

BIG DATA AADT EVALUATION

Comparing with collected 2023 AADT in District of Columbia

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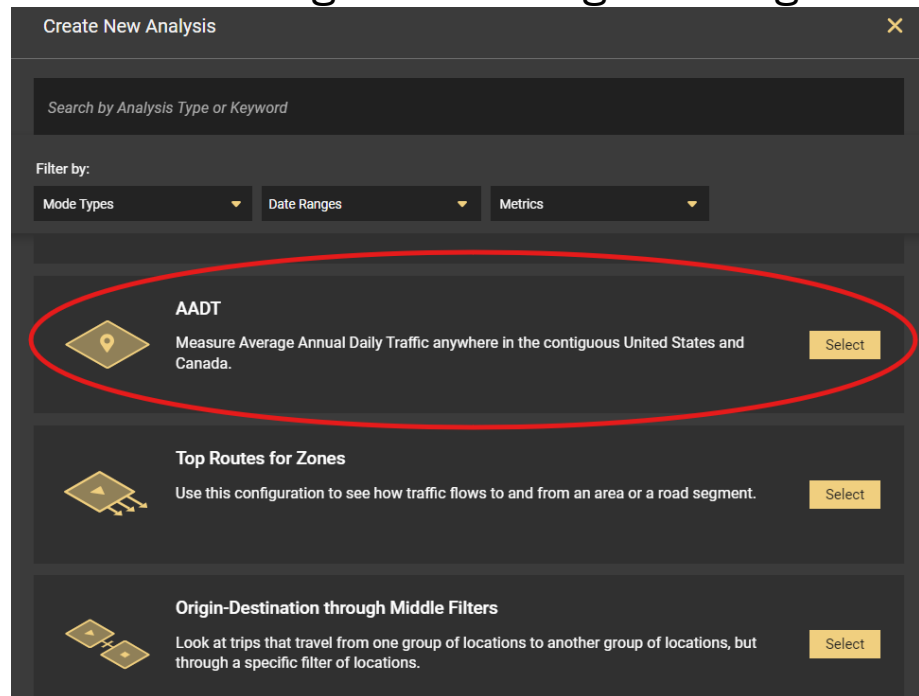
Introduction – Big Data vs Collected Data

- Both StreetLight Data and Replica provide link-level AADT for 2023 and previous years
- AADT data availability and data quality varies from different Big Data products
- COG has access to all the continuous counting stations of District of Columbia
- COG also hires contractor to collect short-term traffic data for District of Columbia.
- Latest 2023 AADT from DC's continuous counting stations and short-term counts are ready to be used to compare with AADT from Big Data.
- The comparison can inform the best use of the Big Data AADT products.



