An Analysis of the Rosslyn-Ballston Metro Corridor Report FAC/FCA-33

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July 28, 2010

Introduction: The Rosslyn-Ballston Metro Corridor is considered a great success in community planning.[1] The purpose of this report is to present the Maynard-model parameters for Rosslyn-Ballston so the Task Force can relate the abstract numbers with an existing development. We do realize that Reston is unique.

Summary: The Maynard-Model parameters that are applicable to the all of the worksheets of the model's Excel workbook are shown in the following table. Blanks indicate that we were unable to determine the value.

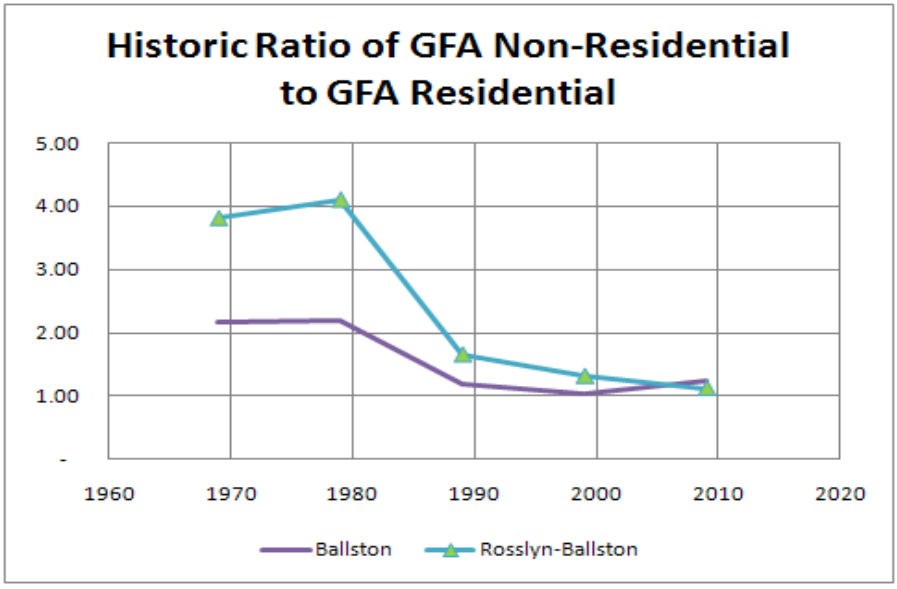
Parameters for entire workbook					
	Arlington County	Ballston-Rosslyn	Ballston		
Per-household values				*Short name*	*Description*
	2.12			Persons	
	0.42			Children	Fairfax County factor for high-rise residences is 0.0783
	1.84			Workers	
	1200.00	1000.00	1000.00	GSFperHH	Gross square feet (1000 sf is estimate)
		2.00		HHParking	Current minimum number of parking spaces per household
				MinHHParking	Desired minimum number of parking spaces
				MaxHHParking	Desired maximum number of parking spaces
School size, number of students					
	420			Grades K-6	
	770			Grades 7-8	
	1369			Grades 9-12	
Office					
		240		GSFperWorker	Gross square feet per worker
		2.50		OfficeParking	Current minimum number of parking spaces per 1000 GSF
				MinOfficeParking	Desired minimum number of parking spaces per 1000 GSF
				MaxOfficeParking	Desired maximum number of parking spaces per 1000 GSF
Open Space					Open space = 0.00149 acres/person per Fairfax County policy
		0.00017		OpenSpace	acres per resident (scaled green areas from map)
Streets					
				StreetWidth	average street width, feet

The parameters that are applicable to individual sub-units are shown in the following table. (The column "Ballston-Rosslyn" contains the composite values for all give Arlington stations.)

