B Metropolitan Policy Program at BROOKINGS

Walkable Urban Places

Data Analysis Update 12 August 2011

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Preliminary Findings

- Criteria for Regionally Significant vs. Localserving Places
- "Levels" of walkability (IMI)
 - Walkable Urban vs. Drivable Suburban
- Test relationship between Walkability and Economic Performance
- Describe Social Equity of Walkable Urban Places

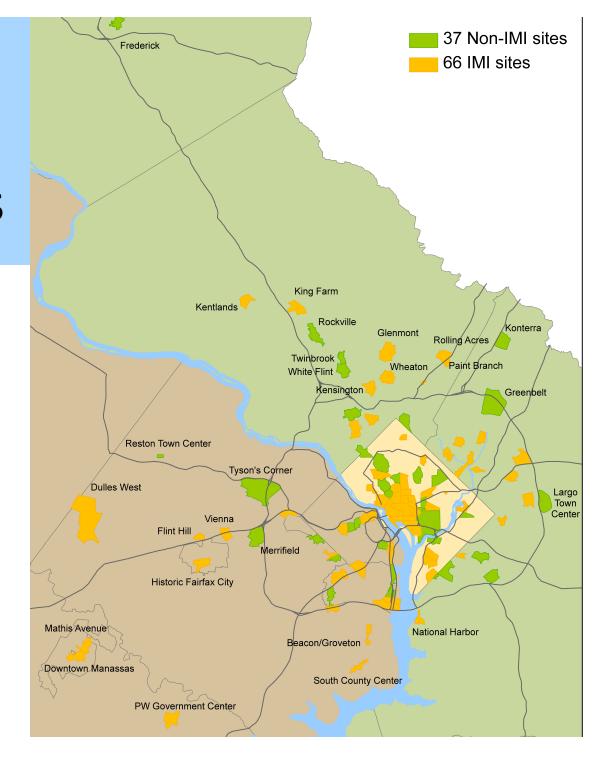
U.S. Metropolitan Land Use Options

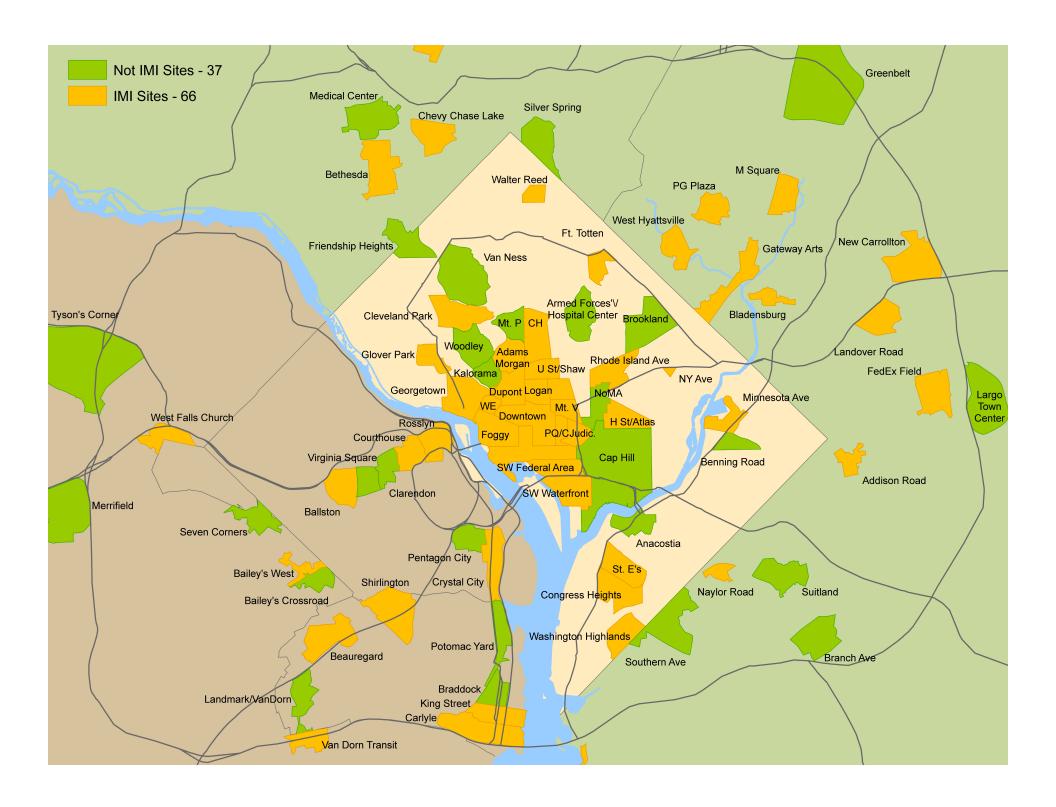
	Regionally Significant	Locally Serving
Walkable Urban	Place (there-there) 1-2% of Metro	Neighborhood 3-7% of Metro Center City, Inner suburban, and New Urbanism neighborhoods
Drivable Suburban	Edge City 5-7% of Metro	Bedroom Community 80-85% of Metro Inner and Outer Suburbs