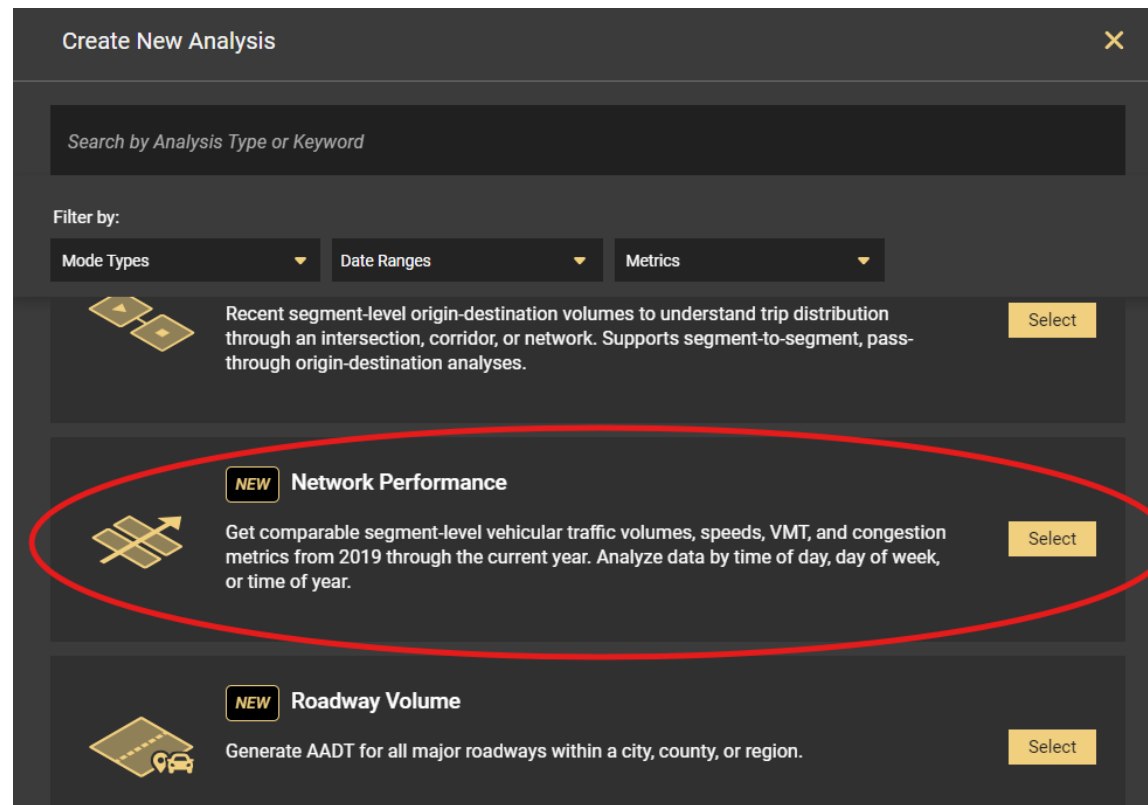
Background – StreetLight AADT

- StreetLight AADT can be derived from the AADT Analysis Module.
- The AADT is available from 2017 to 2023.
- Currently, you cannot compare AADT 2023 with previous years. You can compare annual traffic levels year-over-year from 2019 through 2022 using StreetLight AADT analyses.



Background – StreetLight AADT

- To get comparable 2023 volumes from previous years, run a Network Performance analysis and select all months of the year that you want to compare to AADT 2023.



Background – Replica AADT

- Replica AADT can be derived directly from Purchased Datasets by selecting the Geo Area and Year
- The AADT is available from 2019 to 2023.
- AADT Explorer can be used to visualize AADT along major roads across the country.

Annual Average Daily Traffic (AADT)
\$ AVAILABLE AS PART OF YOUR SUBSCRIPTION

Replica provides AADT for almost all major roads. For FRC 1 and 2 roads, Replica also provides single-truck volume and combination truck volume. [View Documentation](#)

Annual · Latest available year is 2023 Initiate Download ▾

Geo Area: District of Columbia, DC Year: 2023

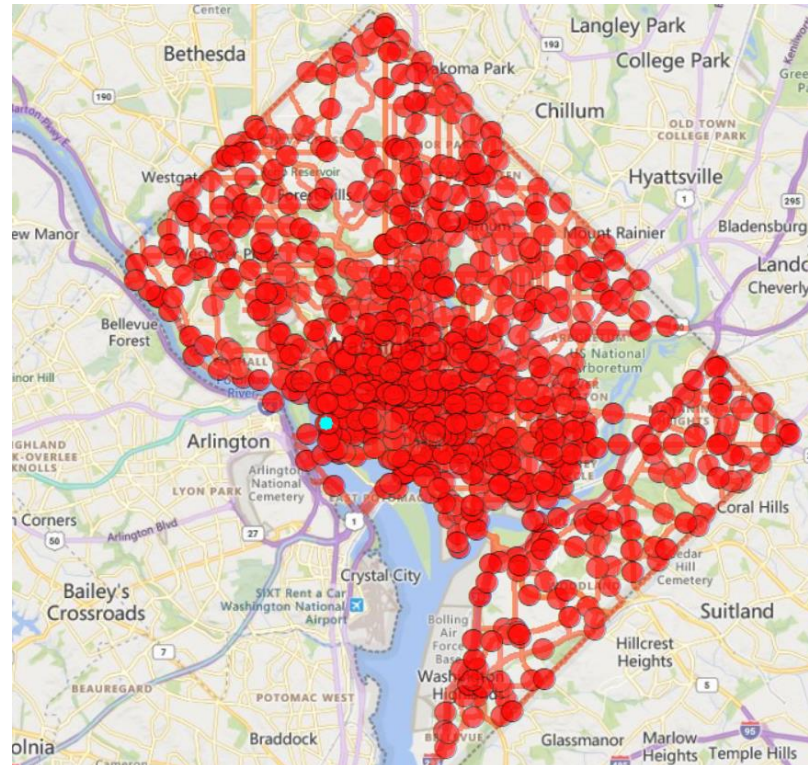
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Id	OsM Id	Comp Stable Edge Id	Bidirectional	Street Name	Highway	Length	Heading	Compass Direction
899962513_0	899962513	null	False	Woodrow Wilson Bridge (...)	motorway	28.43	269	W
312656534_0	312656534	9368209117928381944	False	Arland D. Williams Junior ...	motorway	312.22	37	NE
50477475_1	50477475	15190477310897011821	False	Anacostia Freeway, I 295	motorway	679.43	21	NE