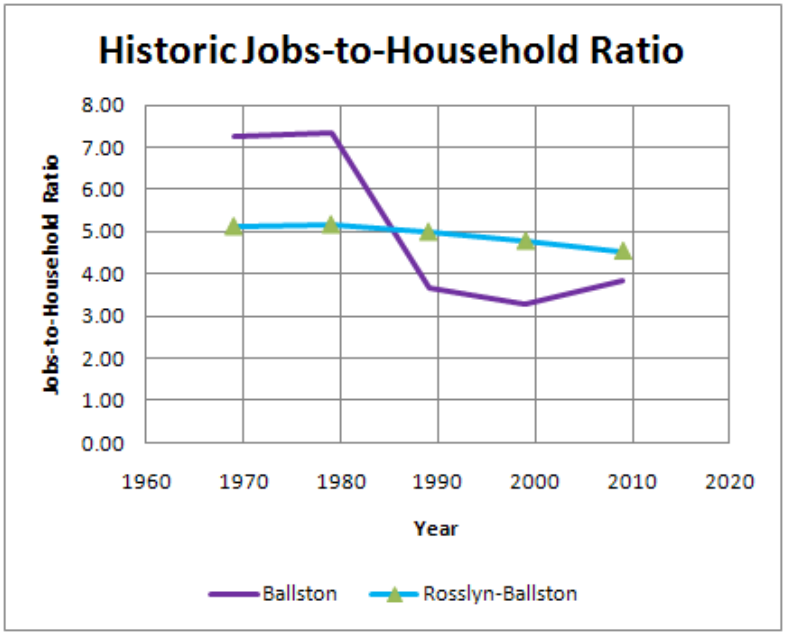
[1] " 40 Years of Transit Oriented Development: Arlington County's Experience with Transit Oriented Development in the Rosslyn-Ballston Metro Corridor." A Presentation to the Reston Land Use Task Force by Robert Brosnan. May 15, 2010

Parameters for the Sub Areas			*Short name*	Continue for each sub area --->	
Sub-Area (e.g., A-2)			SubArea	Ballston	Ballston-Rosslyn
Total Land Area, sq. ft.			LandAreaSF	11,979,000	44,648,129
Existing Gross Floor Area, sq. ft.					
	Residential		ResSF	6,876,000	24,607,000
	Office		OfficeSF	6,801,196	21,590,317
	Retail		RetailSF	1,000,613	2,509,148
	Industrial		IndustrialSF	-	-
	Institutional		InstitutionalSF	155,882	1,119,703
	Hotel		HotelSF	513,890	2,408,650
Percent of land use					
	Open Space/Parks		OpenSpacePct		0.8%
	Natural Areas		NaturalAreasPct		
FAR			FAR	1.28	1.17
FAR allocation, %					
	Residential		ResFARPct	45%	47%
	Office		OfficeFARPct	44%	41%
	Retail		RetailFARPct	7%	5%
	Industrial		IndustrialFARPct		
	Institutional		InstitutionalFARP	1%	2%
	Hotel		HotelFARPct	3%	5%

Two parameters that can be obtained from the computed values of the Maynard Model are shown in the following graphs. The graphs show why traffic has been improving: over the years, the number of offices has been decreasing relative to the number of residences so more people are able to live near their work. **This improvement was made possible by requiring residential development to occur before or simultaneously with commercial and allowing a larger FAR for residential**



than for commercial. We cannot conclude that a 1:1 GFA ratio is optimal, because, for balance, the ratio must be 0.4 GFA non-residential to each GFA residential (=1.6 workers per /household * 1 household per 1000 sq. ft. * 250 sq. ft. of office per worker). If added development exceeds 0.4, traffic will surely increase; therefore, congested roads must be widened or, as suggested by others, people must ride buses, ride bicycles, or walk. **Because for the past 20 years the ratio of the added non-res-to-res has been 0.6, traffic has improved substantially.**



Discussion: We compiled the pertinent information from the following documents, in addition to that in Footnote 1:

http://www.arlingtonva.us/departments/CPHD/planning/data_maps/profile/file69129.pdf
http://www.apsva.us/154010717123317667/lib/154010717123317667/Quick_Facts_Jan._10.pdf
http://www.apsva.us/154010530152647640/lib/154010530152647640/093008Memo.pdf
http://www.arlingtonva.us/Departments/Fire/find/FireFindFindYourStation.aspx
http://www.fcps.edu/fs/budget/wabe/2009.pdf
http://www.arlingtonva.us/departments/CPHD/planning/zoning/pdfs/Ordinance_Section33.pdf

We also used the GFA data provided by Bob Brosnan to Michael Novotny. This data agrees with the data available from MWCOG reports.

