) and an estimated \$12.9 million in hotel tax revenue.

⁶ For this study, conferences under analysis are of two types: citywide and miniwide. Citywide conferences are those held at the WEWCC with 2,500 or more hotel rooms booked in the city on peak nights, and miniwide conferences are those held at the WEWCC with 1,350-2,499 rooms hotel rooms booked in the city on peak nights.

⁷ Destination DC is a private, non-profit corporation with a membership of over 1,000 local businesses and organizations that support the city travel and tourism sector. It is the contracting arm of Events DC. The organization is funded by a percentage of DC's hotel occupancy tax, along with membership dues and co-operative marketing fees. Destination DC serves as the lead organization to manage and market Washington, DC as a global convention, tourism and special events destination, with a special emphasis on the arts, cultural and historical communities.

⁸ In terms of annual convention center conference attendees for this time period, there was a high of 389,402 attendees in 2011 and a low of 228,400 in 2009.

⁹ STR, the industry standard for reporting average hotel rates, reports pre-tax room rates. These pre-tax rates were increased by 14.5% to reflect post-tax, nominal rates. Hereafter, ADRs will always represent post-tax levels.

Figure 1. Yearly Convention Center Conference Attendees

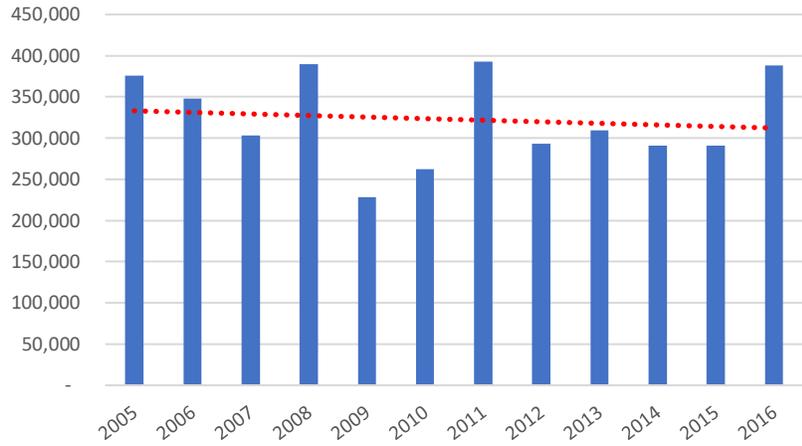


Figure 2. Annual Convention Center Conferences

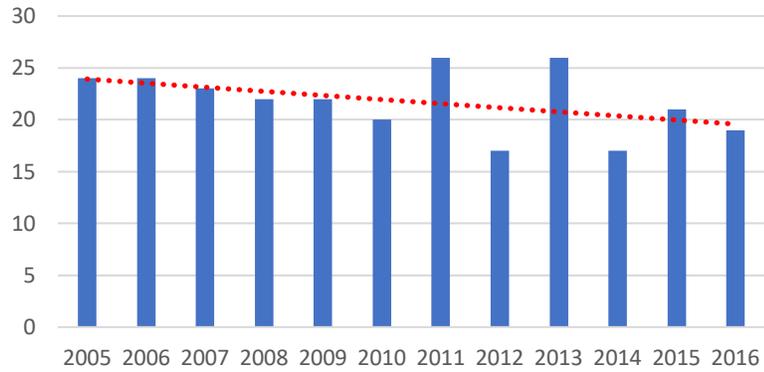
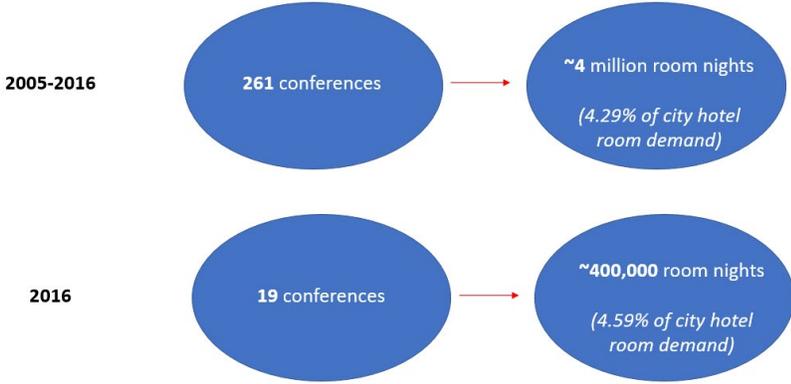