Background – AADT in District of Columbia

- AADT available in all 943 HPMS sections, which covers all the roads except local roads in D.C.
- Continuous counting stations are available in about 30 locations.
- Short-term counts are conducted in 3-year or 6-year cycles for full coverage.
- Latest 2023 AADT available.



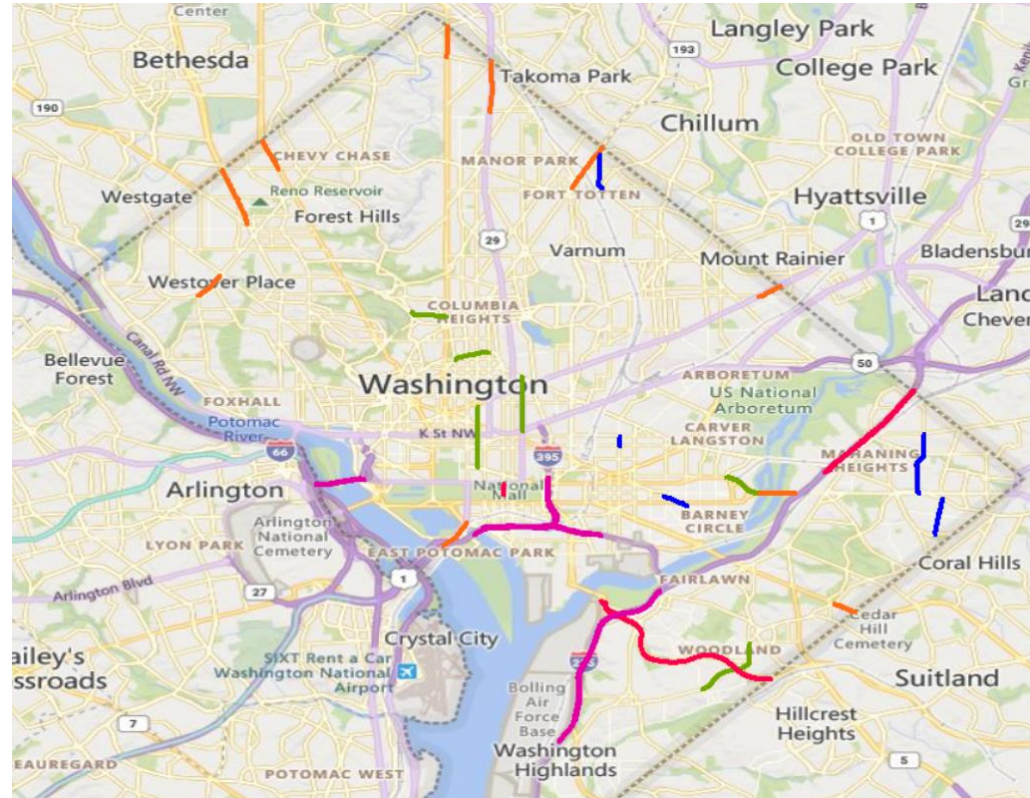
AADT Evaluation Methodology

- For each Functional Classification (FC), select the representative locations with the 2023 collected AADT data available.
- Run AADT analysis on Streetlight platform and compare with the 2023 collected data for each location in every FC.
- Conduct Network Performance Analysis on Streetlight using major Interstate/other Freeway & Expressway in DC, calculate the DOW and seasonal factor and compare with 2023 collected data.
- Download the AADT dataset from Replica platform and compare with the 2023 collected data for each location in every FC.
- Compare the 2022 and 2023 AADT from selected locations in DC using the Replica AADT dataset.