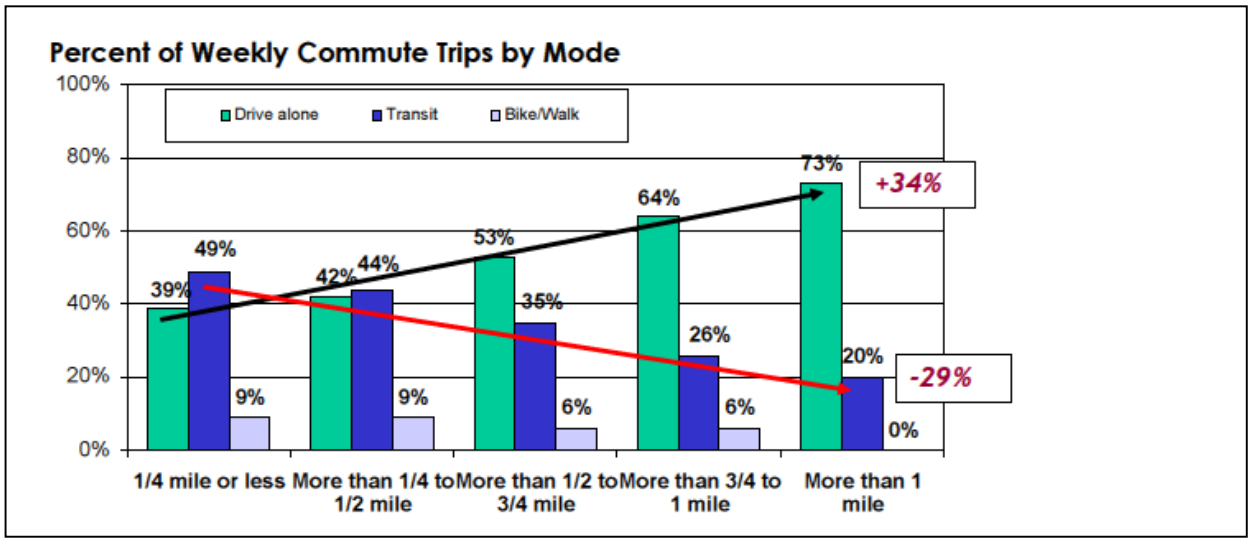
Development was controlled by the following zoning types:

C-0-A: 50/50 residential/office mix; FAR up to 6.0
FAR can be 100 % residential
1.24 FAR residential-commercial units
2.00 FAR residential
Redevelopment in C-O Rosslyn: 10.0 FAR

