



MEMORANDUM

To: Kathy Layendecker

From: David Fields

Date: December 27, 2019

Subject: Castilleja School TDM Program Analysis Memorandum

The purpose of this memo is to analyze data provided by Fehr & Peers to determine the success of the Castilleja School's transportation demand management (TDM) program in reducing auto impacts and achieving compliance with City requirements. The School's conditional use permit set a vehicle trip limit of 511 AM peak hour trips, based upon the estimated number of trips in 2000. The analysis of data includes traffic counts, affiliate mode share, and parking demand.

Traffic Analysis

Figure 1 shows the number of peak hour trips counted at each of the time points from 2000 to 2019. The figure demonstrates that vehicle trips in October 2019 have been reduced by 28% since May 2012, demonstrating the effectiveness of the TDM program in reducing vehicle trips.

In addition, the number of trips during the School's two-hour morning commute period (7:00 am – 9:00 am) effectively matched its lowest mark since counts were first conducted: 396 trips in October 2018 and 397 trips in October 2019, down from 519 trips in April 2014.

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Figure 1 Vehicle Trip Counts without TDM (2000 & 2012) and with TDM (2013 -2019)

Scenario	Trips			% Trip Reduction	AM Trip Rate			Rate (%)	
	In	Out	Total		In	Out	Total	In	Out
2000 ¹ (385 students)	335	176	511	0%	0.87	0.46	1.33	66%	34%
May 2012 (433 students)	285	226	511	0%	0.66	0.52	1.18	56%	44%
Oct. 2013 ² (448 students)	246	211	457	11%	0.55	0.47	1.02	54%	46%
Apr. 2014 (446 students)	255	202	457	11%	0.57	0.45	1.02	56%	44%
Dec. 2014 (444 students)	264	208	472	8%	0.59	0.47	1.06	56%	44%
May 2015 (444 students)	231	197	428	16%	0.52	0.44	0.96	54%	46%
Sept. 2015 (438 students)	222	176	398	22%	0.51	0.40	0.91	56%	44%
Apr. 2016 (438 students)	216	180	396	23%	0.49	0.41	0.90	55%	45%
Sept./Oct. 2016 (438 students)	227	186	413	19%	0.52	0.42	0.94	55%	45%
Apr. 2017 (433 students)	229	196	425	17%	0.53	0.45	0.98	54%	46%
Oct. 2017 (438 students)	223	192	415	19%	0.51	0.44	0.95	54%	46%
Apr. 2018 (432 students)	204	179	383	25%	0.47	0.42	0.89	53%	47%
Oct. 2018 (434 students)	191	160	351	31%	0.44	0.37	0.81	54%	46%
Apr. 2019 (434 students)	213	175	388	24%	0.49	0.40	.089	55%	45%
Oct. 2019 (430 students)	206	162	368	28%	0.48	0.38	0.86	56%	44%

Mode Share

Student morning arrival mode share information for the 7:00 to 9:00 am timeframe was collected from 2012 to 2019. Prior to the implementation of the School's more robust TDM program (including its bus routes and Caltrain shuttle operations), the great majority of students arrived at school by car (86%) with few walking or taking transit. Since the expanded program's inception, single-occupancy vehicle trips have declined from 57% in 2012 to 45% in 2019, a significant decrease. Likewise, driving rates in 2019 have fallen to 64%, with the shuttle use increasing to 16% and walking increasing to 11%.

Since April 2018, there has been a noticeable increase in vehicles driving and parking on campus, but most of the new demand was from increased carpooling (particularly among students, as noted in the parking analysis below). Figure 2 provides detailed data regarding student mode share.

¹ Analysis of 2000 trip counts conducted by Fehr & Peers (October 21, 2013).

² Conducted for one half-hour (7:30 – 8:00 am) only, when the majority of students arrive on campus. Fehr & Peers (February 4, 2015).

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Figure 2 Student Morning Arrival Mode Share³

Mode	Oct. 2019	Apr. 2019	Oct. 2018	Apr. 2018	Oct. 2017	Apr. 2017	Sept./Oct. 2016	Apr. 2016	Sept. 2015	May 2015	Dec. 2014	Apr. 2014	May 2012
Drop Off	53%	57%	52%	61%	58%	57%	55%	52%	55%	62%	58%	59%	74%
<i>Single student</i>	40%	38%	31%	41%	36%	36%	37%	39%	41%	45%	40%	38%	48%
<i>Carpool</i>	13%	19%	21%	20%	22%	21%	19%	13%	14%	17%	19%	21%	26%
Drive and park on campus	11%	8%	9%	6%	6%	6%	8%	8%	10%	3%	7%	8%	12%
<i>Drive alone</i>	5%	5%	5%	4%	3%	3%	6%	6%	5%	2%	6%	4%	9%
<i>Carpool</i>	6%	3%	4%	2%	3%	3%	1%	2%	5%	1%	1%	4%	3%
Drive and park off-campus	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	2%
Walk	11%	9%	9%	9%	7%	8%	8%	19%	10%	13%	18%	15%	4%
Bike	9%	7%	8%	6%	8%	8%	10%	8%	11%	9%	5%	6%	6%
Shuttle/Transit	16%	19%	22%	18%	21%	22%	19%	13%	14%	13%	12%	11%	2%

³ May 2012 data based on electronic surveys of students and parents. All other data provided on site observations conducted by Fehr & Peers (July 7, 2017).

Parking Analysis

The parking analysis conducted by Fehr & Peers details parking demand in both campus lots and on adjacent on-street spaces. As observed, the staff parking lot on Emerson Street and Kellogg Avenue reached 83% occupancy at 2:00 pm. The student (senior) lot on Emerson Street reached full occupancy (96% to 100%) between 9:00 am and 11:00 am while the staff and visitor parking lot on Bryant Street peaked at 84% occupancy at 10:00 am.

Adjacent on-street spaces were analyzed by examining those spaces immediately adjacent to campus and studying additional parking spaces further from campus. The results of the October 2019 counts show that on-street occupancy immediately adjacent to campus was about the same as in April 2019 (182 and 181 vehicles, respectively), and declined by 19 vehicles since the current study area was implemented in May 2015.

Overall, since May 2012, the aggregate parking demand rate (vehicles per student enrolled) in school lots and on-street spaces immediately adjacent to campus has declined by 2% from 0.314 to 0.309. Based on occupancy and mode share rates, the average parking space is being used more efficiently, as carpool rates increase.

Conclusion

The traffic, parking, and travel data collected demonstrate that the TDM program has continued to keep vehicle trips significantly below pre-program levels, and well below the School's vehicle trip limit of 511 AM peak hour trips. The vehicle trip rate appears to have been aided both by the success of the Ride Amigos program utilized by employees and a greater shift from driving alone to carpooling.

In general, these data indicate that the program has improved upon its already successful history with more than a quarter of all vehicle trips eliminated since 2012. The School should be encouraged to further survey affiliates moving forward to help understand and document this remarkable accomplishment.