

A Appendix: Output table of the number of visits per person and month, number of POIs and square meters per thousand residents for each amenity depending on the age-income group

In this section the metrics (number of visits per person and month, number of POIs per 1000 residents and the number of square meters per 1000 residents) obtained from the study carried out in the Boston Metropolitan Area are shown. Table 5 in Appendix A shows a sample including 8 amenities, each one representing a distinct NAICS category.

Table 4: Sample of output table regarding the number of POIs and square meters per amenity category depending on age-income group

age group	income group	category	visits/pm	NPOIs/1000p	Nsqm/1000p
(0.0, 25.0]	(-0.001, 10000.0]	Clothing Store	0.043	0.061	29.651
(0.0, 25.0]	(10000.0, 40000.0]	Clothing Store	0.075	0.108	52.314
(0.0, 25.0]	(40000.0, 75000.0]	Clothing Store	0.09	0.13	56.569
(0.0, 25.0]	(75000.0, 150000.0]	Clothing Store	0.087	0.125	43.691
(0.0, 25.0]	(150000.0, inf]	Clothing Store	0.101	0.144	50.383
(25.0, 45.0]	(-0.001, 10000.0]	Clothing Store	0.092	0.132	106.5
(25.0, 45.0]	(10000.0, 40000.0]	Clothing Store	0.082	0.118	75.093
(25.0, 45.0]	(40000.0, 75000.0]	Clothing Store	0.094	0.135	63.662
(25.0, 45.0]	(75000.0, 150000.0]	Clothing Store	0.109	0.156	73.504
(25.0, 45.0]	(150000.0, inf]	Clothing Store	0.125	0.18	84.637
(45.0, 65.0]	(-0.001, 10000.0]	Clothing Store	0.114	0.163	141.399
(45.0, 65.0]	(10000.0, 40000.0]	Clothing Store	0.09	0.13	82.769
(45.0, 65.0]	(40000.0, 75000.0]	Clothing Store	0.093	0.134	64.786
(45.0, 65.0]	(75000.0, 150000.0]	Clothing Store	0.106	0.152	71.578
(45.0, 65.0]	(150000.0, inf]	Clothing Store	0.131	0.188	88.576
(65.0, inf]	(-0.001, 10000.0]	Clothing Store	0.109	0.156	141.513
(65.0, inf]	(10000.0, 40000.0]	Clothing Store	0.099	0.142	86.816
(65.0, inf]	(40000.0, 75000.0]	Clothing Store	0.119	0.171	83.075
(65.0, inf]	(75000.0, 150000.0]	Clothing Store	0.117	0.168	81.288
(65.0, inf]	(150000.0, inf]	Clothing Store	0.15	0.215	100.941
(0.0, 25.0]	(-0.001, 10000.0]	Elementary School	0.037	0.047	93.859
(0.0, 25.0]	(10000.0, 40000.0]	Elementary School	0.038	0.05	97.283
(0.0, 25.0]	(40000.0, 75000.0]	Elementary School	0.044	0.057	94.291
(0.0, 25.0]	(75000.0, 150000.0]	Elementary School	0.027	0.035	45.507
(0.0, 25.0]	(150000.0, inf]	Elementary School	0.041	0.053	30.128
(25.0, 45.0]	(-0.001, 10000.0]	Elementary School	0.059	0.077	152.372
(25.0, 45.0]	(10000.0, 40000.0]	Elementary School	0.048	0.062	103.579
(25.0, 45.0]	(40000.0, 75000.0]	Elementary School	0.047	0.06	125.641
(25.0, 45.0]	(75000.0, 150000.0]	Elementary School	0.038	0.049	81.845
(25.0, 45.0]	(150000.0, inf]	Elementary School	0.034	0.044	73.377
(45.0, 65.0]	(-0.001, 10000.0]	Elementary School	0.077	0.1	198.186
(45.0, 65.0]	(10000.0, 40000.0]	Elementary School	0.054	0.07	157.152