Selected Locations in D.C. with collected AADT in 2023

- A total of 31 locations in different roadway functional classification are selected
 - 5 locations: Principal Arterial - Interstate(FC1)
 - 5 locations: Principal Arterial - Other Freeway and Expressway(FC2)
 - 10 locations: Principal Arterial - Other(FC3)
 - 6 locations: Minor Arterial(FC4)
 - 5 locations: Major Collector(FC5)



2023 StreetLight AADT VS Collected AADT - Higher FC

	HPMS_ID	Location	2023CountType	2023AADT_Observed	2023AADT_Streetlight	Diff	Diff%
Principal Arterial - Interstate(FC1)	1202	INTERSTATE 66	Continuous	76,055	104,066		
	1301	INTERSTATE 295	Continuous	112,688	119,788		
	1402A	INTERSTATE 695	Continuous	126,410	146,130		
	1502	INTERSTATE 395	3/7 Days	120,867	126,671		
	1601	INTERSTATE 395	3/7 Days	147,295	167,357		
	FC1 Summary				583,315	664,012	80,697
Principal Arterial - Other Freeway and Expressway(FC2)	2106	9TH ST NW	3/7 Days	28,703	35,629		
	2208	SUITLAND PKY SE	3/7 Days	54,608	56,764		
	2209	SUITLAND PKY SE	3/7 Days	50,256	53,515		
	2401	KENILWORTH AVE NE	Continuous	119,708	125,036		
	2501	KENILWORTH AVE NE	Continuous	120,422	120,058		
	FC2 Summary				373,697	391,002	17,305
	FC1/FC2 Summary			957,012	1,055,014	98,002	10%

