Visualizing Transit Need

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Introduction/Background

Transit network



ACS data





1		Census Tract 8750, St. Mary's County, Maryland		Census Tract 8751, St. Mary's County, Maryland		Census Tract 8752.01, St. Mary's County, Maryland		Census Tract 8752.02, St. Mary's County, Maryland		Census Tract 8753, St. Mary's County, Maryland	
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9		Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
	Total	6,420	+/-408	4,840	+/-392	5,050	+/-501	6,173	+/-434	3,336	+/-364
	Male	3,162	+/-295	2.502	+1-288	2,509	+/-310	2,915	+/-264	1,716	+/-21
	Under 5 years	203	+/-121	157	+/-85	102	+1-55	121	+/-80	94	+1-5
	5 to 9 years	346	+/-161	153	+1-72	170	+/-104	80	+/-58	78	+/-51
	10 to 14 years	214	+/-89	172	+/-94	184	+1.75	321	+/-108	156	+/-10
	15 to 17 years	156	+/-88	84	+/-48	147	+/-85	336	+/-116	37	+-3
	18 and 19 years	41	+/-54	45	+/-40	75	+/-53	60	+/-45	60	+/-5
	20 years	64	+1-74	44	+/-39	30	+/-38	102	+1-97	14	+1-7
	21 years	17	+1-27	73	+/-82	86	+/-88	62	+/-51	40	+1-3
	22 to 24 years	92	+/-66	50	+/-49	224	+1-123	40	+/-47	57	+1-3
	25 to 29 years	191	+/-91	116	+/-87	153	+/-116	197	+/-98	97	+1-7
	30 to 34 years	159	+1-88	115	+4.55	139	+1-76	122	+/-68	60	4/-4
	35 to 39 years	213	+/-107	141	+/-49	101	+/-63	149	+/-85	117	+/-6
	40 to 44 years	251	+/-119	156	+1.54	174	+/-103	286	+/-94	102	+1.5
	45 to 49 years	351	+/-122	169	+/-68	245	+/-109	222	+/-85	115	+1.6
	50 to 54 years	229	+/-82	142	+/-81	208	+1-87	353	+/-92	135	41.5
	55 to 59 years	260	+/-77	139	+/-67	174	+/-105	232	+/-103	75	+/-4
	60 and 61 years	29	+/-31	92	+/-50	82	+1-55	16	+/-21	64	+1-3
	62 to 64 years	45	+/-42	87	+/-51	45	+1-42	55	+/-47	73	+1-3
	65 and 66 years	7	+/-11	29	+1-27	13	+/-20	18	+/-22	20	4/-1
	67 to 69 years	84	+1-55	126	+/-59	45	+/-43	10	+/-17	95	+/-81
	70 to 74 years	65	+/-50	81	+/-49	68	+/-45	68	+/-54	127	+1-71
	75 to 79 years	37	+/-48	114	+/-54	33	+/-30	65	+/-39	74	4/-4
	80 to 84 years	96	+/-63	99	+/-80	8	+/-12	0	+/-17	19	+/-1
	85 years and	10	+/-17	118	*/-58	0	+/-17	0	+/-17	7	a/-1

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- Extract 5-year ACS estimates of potentially transit-dependent population segments.
 - Older adults 65+. May choose not to drive or can no longer drive due to age.
 - Individuals with disabilities 18+. Disability status based on 6 aspects (hearing, vision, cognitive, ambulatory, self care, or independent living difficulty).
 - Low-income individuals Purchasing/maintaining a personal vehicle may be difficult.
 - Autoless households Lack of a vehicle is a significant factor for transit need.
 - Youth 10 17. Most likely must rely on others for transportation.

ACS Data Sources

Population Category	Table Source/Number	Table Description
Area	US Census – AREALAND	Area (meters)
Population	ACS - B01003	Total Population
No Vehicle Households	ACS - B25044	Tenure by Vehicles Available
Older Adults	ACS - B01001	Sex by Age (65 yrs +)
Youth	ACS - B01001	Sex by Age (10 - 17 yrs)
Individuals with Disabilities*	ACS - S1810	Disability Characteristics (18 - 64 yrs; 65 yrs +)
Individuals Below Poverty	ACS - B17021	Poverty Status of Individuals in the Past 12 Months by Living Arrangement

* Available at the Census Tract level

ACS Data Sources

• For equity analyses under Title VI of the Civil Rights Act.

Population Category	Table Source/Number	Table Description
Race	ACS - B02001	Minorities - Not "White Alone"
Individuals Below Poverty	ACS - B17021	Poverty Status of Individuals in the Past 12 Months by Living Arrangement

Classification

• Rank geography based on the average for the study area.

Number of Vulnerable Persons/Households	Rankings
< Study Area Average (SAA)	Very Low (1)
> SAA and < 1.33 times the SAA	Low (2)
> 1.33 times the SAA and < 1.67 times the SAA	Moderate (3)
> 1.67 times the SAA and < 2.00 times the SAA	High (4)
> 2 times the SAA	Very High (5)

Transit network



ACS data

Transit Need Visualization









- Frederick County, Maryland
- Older Adult
 Classification
- Block Group Summary Level



- Frederick County, Maryland
- Autoless Households
- Block Group
 Summary Level



- Frederick County, Maryland
- Low Income
- Block Group Summary Level



- Frederick County, Maryland
- Youth
- Block Group Summary Level



- Frederick County, Maryland
- Persons with Disabilities
- Tract Summary
 Level



Aggregate Analysis

- Combine the variables to calculate a transit dependence index (TDI).
- TDI framework based a 2004 National Cooperative Highway Research Program (NCHRP) report.
- The report presented an Environmental Justice Index that could be modified to include other populations (beyond low income and minority).

Forkenbrock, D. and Sheeley, J. 2004. Effective Methods for Environmental Justice Assessment. NCHRP Report 532. Transportation Research Board, National Research Council. Washington, DC: National Academy Press.

Aggregate Analysis

Population Category Inputs



Aggregate Index Outputs

TDI= PD x [NVH + OA + Y + BP]

Amount of Potential Need

TDIP= [NVH + OA + Y + BP]

Degree of Potential Need

Aggregate Analysis

- Minnesota Statewide TDI
- Amount of Vulnerability
- Identifies needs in more dense, urban areas



Aggregate Analysis

- Minnesota Statewide TDIP
- Degree of Vulnerability
- Identifies needs in more rural areas



Aggregate Analysis





Equity Analysis

 St. Mary's County, Maryland– Minority Classification



Equity Analysis

 St. Mary's County, Maryland– Below Poverty Classification



ACS Considerations/Issues

- Excel Retrieval Tool uses too much memory/crashes
- Difficult to navigate through FactFinder- block groups not available?
- Limit of 250 geography per download on FactFinder
- Disability Status only available at tract level
- Unclear how geographies in the 5 year sample are reconciled