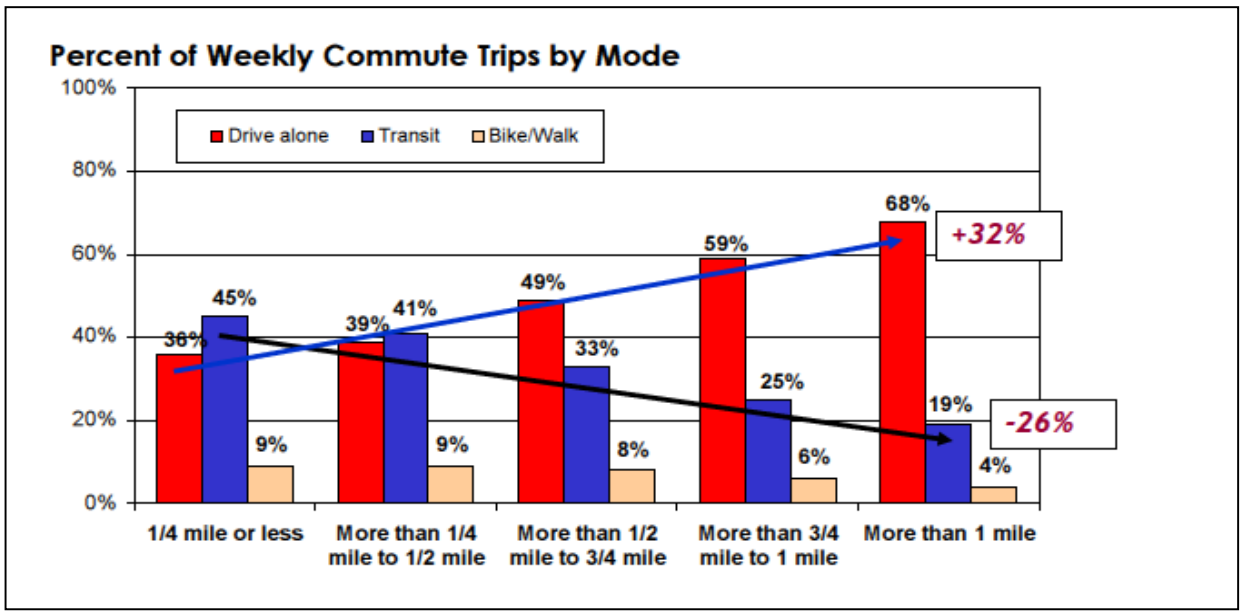
In 2009, Arlington County conducted two surveys to determine transportation modes (thanks to Fairfax County's Faheem Darab for the citations):

1. Resident survey of entire Rosslyn-Ballston Corridor[2] and
2. Employer/employee survey of several buildings near Rosslyn, Courthouse and Ballston metro stations[3].

The resident survey results are summarized on the following chart for rail transit (Page 54 of 227 pages):



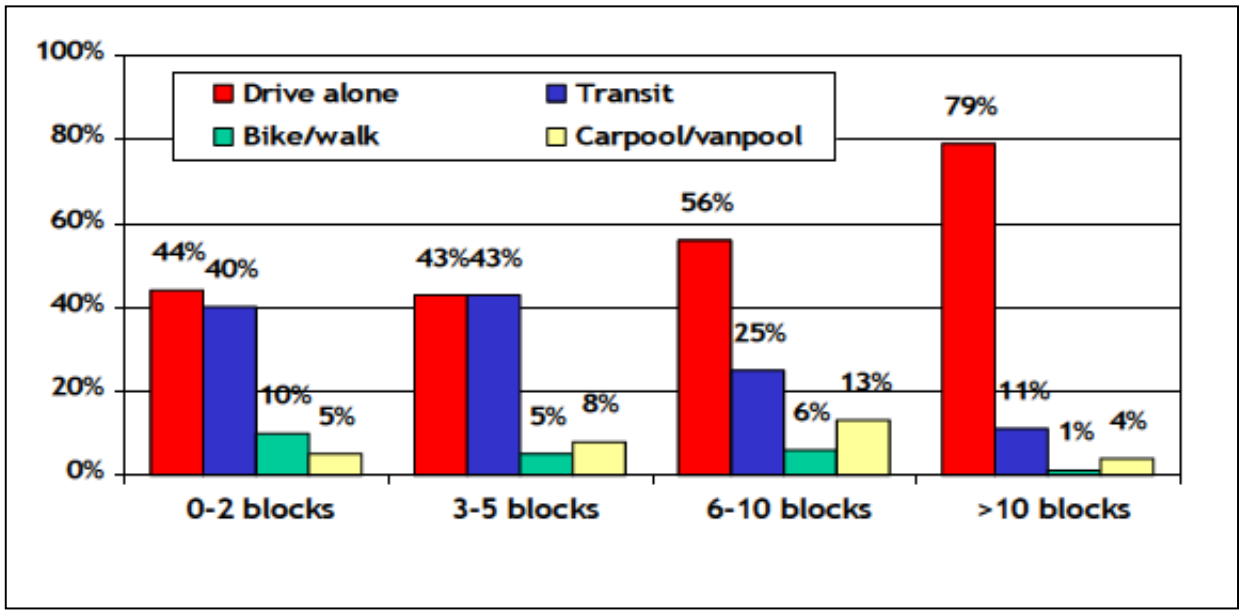
A similar result was evident for bus transit (Pg 55):