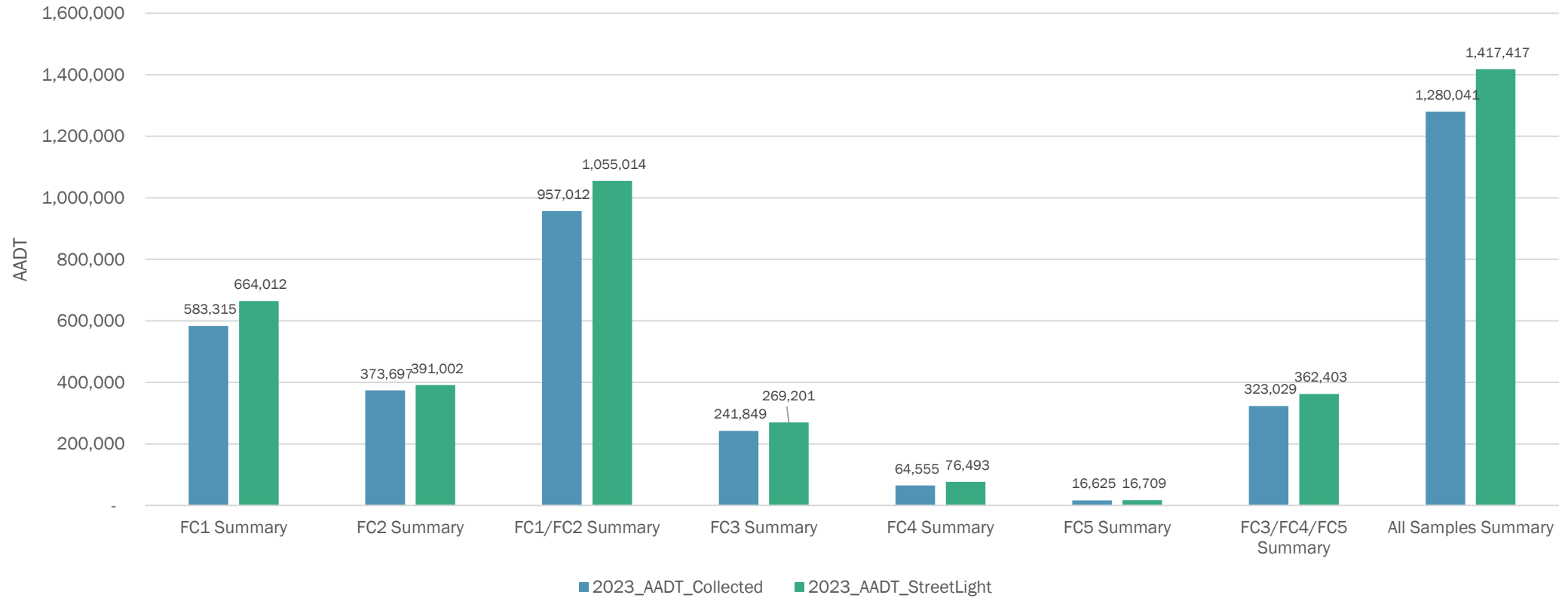


2023 StreetLight AADT VS Collected AADT - Lower FC

	HPMS_ID	Location	2023CountType	2023AADT_Observed	2023AADT_Streetlight	Diff	Diff%
Principal Arterial - Other(FC3)	3603	PENNSYLVANIA AVE SE	Continuous	19,925	21,551		
	3707	WISCONSIN AVE NW	Continuous	18,804	21,002		
	6002	EAST CAPITOL ST	Continuous	38,268	44,305		
	7032	NEW HAMPSHIRE AVE NE	Continuous	24,918	26,320		
	7041	16TH ST NW	Continuous	25,412	33,033		
	7051	GEORGIA AVE NW	Continuous	21,839	21,095		
	7069	RHODE ISLAND AVE NE	Continuous	16,794	17,418		
	7076A	14th Street	Continuous	20,816	24,431		
	7088	CONNECTICUT AVE NW	Continuous	29,414	30,948		
	7171	NEBRASKA AVE NW	Continuous	25,659	29,098		
	FC3 Summary			241,849	269,201	27,352	11%
Minor Arterial(FC4)	3606	13TH ST NW	Continuous	13,826	18,810		
	4502	ALABAMA AVE SE	Continuous	15,971	14,189		
	2205	C ST NE	3/7 Days	9,046	10,529		
	3404	6TH ST NW	3/7 Days	11,281	16,012		
	4308	IRVING ST NW	3/7 Days	7,341	8,103		
	5410	FLORIDA AVE NW	3/7 Days	7,090	8,850		
	FC4 Summary			64,555	76,493	11,938	18%
Major Collector(FC5)	4201	49TH ST NE	3/7 Days	3,262	3,562		
	4319	6TH ST NE	3/7 Days	3,621	3,479		
	5101	51ST ST SE	3/7 Days	2,589	2,620		
	5405	MASSACHUSETTS AVE SE	3/7 Days	2,945	3,155		
	6024	3RD ST NE	3/7 Days	4,208	3,893		
	FC5 Summary			16,625	16,709	84	1%
	FC3/FC4/FC5 Summary			323,029	362,403	39,374	12%
	All Samples Summary			1,280,041	1,417,417	137,376	11%