Figure 3. Summary of Conference Data



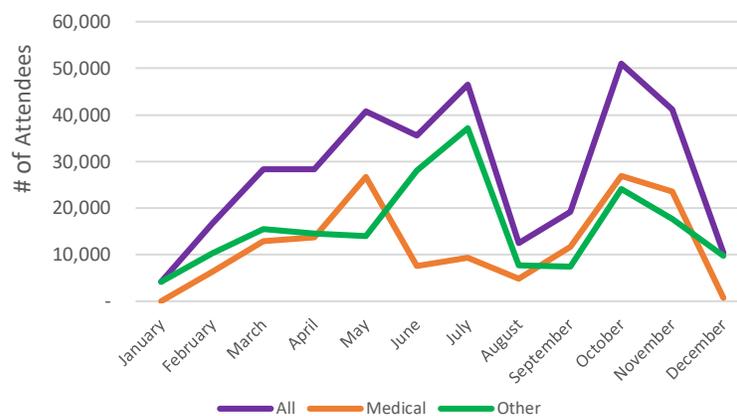
Upon review of the conference data for all years, medical conferences are the only subset of conferences that continues to be substantially large in all years in terms of reserved hotels room nights. They alone account for almost half of all city hotel room nights attributable to convention center attendees. Accordingly, all convention center conferences for all years were categorized into two broad categories: medical conferences and all other conferences.

Monthly Hotel Room Rates & Conference Seasonality

Since the primary objective for this study is to estimate the annual hotel tax revenue for the District of Columbia generated by conference attendees of the WEWCC for the study period, one key variable is the operative hotel room rate for both medical conference hotel rooms and all other conference hotel rooms. The data available for this task is the citywide average monthly hotel rate data collected by a monthly survey and provided by STR. Hotel rooms occupied by WEWCC conference attendees account for less than five percent of the city’s total demand for hotel rooms. However, these rooms are likely, in many cases, to command higher than citywide average room rates (even during peak months) because these conferences require thousands of hotel rooms at very specific dates. And, many of these conferences tend to occur during the city’s peak hotel periods (spring and fall) when hotel rates are highest and city hotel vacancy rates tend to be lowest.

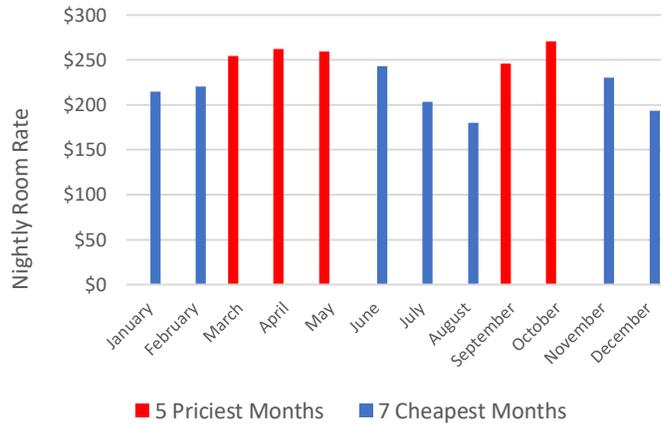
When we aggregate monthly citywide hotel room rate data to an annual level, it is likely that this methodology significantly understates the annual average hotel rate paid by conference attendees because it weights the months when the citywide hotel rates are lowest (December and January) equally with months when the citywide hotel rates are highest (e.g. April, May and October). For example, Octobers tend to account for 15 percent of all conference attendees on average, while Januarys only account for 1 percent (Figure 4). Because, we believe the applicable hotel room rates for this analysis are higher than the citywide average monthly hotel rate provided by STR, we adjust the citywide average monthly hotel rate for the seasonality of conferences at the convention center.