(45.0, 65.0]	(40000.0, 75000.0]	Elementary School	0.055	0.071	140.657
(45.0, 65.0]	(75000.0, 150000.0]	Elementary School	0.04	0.052	102.659
(45.0, 65.0]	(150000.0, inf]	Elementary School	0.043	0.055	123.075
(65.0, inf]	(-0.001, 10000.0]	Elementary School	0.07	0.091	180.699
(65.0, inf]	(10000.0, 40000.0]	Elementary School	0.071	0.092	245.917
(65.0, inf]	(40000.0, 75000.0]	Elementary School	0.068	0.088	173.663
(65.0, inf]	(75000.0, 150000.0]	Elementary School	0.049	0.064	88.776
(65.0, inf]	(150000.0, inf]	Elementary School	0.058	0.076	201.966
(0.0, 25.0]	(-0.001, 10000.0]	Full-Service Restaurants	0.314	0.422	68.017
(0.0, 25.0]	(10000.0, 40000.0]	Full-Service Restaurants	0.513	0.691	105.721
(0.0, 25.0]	(40000.0, 75000.0]	Full-Service Restaurants	0.574	0.772	115.098
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age group	income group	category	visits/pm	NPOIs/1000p	Nsqm/1000p
(0.0, 25.0]	(75000.0, 150000.0]	Full-Service Restaurants	0.568	0.764	123.829
(0.0, 25.0]	(150000.0, inf]	Full-Service Restaurants	0.576	0.776	124.474
(25.0, 45.0]	(-0.001, 10000.0]	Full-Service Restaurants	0.644	0.867	136.938
(25.0, 45.0]	(10000.0, 40000.0]	Full-Service Restaurants	0.572	0.77	117.032
(25.0, 45.0]	(40000.0, 75000.0]	Full-Service Restaurants	0.59	0.794	118.376
(25.0, 45.0]	(75000.0, 150000.0]	Full-Service Restaurants	0.628	0.846	126.015
(25.0, 45.0]	(150000.0, inf]	Full-Service Restaurants	0.672	0.905	134.789
(45.0, 65.0]	(-0.001, 10000.0]	Full-Service Restaurants	0.705	0.948	145.102
(45.0, 65.0]	(10000.0, 40000.0]	Full-Service Restaurants	0.62	0.835	124.351
(45.0, 65.0]	(40000.0, 75000.0]	Full-Service Restaurants	0.641	0.863	128.525
(45.0, 65.0]	(75000.0, 150000.0]	Full-Service Restaurants	0.697	0.938	142.612
(45.0, 65.0]	(150000.0, inf]	Full-Service Restaurants	0.693	0.932	141.699
(65.0, inf]	(-0.001, 10000.0]	Full-Service Restaurants	0.701	0.944	135.869
(65.0, inf]	(10000.0, 40000.0]	Full-Service Restaurants	0.691	0.93	141.333
(65.0, inf]	(40000.0, 75000.0]	Full-Service Restaurants	0.781	1.051	168.203
(65.0, inf]	(75000.0, 150000.0]	Full-Service Restaurants	0.77	1.036	176.106
(65.0, inf]	(150000.0, inf]	Full-Service Restaurants	0.837	1.127	171.299
(0.0, 25.0]	(-0.001, 10000.0]	Grocery or Supermarket	0.06	0.048	24.36
(0.0, 25.0]	(10000.0, 40000.0]	Grocery or Supermarket	0.121	0.098	46.358
(0.0, 25.0]	(40000.0, 75000.0]	Grocery or Supermarket	0.11	0.089	22.269
(0.0, 25.0]	(75000.0, 150000.0]	Grocery or Supermarket	0.102	0.083	24.603
(0.0, 25.0]	(150000.0, inf]	Grocery or Supermarket	0.107	0.087	30.16
(25.0, 45.0]	(-0.001, 10000.0]	Grocery or Supermarket	0.142	0.115	60.045
(25.0, 45.0]	(10000.0, 40000.0]	Grocery or Supermarket	0.137	0.111	29.715
(25.0, 45.0]	(40000.0, 75000.0]	Grocery or Supermarket	0.12	0.097	28.954
(25.0, 45.0]	(75000.0, 150000.0]	Grocery or Supermarket	0.116	0.094	25.325
(25.0, 45.0]	(150000.0, inf]	Grocery or Supermarket	0.106	0.086	23.042