2023 StreetLight AADT VS Collected AADT Summary



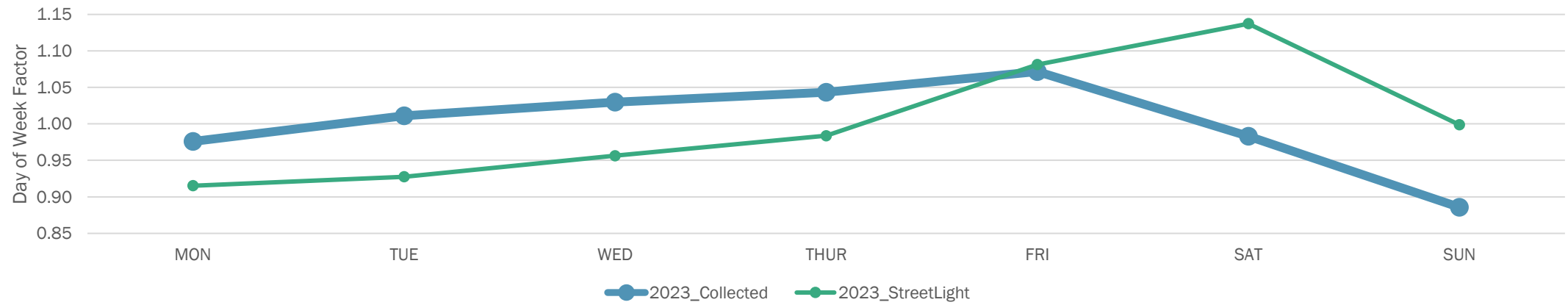
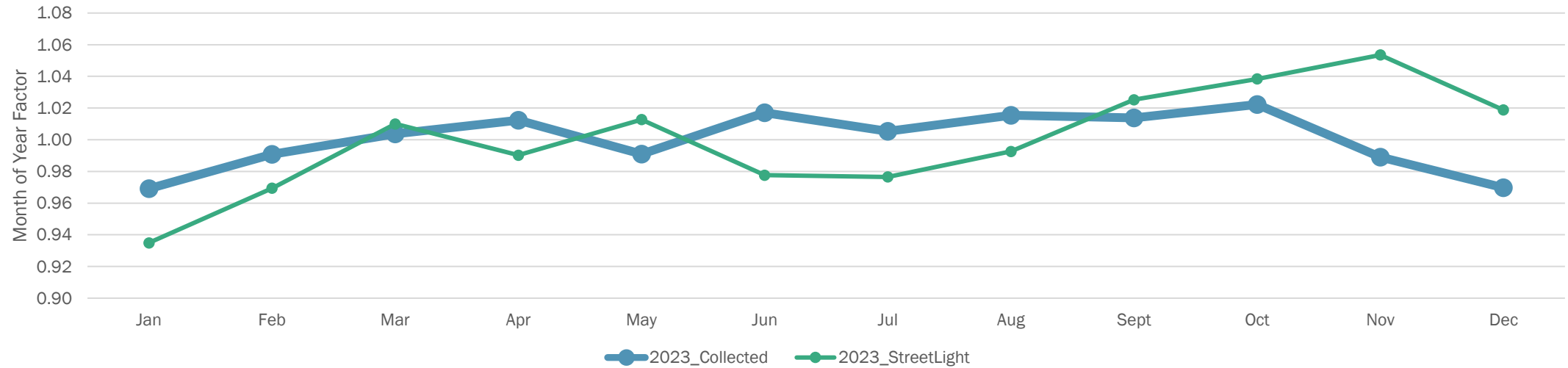
StreetLight Network Performance Test

- Major Interstates in DC are selected: 395 Express, 3rd Street Tunnel, Anacostia Freeway, Arland D. Williams Junior Memorial Bridge, George Mason Memorial Bridge, Southeast Freeway, Southwest Freeway, TR Bridge.
- The output includes the traffic volume by hour, day of week and month of year for each selected location. The data was then summarized to calculate the factor table below.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Day of Week Factor
MON	0.86	0.90	0.93	0.91	0.92	0.90	0.90	0.89	0.95	0.95	0.99	0.88	0.92
TUE	0.83	0.86	0.95	0.92	0.96	0.93	0.90	0.93	0.97	0.92	0.99	0.97	0.93
WED	0.87	0.92	0.96	0.94	0.94	0.94	0.92	0.94	1.00	0.99	1.04	1.00	0.96
THUR	0.92	0.96	0.99	0.97	0.98	0.96	0.96	0.96	1.04	1.03	0.98	1.05	0.98
FRI	1.04	1.06	1.06	1.07	1.12	1.00	1.04	1.09	1.13	1.13	1.11	1.13	1.08
SAT	1.09	1.11	1.16	1.14	1.14	1.10	1.12	1.13	1.09	1.19	1.19	1.18	1.14
SUN	0.94	0.96	1.02	0.98	1.03	1.00	1.00	1.01	1.01	1.06	1.06	0.92	1.00
Month of Year Factor	0.93	0.97	1.01	0.99	1.01	0.98	0.98	0.99	1.03	1.04	1.05	1.02	1.00



StreetLight Network Performance vs Collected Data



Summary of StreetLight AADT

- The 2023 AADT estimates from StreetLight AADT module is reasonable.
- The AADT data coverages of StreetLight AADT is good, however, during the test, some local roads such as Bates Rd NE has no volume.
- Need to pay attention to AADT Link selection; noticed 12th Street Express Way and the parallel 12th St SW share the same AADT.
- The Year-to-year AADT comparison from StreetLight is tricky for 2023. If using AADT module, 2022 vs 2023 AADT change rate is tested to be 30%.
- The StreetLight DOW and Month of year traffic pattern is not very reasonable.