Figure 4. Average Attendance by Month



On average, March, April, May, September, and October were the five priciest months in the city in terms of hotel rates from 2005 to 2016 (Figure 5). STR’s ADRs for these five months was \$258.46, compared to \$212.19 for the rest of the year.¹⁰

Figure 5. Average STR Room Rates by Month (2005-2016)



Of the five months that tend to host the most medical conferences, four of them were among the five priciest months (Table 1). In contrast, of the five months with the most all other conferences, only two of them were within the five priciest months. This illustrates that using citywide monthly average hotel room rates may understate the economic and fiscal impact of convention center conference attendees of which medical conference attendees are a major component.

Table 1
Top Months by Attendance

(months matching up to the 5 priciest months are marked with an *)

Medical

1. **October***
2. **May***
3. November
4. **April***
5. **March***



4 of the 5 priciest months

Other

1. July
2. June
3. **October***
4. November
5. **March***



2 of the 5 priciest months

¹⁰ The Cherry Blossom season (the start of the spring tourist season), spring congressional legislative sessions (and the resultant host of lobbyists, corporate executives and other special interests visiting the city), business conferences and other spring business events tend to attract many visitors to the city in March, April, and May. Similarly, the fall congressional legislative sessions, business conferences and other fall business events help attract many more visitors to the city in September and October. Using the unadjusted attendee statistics, 52.2 percent of all attendees tend to visit the city in March April, May, September and October, which includes 60.1 percent of all medical attendees.

For example, STR’s ADR on an annual basis for all years 2005 to 2016 is \$231.47, and this is calculated by averaging the monthly average citywide hotel rate for all 144 months. For this study, STR’s ADRs are modified by weighting monthly ADRs by all WEWCC conference attendance and then separately by medical conference attendance data and the all other conference data. In sum, weighted ADRs on an annual basis for all years 2005 to 2016 for all conferences attendees is 3.5 percent higher than the STR unweighted ADR, and the weighted ADRs all years but only for all medical conferences attendees is 6.4 percent higher than the STR unweighted ADR (Table 2).

Table 2. STR Room Rates Weighted by Attendance

Time Period	STR ADR	Weighted ADR (All)	Weighted ADR (Medical)	Weighted ADR (Other)
2005-2016	\$ 231.47	\$239.50 (+3.5%)	\$246.27 (+6.4%)	\$234.38 (+1.3%)

III. Methodology

This study implements multivariate linear regression analysis to quantify the contribution of conference attendees to the District’s monthly hotel tax revenue, with the model taking the following form:

$$y_t = \eta_0 + \alpha c_t + \delta_{t \text{ mod } 12} + \gamma z_t + \beta w_t + \varepsilon_t$$

where:

- y_t represents hotel tax revenue during month t
- η_0 is the intercept
- α measures the **average fiscal impact per attendee** and c_t represents the number of attendees during month t
- $\delta_{t \text{ mod } 12}$ is a seasonal adjustment for month t
- γ measures the average fiscal impact per point fluctuation in hotel industry-specific, regional CPI and z_t represents hotel industry-specific, regional CPI for month t
- β measures the average fiscal impact per point fluctuation in U.S. personal income and w_t represents U.S. personal income for month t
- ε_t is the error term for month t

To break down the effect of attendees as a whole into that of medical attendees and other attendees, the model took a modified form of:

$$y_t = \eta_0 + \alpha_1 \theta_t + \alpha_2 \omega_t + \delta_{t \text{ mod } 12} + \gamma z_t + \beta w_t + \varepsilon_t$$

where:

- $\alpha_1 \theta_t + \alpha_2 \omega_t$ replaces αc_t so that
 - α_1 measures the average fiscal impact per **medical** attendee (θ_t)
 - α_2 measures the average fiscal impact per **other** attendee (ω_t)

IV. Results

For the set of regressions analyzing the citywide effects of the adjusted attendee data, the coefficient of the key variable of interest measures the average fiscal impact per attendee. It specifies how many dollars an individual convention center attendee contributes to hotel tax revenue per day. (Estimates for hotel spending by conference attendees was possible using monthly citywide hotel sales tax data, which was only available for the years 2005 through 2016.) As shown in Table 3, an attendee contributed an average of \$21.27 per day to hotel tax revenue for years 2005 to 2016.