(45.0, 65.0]	(-0.001, 10000.0]	Grocery or Supermarket	0.173	0.14	73.29
(45.0, 65.0]	(10000.0, 40000.0]	Grocery or Supermarket	0.136	0.111	55.869
(45.0, 65.0]	(40000.0, 75000.0]	Grocery or Supermarket	0.133	0.108	37.642
(45.0, 65.0]	(75000.0, 150000.0]	Grocery or Supermarket	0.14	0.114	57.443
(45.0, 65.0]	(150000.0, inf]	Grocery or Supermarket	0.125	0.101	27.113
(65.0, inf]	(-0.001, 10000.0]	Grocery or Supermarket	0.138	0.112	58.303
(65.0, inf]	(10000.0, 40000.0]	Grocery or Supermarket	0.134	0.108	56.623
(65.0, inf]	(40000.0, 75000.0]	Grocery or Supermarket	0.164	0.133	69.471
(65.0, inf]	(75000.0, 150000.0]	Grocery or Supermarket	0.135	0.109	51.488
(65.0, inf]	(150000.0, inf]	Grocery or Supermarket	0.134	0.109	26.494
(0.0, 25.0]	(-0.001, 10000.0]	Museum	0.045	0.073	156.016
(0.0, 25.0]	(10000.0, 40000.0]	Museum	0.049	0.08	170.487
(0.0, 25.0]	(40000.0, 75000.0]	Museum	0.045	0.074	39.736
(0.0, 25.0]	(75000.0, 150000.0]	Museum	0.041	0.067	36.009
(0.0, 25.0]	(150000.0, inf]	Museum	0.073	0.12	256.241
(25.0, 45.0]	(-0.001, 10000.0]	Museum	0.055	0.091	111.944
(25.0, 45.0]	(10000.0, 40000.0]	Museum	0.039	0.063	37.977
(25.0, 45.0]	(40000.0, 75000.0]	Museum	0.046	0.075	92.647
(25.0, 45.0]	(75000.0, 150000.0]	Museum	0.052	0.085	105.12
(25.0, 45.0]	(150000.0, inf]	Museum	0.054	0.088	108.672
(45.0, 65.0]	(-0.001, 10000.0]	Museum	0.049	0.079	47.582
(45.0, 65.0]	(10000.0, 40000.0]	Museum	0.041	0.067	40.218
(45.0, 65.0]	(40000.0, 75000.0]	Museum	0.045	0.074	44.271
(45.0, 65.0]	(75000.0, 150000.0]	Museum	0.051	0.083	102.231
(45.0, 65.0]	(150000.0, inf]	Museum	0.054	0.089	47.554
(65.0, inf]	(-0.001, 10000.0]	Museum	0.044	0.071	42.677
(65.0, inf]	(10000.0, 40000.0]	Museum	0.052	0.085	50.966
(65.0, inf]	(40000.0, 75000.0]	Museum	0.055	0.09	52.314
(65.0, inf]	(75000.0, 150000.0]	Museum	0.061	0.1	50.407
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age group	income group	category	visits/pm	NPOIs/1000p	Nsqm/1000p
(65.0, inf]	(150000.0, inf]	Museum	0.073	0.119	58.665
(0.0, 25.0]	(-0.001, 10000.0]	Offices of Physicians	0	0.001	653.323
(0.0, 25.0]	(10000.0, 40000.0]	Offices of Physicians	0.001	0.002	653.323
(0.0, 25.0]	(40000.0, 75000.0]	Offices of Physicians	0	0.001	653.323
(0.0, 25.0]	(75000.0, 150000.0]	Offices of Physicians	0	0	653.323
(0.0, 25.0]	(150000.0, inf]	Offices of Physicians	0	0	653.323
(25.0, 45.0]	(-0.001, 10000.0]	Offices of Physicians	0.001	0.003	653.323
(25.0, 45.0]	(10000.0, 40000.0]	Offices of Physicians	0.001	0.003	653.323
(25.0, 45.0]	(40000.0, 75000.0]	Offices of Physicians	0	0.001	653.323
(25.0, 45.0]	(75000.0, 150000.0]	Offices of Physicians	0	0.002	653.323
(25.0, 45.0]	(150000.0, inf]	Offices of Physicians	0	0	653.323
(45.0, 65.0]	(-0.001, 10000.0]	Offices of Physicians	0.001	0.005	653.323
(45.0, 65.0]	(10000.0, 40000.0]	Offices of Physicians	0	0.001	653.323