2023 Replica AADT VS Collected AADT - Higher FC

	HPMS_ID	Location	2023CountType	2023AADT_Observed	2023AADT_Replica	Diff	Diff%
Principal Arterial - Interstate(FC1)	1202	INTERSTATE 66	Continuous	76,055	86,346		
	1301	INTERSTATE 295	Continuous	112,688	144,075		
	1402A	INTERSTATE 695	Continuous	126,410	129,455		
	1502	INTERSTATE 395	3/7 Days	120,867	115,342		
	1601	INTERSTATE 395	3/7 Days	147,295	153,284		
	FC1 Summary				583,315	628,502	45,187
Principal Arterial - Other Freeway and Expressway(FC2)	2106	9TH ST NW	3/7 Days	28,703	28,529		
	2208	SUITLAND PKY SE	3/7 Days	54,608	47,702		
	2209	SUITLAND PKY SE	3/7 Days	50,256	45,219		
	2401	KENILWORTH AVE NE	Continuous	119,708	132,807		
	2501	KENILWORTH AVE NE	Continuous	120,422	115,992		
	FC2 Summary				373,697	370,249	(3,448)
	FC1/FC2 Summary			957,012	998,751	41,739	4%

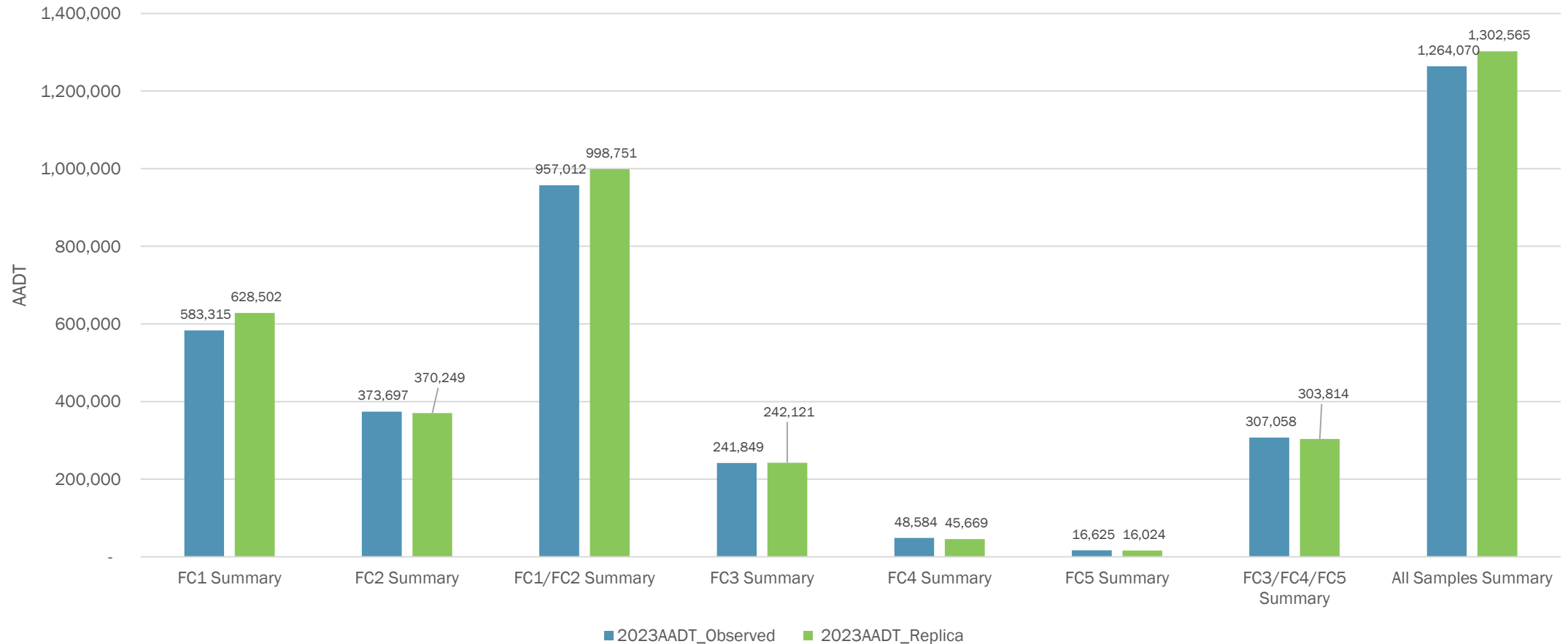


2023 Replica AADT VS Collected AADT - Lower FC

	HPMS_ID	Location	2023CountType	2023AADT_Observed	2023AADT_Replica	Diff	Diff%
Principal Arterial - Other(FC3)	3603	PENNSYLVANIA AVE SE	Continuous	19,925	16,657		
	3707	WISCONSIN AVE NW	Continuous	18,804	18,891		
	6002	EAST CAPITOL ST	Continuous	38,268	37,751		
	7032	NEW HAMPSHIRE AVE NE	Continuous	24,918	20,749		
	7041	16TH ST NW	Continuous	25,412	30,235		
	7051	GEORGIA AVE NW	Continuous	21,839	21,240		
	7069	RHODE ISLAND AVE NE	Continuous	16,794	13,952		
	7076A	14th Street	Continuous	20,816	26,056		
	7088	CONNECTICUT AVE NW	Continuous	29,414	33,635		
	7171	NEBRASKA AVE NW	Continuous	25,659	22,955		
	FC3 Summary			241,849	242,121	272	0%
Minor Arterial(FC4)	3606	13TH ST NW	Continuous	13,826	15,592		
	4502	ALABAMA AVE SE	Continuous	15,971	8,531		
	2205	C ST NE	3/7 Days	9,046	9,890		
	3404	6TH ST NW	3/7 Days	11,281	9,496		
	4308	IRVING ST NW	3/7 Days	7,341	4,809		
	5410	FLORIDA AVE NW	3/7 Days	7,090	5,882		
		FC4 Summary			48,584	45,669	(2,915)
Major Collector(FC5)	4201	49TH ST NE	3/7 Days	3,262	3,610		
	4319	6TH ST NE	3/7 Days	3,621	3,302		
	5101	51ST ST SE	3/7 Days	2,589	2,374		
	5405	MASSACHUSETTS AVE SE	3/7 Days	2,945	2,890		
	6024	3RD ST NE	3/7 Days	4,208	3,848		