Table 3. Regression Results: Citywide

Time Period	Conference Type	Coefficient (SE)	T-value	p-value	R ²
2005-2016	All	21.26821 (7.38212)	2.88	0.0046	0.8927
	Medical	29.60729 (10.55215)	2.81	0.0058	0.8937
	Other	15.36847 (9.10523)	1.69	0.0939	0.8937
2014-2016	All	28.08525 (13.85551)	2.03	0.0555	0.9792
	Medical	37.91729 (15.62359)	2.43	0.0248	0.9808
	Other	7.62846 (20.91064)	0.36	0.7191	0.9808

Table 4 displays the estimated average per person per day hotel expenditure derived from the regression outputs shown in Table 3, as well as the estimated expenditures derived from the weighted STR averages shown in Table 2.¹¹

Table 4. Hotel Expenditure: Citywide

Time Period	Conference Type	Estimated Daily Hotel Expenditure (ADR)	
		Regression	STR Weighted
2005-2016	All	\$167.95	\$239.50
	Medical	\$233.80	\$246.27
2014-2016	All	\$221.78	\$257.33
	Medical	\$299.42	\$270.06

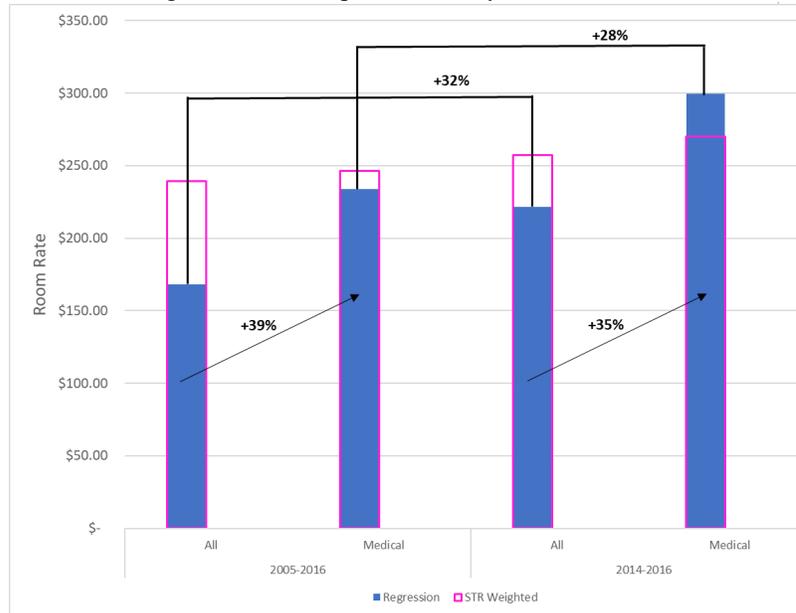
Figure 6 shows the regression estimates for daily hotel expenditures (blue solid bars) from Table 4 and compares them to estimated expenditures derived from the weighted STR averages (pink hollow bars).¹² The regression estimates for medical attendees for 2005 to 2016 spent 39 percent more than did all attendees on a hotel room per day on average (\$233.80 vs. \$167.95), and from 2014 to 2016 they spent 35 percent more (\$299.42 vs. \$221.78). For the 2014 to 2016 time period, all attendees and medical attendees spent 32 percent more (\$221.78 vs. \$167.95) and 28 percent more (\$299.42 vs. \$233.80), respectively, on hotels than they did during the 2005 to

¹¹ Expenditure by “all other” attendees is not displayed, as their regression output is insignificant at the $\alpha = 0.05$ significance level.

¹² For the 2005-2016 period, the model (blue solid bars) explains on average 83 percent of the weighted STR data (pink hollow bars), and the explanatory power increases to an average of 99 percent when only considering the most recent years of 2014-2016. We conclude the regression models have substantial power in explaining the amount of hotel tax revenue (and hotel expenditures) paid by convention center conferences attendees.

2016 period. In essence, the figure shows the tendency for medical attendees to spend 35 percent or more than attendees from all other types of conferences at the convention center, and for attendees to spend more on a hotel room per day in years 2014 to 2016.