(45.0, 65.0]	(40000.0, 75000.0]	Offices of Physicians	0	0.002	653.323
(45.0, 65.0]	(75000.0, 150000.0]	Offices of Physicians	0	0.002	653.323
(45.0, 65.0]	(150000.0, inf]	Offices of Physicians	0.001	0.002	653.323
(65.0, inf]	(-0.001, 10000.0]	Offices of Physicians	0.001	0.006	653.323
(65.0, inf]	(10000.0, 40000.0]	Offices of Physicians	0.002	0.007	653.323
(65.0, inf]	(40000.0, 75000.0]	Offices of Physicians	0	0.001	653.323
(65.0, inf]	(75000.0, 150000.0]	Offices of Physicians	0	0.002	653.323
(65.0, inf]	(150000.0, inf]	Offices of Physicians	0	0	653.323
(0.0, 25.0]	(-0.001, 10000.0]	Professional Services	0.006	0.316	13577.13
(0.0, 25.0]	(10000.0, 40000.0]	Professional Services	0.007	0.411	17651.533
(0.0, 25.0]	(40000.0, 75000.0]	Professional Services	0.008	0.469	17921.256
(0.0, 25.0]	(75000.0, 150000.0]	Professional Services	0.008	0.448	19261.275
(0.0, 25.0]	(150000.0, inf]	Professional Services	0.006	0.337	7507.977
(25.0, 45.0]	(-0.001, 10000.0]	Professional Services	0.008	0.425	534.643
(25.0, 45.0]	(10000.0, 40000.0]	Professional Services	0.008	0.459	2724.421
(25.0, 45.0]	(40000.0, 75000.0]	Professional Services	0.009	0.516	3061.517
(25.0, 45.0]	(75000.0, 150000.0]	Professional Services	0.01	0.537	16589.945
(25.0, 45.0]	(150000.0, inf]	Professional Services	0.01	0.578	17857.457
(45.0, 65.0]	(-0.001, 10000.0]	Professional Services	0.012	0.642	1696.949
(45.0, 65.0]	(10000.0, 40000.0]	Professional Services	0.009	0.515	19690.493
(45.0, 65.0]	(40000.0, 75000.0]	Professional Services	0.012	0.637	801.192
(45.0, 65.0]	(75000.0, 150000.0]	Professional Services	0.012	0.682	21082.975
(45.0, 65.0]	(150000.0, inf]	Professional Services	0.009	0.497	2949.462
(65.0, inf]	(-0.001, 10000.0]	Professional Services	0.009	0.471	592.943
(65.0, inf]	(10000.0, 40000.0]	Professional Services	0.011	0.608	18778.442
(65.0, inf]	(40000.0, 75000.0]	Professional Services	0.009	0.512	644.64
(65.0, inf]	(75000.0, 150000.0]	Professional Services	0.01	0.567	17521.785
(65.0, inf]	(150000.0, inf]	Professional Services	0.011	0.618	3666.761
(0.0, 25.0]	(-0.001, 10000.0]	Public Admin	0	0.029	447
(0.0, 25.0]	(10000.0, 40000.0]	Public Admin	0	0	447
(0.0, 25.0]	(40000.0, 75000.0]	Public Admin	0	0.047	447
(0.0, 25.0]	(75000.0, 150000.0]	Public Admin	0	0	447
(0.0, 25.0]	(150000.0, inf]	Public Admin	0	0	447
(25.0, 45.0]	(-0.001, 10000.0]	Public Admin	0	0.023	447
(25.0, 45.0]	(10000.0, 40000.0]	Public Admin	0	0.045	447
(25.0, 45.0]	(40000.0, 75000.0]	Public Admin	0.001	0.09	447
(25.0, 45.0]	(75000.0, 150000.0]	Public Admin	0.001	0.111	447
(25.0, 45.0]	(150000.0, inf]	Public Admin	0.002	0.177	447
(45.0, 65.0]	(-0.001, 10000.0]	Public Admin	0.001	0.069	447
(45.0, 65.0]	(10000.0, 40000.0]	Public Admin	0.001	0.091	447
(45.0, 65.0]	(40000.0, 75000.0]	Public Admin	0	0.011	447
(45.0, 65.0]	(75000.0, 150000.0]	Public Admin	0	0.024	447
(45.0, 65.0]	(150000.0, inf]	Public Admin	0.001	0.102	447