	FC5 Summary			16,625	16,024	(601)	-4%
	FC3/FC4/FC5 Summary			307,058	303,814	(3,244)	-1%
	All Samples Summary			1,264,070	1,302,565	38,495	3%



2023 Replica AADT VS Collected AADT Summary



Replica 2022 AADT vs 2023 AADT

- Compared the 2022 and 2023 AADT from Replica using the same 31 DC locations tested above.
- Using DC 2022 and 2023 Continuous Counting Stations Data, the FC1/FC2 growth rate is 2.94%, and FC3/4/5 growth rate is 2.86%, and the overall growth rate is 2.92%.

	2022AADT_Replica	2023AADT_Replica	Growth Rate
Principal Arterial - Interstate(FC1)	637,956	628,502	-1%
Principal Arterial - Other Freeway and Expressway(FC2)	382,595	370,249	-3%
FC1/FC2 Summary	1,020,551	998,751	-2%
Principal Arterial - Other(FC3)	240,762	242,121	1%
Minor Arterial(FC4)	43,734	45,669	4%
Major Collector(FC5)	16,524	16,024	-3%
FC3/FC4/FC5 Summary	301,020	303,814	1%
All Samples Summary	1,321,571	1,302,565	-1%

Summary of Replica AADT

- The 2023 AADT estimates from Replica are very reasonable.
- The AADT data coverages of Replica are also good, covering most major roads.
- AADT estimate from Replica can be off for some individual roads, such as Alabama Ave SE: 2023 AADT dropped to 8,531 from 2022 AADT of 16,412. Can use previous year's data to crosscheck.
- The Year-to-Year traffic comparison (2022 vs 2023) from Replica AADT is reasonable for lower FC but a little off for higher FC. When comparing the total 2022 vs 2023 AADT from Replica for all the links, the change rate was negative, which is questionable.
- Replica doesn't have traffic data for each season of the year and each day of the week.



Next Step

- Run Network Performance analysis to compare StreetLight 2022 AADT and 2023 AADT.
- Evaluate the Single Unit Truck and Combination Unit Truck shares in the traffic data.
- Evaluate the Active Transportation counts.
- Reach out to Replica and StreetLight to share findings and get feedback (Mark mentioned)
- Historical year evaluation (James mentioned COVID period)
- AADT vs Network Link Volume (Feng and Ray mentioned)



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