Figure 6. Hotel Expenditure: Citywide



Estimated total hotel spending for the 2005 to 2016 time period averaged \$56.2 million annually (\$8.1 million in hotel tax revenue), but \$70.8 million (\$10.3 million in tax revenue) for the 2014 to 2016 time period.¹³ This increase in yearly hotel expenditure in the more recent years was in spite of average annual attendance decreasing to 319,020 in years 2014 to 2016 (Table 5).

Table 5. Attendees and Hotel Expenditures for WEWCC Conferences 2005 to 2016

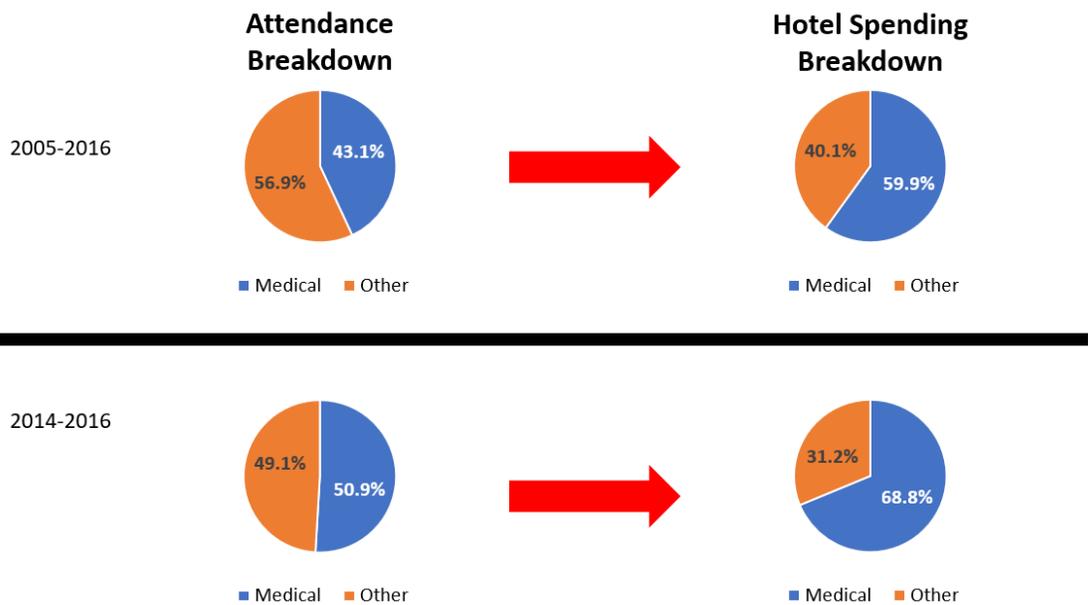
	Average Yearly Attendees			Average Yearly Hotel Expenditures (\$ in millions)		
	Medical	All Other	Total	Medical	All Other	Total
2005-2016	144,089	190,482	334,571	\$33.7	\$22.5	\$56.2
2014-2016	162,473	156,547	319,020	\$48.7	\$22.1	\$70.8
% Difference	+12.8%	-17.8%	-4.6%	+44.5%	-1.8%	+26.0%

For medical conferences at the convention center, attendees spent an annual average of \$48.7 million (\$6.2 million in hotel tax revenue) in years 2014 to 2016. This annual average amount suggests that hotel spending, as well as medical conference attendees, has been trended higher in more recent years.

¹³ To calculate aggregate hotel spending by attendees, expenditure per attendee from the regression was multiplied by the number of attendees on record in the time period. For example, regression-calculated individual attendee expenditure of \$167.95 for 2005-2016 was multiplied by a little over the 4 million attendees on record for the 12 years, to calculate aggregate hotel spending generated by attendees as \$674,295,065.

Overall, medical attendees made up 43 percent of all attendees yet accounted for 60 percent of hotel tax revenue/spending (Figure 7). But in the last three years of the study, medical attendance and medical-specific revenue/spending, as shares, increased to 51 percent and 69 percent, respectively. This indicates that medical attendees are a growing share of total conference attendees at the convention center. And because the estimated average hotel room rate paid by these attendees are on average at least 35 percent more than the estimated average hotel room rate paid by all other conference attendees, the medical attendees account for 69 percent of all hotel expenditures paid by convention conference attendees in the latter years.