[2] http://www.commuterpage.com/research/uploads/ACCS038/2009%20AC%20Resident%20Transportation%20PRESENTATION.pdf

[3] http://www.commuterpage.com/research/uploads/ACCS030/ACCS%20Commercial%20Building%20Study%20Report.pdf

The survey of employees working near the Metro stations showed a similar trend (Page 98 of 186):



These two surveys contain much data on factors such as the incomes and ages of the surveyed people. The raw data could be useful for developing a model of mode selection.

Appendix A: Ballston-Rosslyn GFA Data

The following GFA data, housing count, hotel-room count and parking-spaces count were obtained from the Arlington County by Michael Novotny and were used in generating the parameters presented in the body of this report. The ratios computed in this appendix differ from those in the body of the report because, in this appendix, we use John Carter's per-square-foot values.

Ballston-Rosslyn Totals						
Decade	**Office Gross Floor Area (GFA) in Square Feet**	**Retail Gross Floor Area (GFA) in Square Feet**	**Other* Gross Floor Area (GFA) in Square Feet**	**Residential Units**	**Hotel Rooms**	**Parking spaces**
Existing Density Completed by Decade						
1960-1969	3,808,240	333,235	133,272	1,314	1,079	10,309
1970-1979	1,070,263	131,415	148,608	378	872	3,777
1980-1989	8,485,688	1,163,282	0	8,578	572	29,675
1990-1999	3,461,971	334,201	496,755	6,179	458	13,876
2000-2010	4,764,155	547,015	341,068	8,158	614	11,487
Total 1960 to date	21,590,317	2,509,148	1,119,703	24,607	3,595	69,124
Under Construction	353,746	71,329	244,000	299	0	4,190
Approved, but Not Yet Under Construction	2,470,281	252,458	484,018	2,494	0	8,607
TOTAL	24,414,344	2,832,935	1,847,721	27,400	3,595	81,921

Ratios based on John Carter's unit values:

Office sf/worker	250
Retail sf/worker	400
Industrial sf/worker	450
Other sf/worker	500
Residential sf/unit	1250
Hotel	670

	Using John's numbers as shown		Using John's numbers,but only 10% of area and workers for retail, other and hotel	
decade	**sf non-res/sf res**	**jobs/workers**	**sf non-res/sf res**	**jobs/workers**
1960-1969	3.04	7.77	2.39	7.30
1970-1979	4.09	8.11	2.45	7.18
1980-1989	0.94	2.68	0.81	2.49
1990-1999	0.60	1.59	0.46	1.42
2000-2010	0.59	1.62	0.48	1.48
Total as of 2010	0.90	2.41	0.72	2.22
Under Construction	1.79	4.35	1.03	3.10
Approved, but Not Yet Under Construction	1.03	2.88	0.82	2.52
TOTAL future	0.92	2.47	0.73	2.25