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age group	income group	category	visits/pm	NPOIs/1000p	Nsqm/1000p
(65.0, inf]	(-0.001, 10000.0]	Public Admin	0	0	447
(65.0, inf]	(10000.0, 40000.0]	Public Admin	0.001	0.058	447
(65.0, inf]	(40000.0, 75000.0]	Public Admin	0	0	447
(65.0, inf]	(75000.0, 150000.0]	Public Admin	0	0	447
(65.0, inf]	(150000.0, inf]	Public Admin	0	0.039	447

B Appendix: Results for the frequency, walking boundary, and distance analysis

This appendix collects the results obtained in the Boston Urban Area following the methodology described in this paper.

Table 5: Frequency of use, walking boundary and distance obtained for each amenity.

Sub Amenity	Frequency	Walking boundary (miles)	Distance (miles)
Full-Service Restaurants	2.388	0.229	0.229
Snack and Nonalcoholic Beverage Bars	1.215	0.26	0.263
Limited-Service Restaurants	1.065	0.267	0.272
Grocery or Supermarket	0.853	0.45	0.454
Home Goods Store	0.609	0.488	0.491
Hotel and Lodging	0.565	0.275	0.287
Zoos and Nature Parks	0.517	0.289	0.303
Gym	0.501	0.242	0.26
Elementary School	0.5	0.368	0.383
Drinking Places	0.464	0.251	0.273
Universities	0.448	0.418	0.433
Clothing Store	0.367	0.444	0.458
Real Estate	0.339	0.36	0.383
Hospitals	0.332	0.287	0.318
Convenience Corner Store	0.299	0.495	0.505
Liquor Store	0.284	0.464	0.479
Car Dealer	0.279	0.468	0.484
Pharmacy	0.268	0.414	0.44
Recreation Industries	0.218	0.248	0.298
Florist	0.216	0.494	0.508
Religious Centers	0.216	0.32	0.368
Fuel Station	0.212	0.439	0.468
Specialty Food Retailers	0.207	0.477	0.498
Museum	0.206	0.316	0.372
Book Store	0.196	0.494	0.512
Department Store	0.176	0.438	0.472
Nursing and Residential Care	0.169	0.278	0.348
Optical Goods Retail	0.118	0.396	0.444
Offices of Dentists	0.115	0.221	0.305
Hobby retailers	0.106	0.481	0.507
Car Repair	0.101	0.259	0.344
Used Merchandise Retailers	0.1	0.351	0.419
Pet Store	0.099	0.457	0.494
Gift and Souvenir Retailers	0.093	0.378	0.442
Manufacturing	0.092	0.106	0.213
Shoe Store	0.091	0.485	0.515
Jewelry Stores	0.079	0.445	0.491
Offices of Physicians (not mental health)	0.073	0.237	0.35
Art Gallery	0.065	0.563	0.559
Personal Grooming	0.064	0.277	0.391
Parking	0.058	0.238	0.366
Spectator Sports	0.053	0.222	0.357
Media	0.053	0.346	0.445
Finance	0.049	0.273	0.401
Warehouse	0.048	0.338	0.445
Special Food Services	0.038	0.164	0.327
Cosmetics Retail	0.038	0.464	0.515
Professional services	0.037	0.186	0.355
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Sub Amenity	Frequency	Walking boundary (miles)	Distance (miles)
Laundry	0.036	0.281	0.424
Golf Courses	0.033	0.208	0.38
Fire Station	0.032	0.314	0.449
Library	0.03	0.176	0.377
Sports and Recreation Instruction	0.028	0.246	0.426
Car Rental	0.027	0.509	0.541
Wholesale Trade	0.023	0.319	0.473
Personal Wellness	0.019	0.32	0.48
Junior Colleges	0.018	0.363	0.499
Utilities	0.014	0.062	0.327
Insurance Agency	0.013	0.213	0.446
Personal Healthcare Retail	0.013	0.508	0.545
Post Office	0.01	0.243	0.469
Performing Arts	0.009	0.244	0.474
Death Care Services	0.009	0.178	0.452
Amusement Park	0.008	0.23	0.479
Waste Management and Remediation Services	0.008	0.2	0.473
Police Station	0.006	0.216	0.485
Bowling	0.005	0.356	0.524
Construction	0.004	0.128	0.466
Public Admin	0.002	0.334	0.529
Veterinary Services	0.002	0.091	0.477
Offices of Physicians	0.002	0.205	0.517
Storage	0.001	0.189	0.521
Moving Company	0.001	0.189	0.527
Marinas	0.001	0.205	0.536
Administrative and Support Services	0.001	0.147	0.538