Figure 7. Attendance and Hotel Tax Revenue/Spending as Shares: Citywide



For the study period, total attendance at the convention center trended downward in the recent years of the study period on the order of 4.6 percent. But simultaneously, hotel spending by these conference attendees is estimated to be 26 percent higher in recent years compared to earlier years of the study period for two key reasons. First, while total convention center conference attendance is down 4.6 percent, medical conference attendance is up nearly 13 percent. And second, medical conference attendees have been found to pay even higher hotel rates than all other convention center conference attendees.

Looking Ahead

Figure 8 shows convention center conference attendance for time period: 2005 to 2019. The figure also shows the estimated attendance based on confirmed bookings for years 2020-2022. The linear trend lines are reflective of attendance trends for years 2005-2016 only. They are extrapolated out until 2022 as points of reference. Table 6 summarizes 2017 to 2022 attendance relative to the trend lines.

Figure 8. 2017-2022 Annual Attendance Relative to Trend

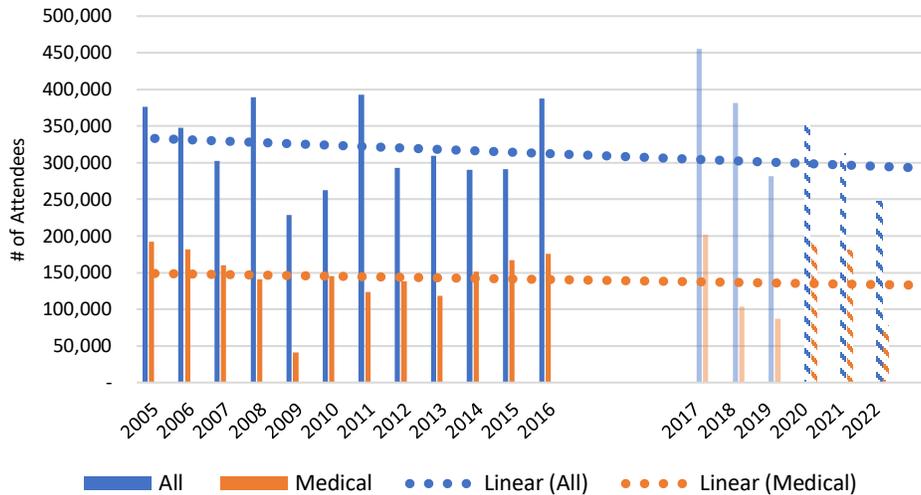


Table 6. 2017-2022 Annual Attendance Relative to Trend

Year	All	Medical
2017	+145k	+62k
2018	+73k	-35k
2019*	-25k	-51k
Total	+193k	-24k
% Difference from Projected Trend for 2017-2019	20.7%	-6.0%
2020*	+9k	+45k
2021*	+145k	+62k
2022*	+73k	-35k
Total	+4k	+45k
% Difference from Projected Trend for 2020-2022	0.3%	10.8%

* Estimated attendance based on confirmed bookings

For 2017 to 2019, overall attendance surpassed the study period trend by 20.7 percent, but medical attendance fell 6 percent below trend. During this time period, the District saw fewer of the attendees who produced the greatest economic impacts for the city. But for years 2020 to 2022, the outlook is positive in terms of attendance and economic and fiscal impact based on confirmed conference bookings. Both total attendee and medical attendee figures are above the 2005 to 2016 trend with medical attendees being significantly so. And while the number of confirmed conference attendees for 2022 may be concerning (Table 7), conference bookings are likely to only increase given that there are more than 24 months to secure additional conference bookings.

Table 7. 2017-2022 Annual Hotel Spending

Year	Annual Attendance	Estimated Average Room Rate ^d	Estimated Hotel Spending
2014-2016 ^a	319,020	\$221.78	\$70,752,256
2017	455,486 ^b	\$254.50	\$115,920,096
2018	381,290 ^b	\$273.34	\$104,221,225
2019	281,458 ^c	\$293.19	\$82,520,548
2020	352,160 ^c	\$314.07	\$110,603,582
2021	311,995 ^c	\$336.44	\$104,968,130
2022	247,727 ^c	\$360.40	\$89,281,983