Appendix B: Station-by-Station Data

Rosslyn Metro Station Area

Decade	Office Gross Floor Area (GFA) in Square Feet	Retail Gross Floor Area (GFA) in Square Feet	Other* Gross Floor Area (GFA) in Square Feet	Residential Units	Hotel Rooms	Parking Spaces
1960-1969	2,616,672	216,109	9,440	616	643	5,907
1970-1979	1,047,166	92,262	0	94	872	2,698
1980-1989	3,603,411	345,594	0	3,705	141	8,824
1990-1999	231,473	0	0	114	458	577
2000-2005	347,295	10,833	7,560	459	0	1,023
Total 1960 - date	7,846,017	664,798	17,000	4,988	2,114	19,029
Under Construction	0	5,758	0	161	0	200
Approved, but Not Yet	877,712	29,778	0	984	160	2126
TOTALS	8,723,729	700,334	17,000	6,133	2,274	21,355

Court House Metro Station Area

Decade	Office Gross Floor Area (GFA) in Square Feet	Retail Gross Floor Area (GFA) in Square Feet	Other* Gross Floor Area (GFA) in Square Feet	Residential Units	Hotel Rooms	Parking Spaces
1960-1969	235,977	16,120	97,152	221	391	1,440
1970-1979	0	3,750	0	0	0	16
1980-1989	1,984,774	114,966	0	1,818	0	6,623
1990-1999	906,946	7290	231355	2819	0	5,097
2000-2005	286,093	38,374	0	499	189	1,167
Total 1960 - date	3,413,790	180,500	328,507	5,357	580	14,343
Under Construction	197681	23,566	0	306	0	705
Approved, but Not Yet	365,828	28,906	3700	534	276	1919
TOTALS	3,977,299	232,972	332,207	6,197	856	16,967

Clarendon Metro Station Area

Decade	Office Gross Floor Area (GFA) in Square Feet	Retail Gross Floor Area (GFA) in Square Feet	Other* Gross Floor Area (GFA) in Square Feet	Residential Units	Hotel Rooms	Parking Spaces
1960-1 969	56,680	6,504	23,230	31	0	15
1970-1979	12,217	0	11376	23	0	19
1980-1989	415,415	57,638	0	0	0	1,04
1990-1999	107,712	63822	97900	27	0	1,61
2000-2005	208,760	334,990	108,126	1462	0	3,51
Total 1960 - date	800,784	462,954	240,632	1,543	0	6,52
Under Construction	64545	21,515	0	312	0	58
Approved, but Not Yet	74,475	57,921	90484	573	0	105
TOTALS	939,804	542,390	331,116	2,428	-	8,16

Virginia Square Metro Station Area

Decade	Office Gross Floor Area (GFA) in Square Feet	Retail Gross Floor Area (GFA) in Square Feet	Other* Gross Floor Area (GFA) in Square Feet	Residential Units	Hotel Rooms	Parking Spaces
1960-1969	105,309	36,456	0	54	45	34
1970-1979	10,880	12,778	132000	252	0	73
1980-1989	272,292	15,681	0	84	0	85
1990-1999	369,872	45123	167500	741	0	2,23
2000-2005	508,590	75,865	45,108	1403	0	2,98
Total 1960 - date	1,266,943	185,903	344,608	2,534	45	7,15
Under Construction	602812	30,784	1724	667	0	1,55
Approved, but Not Yet	43,045	12,530	628193	386	0	232
TOTALS	1,912,800	229,217	974,525	3,587	45	11,04

Ballston Metro Station Area						
Decade	Office Gross Floor Area (GFA) in Square Feet	Retail Gross Floor Area (GFA) in Square Feet	Other* Gross Floor Area (GFA) in Square Feet	Residential Units	Hotel Rooms	Parking Spaces
1960-1969	793,602	58,046	3,450	392	0	2,45
1970-1979	0	22,625	5232	9	0	13
1980-1989	2,209,796	629,403	0	2,971	431	12,32
1990-1999	1,845,968	217966	0	2478	0	4,34
2000-2010	1,951,830	72,573	147,200	1026	336	2,80
Total 1960 to date	6,801,196	1,000,613	155,882	6,876	767	22,07
Under Construction	132827	9,949	0	0	0	1,13
Approved, but Not Yet	943,179	62,392	0	717	0	118
TOTALS	7,877,202	1,072,954	155,882	7,593	767	24,38