a- Amounts are annual averages

b- actual

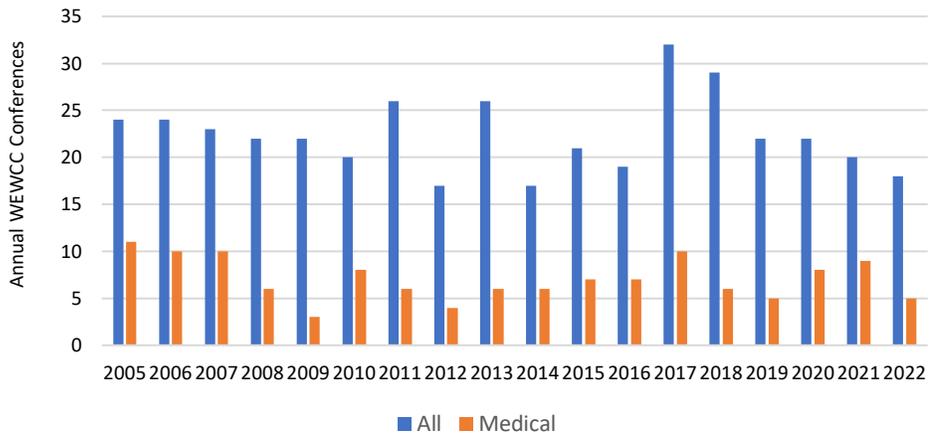
c- projections based on confirmed bookings

d- Predicted rates account for the tax rate increases in 2018 to 14.8% and in 2019 to 14.95%.

To estimate these attendees' impact on the city's hotel spending for years 2017 to 2019 and 2020 to 2022, the coefficients of the primary regression model was used.¹⁴ For years 2005 to 2016, there was an average of 7.0 medical conferences and 14.8 all other conferences per year. However, for years 2017 to 2022, there is an average of 7.2 medical conferences and 16.7 all other conferences per year. Additionally, in years 2005 to 2011 the average conference length (number of conference days per conference) was 3.4 days for all conferences and 3.6 days only for medical conferences. However, for years 2012 to 2016 the average conference length was 3.8 days for all conferences and 4.3 days. The current trend of slightly more conferences, longer conferences (Figure 9) and more attendees at the WEWCC is expected to increase the economic impact to the city of future conferences.

¹⁴ Estimates for hotel spending by conference attendees was possible using monthly citywide hotel sales tax data, which was only available for the years 2005 through 2016. To predict aggregate hotel spending, average individual hotel expenditure for each year from 2017-2022 was calculated and multiplied by attendance on record each of those years. Daily expenditure per attendee was derived by applying a constant growth rate consistent with the model. From the model, daily expenditure per attendee increased 32 percent from 2005-2016 to 2014-2016. Taking 2010 and 2015 as the respective centers of the two time periods, hotel expenditure increased 32 percent over 4.5 years. This equates to 7.12% yearly growth — the rate by which hotel rates were appraised each year.

Figure 9. Annual WEWCC Conferences Years 2005 to 2022



V. Conclusion

This study analyzed the economic and fiscal impacts of conference attendees of the Walter E. Washington Convention Center (WEWCC) for years 2005 to 2022. We consider convention center conference attendees a small but important subset of business travelers to the District of Columbia because of the essential role they play in the success of the 2.3 million-square-foot publicly financed WEWCC and the adjoining 14-story 1,175 room convention center hotel.

Prior to 2017, the average yearly conference attendance at the convention center was trending down even as hotel spending by these fewer attendees was trending up. This result largely stems from the growing role of medical conferences at the WEWCC. Whereas medical conferences attendees used to account for 43.1 percent of all annual conference attendees at the convention center, they now account for 50.9 percent of all attendees and are responsible for 68.8 percent of hotel spending by conference attendees.

In 2017, over 455,000 conference attendees (the highest on record) visited the WEWCC and spent an estimated \$116 million in hotel spending which in turn generated over \$16.8 million in hotel tax revenue (7.8 percent of total citywide hotel tax revenue). Given the national and local trends for business travelers and the hospitality industry, the relatively new convention center hotel, and the existing convention center conference bookings for years 2020 to 2022, it is possible that city hotel spending (and other subsequent spending in the city) by all conference attendees in years 2020 to 2022 may more closely approach or even exceed that of 2017.