Research Design Overview

- Stratified random sample (from N=203 population) based on Walkscore
 - Oversampled (100%) from highest walkability level;
 representative sample from other levels
 - Total N = 66
- Purposive sample based on:
 - Footloose & Fancyfree results
 - Economics Development panel
 - Developer funders
- Total sample = 103

Data are collected for these 103 sites





	Contra	1	ı	1	1	1	1		1	ı	1		ı	1	1	1	1 1
	Brookings Transit Census CNT																
	Zillow																
	Placema ESRI-De ESRI-Bu Data S	ources													— ,		
	REIS IMI TAX ASSESSOR	DON'T HAVE YET													r	Regional	
	WMATA WALK SCORE														<u> </u>	Significand	e OTHER
INDEPENDENT	VARIABLES (WUP OPERATIONAL	DEFINITION)	DEPENDENT VARIA							DEPENDI	NT VARIABLES	(SOCIAL EQUITY)				Burney and an income	Ponner.
Real estate descriptors - Current; Totals and subdivided by Office, Office A-F, Retail,	d	Other Descriptors of	eal estate performance - irrent; Totals and subdivided Office, Office A-F, Retail,		ccessibility -	Accessibility -			Diversity -		Affordability -	Affordability -					
Flex, and Industrial	Walkability	WUPs	ex, and Industrial	Fiscal Impact Tax Paid SFR, Condo, Duplex/Triplex, Other &	ansportation	Total jobs within	Accessibility - Food Grocery stores -	Diversity	Change	Affordability Housing & Transportation	Housing Housing costs as %	Transportation Annual Trasportation	Income	Employment/Industries Civilian population 16+ in labor	Population 25+ by Educational Attainment	Businesses/Employees/Sales	General
Acreage	Proximity to all land uses, no "form"	Placemaking entity	06Q1 ccupancy Rate, Current &	Total; 2010, 2005 Tax/Assessment SFR, Condo, Duplex/Triplex, Other &	ail Stops	90 min	Total Count	%Latino	%Change Latino	costs as % AMI	of AMI	Costs	Per capita income, 2010, 2000 2000-2010 median household income: annual compound	force, 2010, 2000 Employed civilian population, 2010	Base, 2010, 2000	Total - Total Count	Total population, 2010, 2000
Total land sqft	related items	Number of parks	06Q1	Total; 2010, 2005 Tax/Zestimate SFR, Condo,	is Stops	% MSA jobs		%White	%Change White			% of AMI	growth rate	2000	-	Total - Sales	Household population, 2010, 2000
Existing RBA	Proximity to "neutral," non-residential land uses, no "form" related items	Park acreage	ased Rate, Current	Duplex/Triplex, Other & Total; 2010, 2005	verage wait me utos per			%Black	%Change Black			Monthly Transportation Costs	2000-2010 per capita income growth rate	Employed civilian population 16+ l industry base, 2010, 2000	Y	Total - Employees Motor Vehicle parts and dealers -	Family population, 2010, 2000
Existing RBA 2010Q2-2011Q1, 2006Q1-4	Includes variables related to form	Park within .25 mile?	railable Vacancy Rate, Current		ousehold			%Asian	%Change Asian				Aggregate income, 2010, 2000 Households by Income Base		-	Total Count	Group quarters population, 2010, 2000
Buildings	All non-residential land uses (form&function)		tal Available Rate, Current		Journeys to ork by Transit				%Change Non- white				(Income distribution), 2010, 2000	Unemployed Population 16+, 2010 2000		Motor Vehicle parts and dealers - Sales	Total households, 2010, 2000
Buildings 2010Q2-2011Q1, 2006Q1-Q4	All residential land uses		rect Available Rate, Current		aveled per ousehold			<u>L</u> _	Diversity Index, 2010, 2000				Average Household Income, 2010, 2000	Unemployment Rate, 2010, 2000		Motor Vehicle parts and dealers - Employees	Average household size, 2010, 2000
Vacant sqft, Current & 2006 Q	1 Measure of "disconnectivity"		blet Available Rate, Current										Aggregate Household Income, 2010, 2000 Households by Disposable	Population 16+ by Employment Status Base, 2000 Population 16+ by Employment: in		Food and beverage - Total Count	Total family households, 2010, 2000
Occupied sqft, Current & 2006 Q1	Parks, playgrounds, etc		06 g Direct Gross Rent (except		-								Income Base, 2010, 2000 Average Disposable Income, 2010, 2000	Labor Force-Civ Employed, 2000 Population 16+ by Employment: in		Food and beverage - Sales	Average family size 2010, 2000
Leased sqft Vacant Available sqft	Pedestrian Amenities Pedestrian Amenities, including alleys		g Price/bldg 2000-2010										2010, 2000 Average household size owner occupied, 2010, 2000	Labor Force-Civ Unemployed, 2000 Population 16+ by Employment: in Labor Force, 2000		Food and beverage - Employees Personal health care - Total Count	
Total Available sqft	Measures of physical incivitilies; safey from crime		g price/sidg 2000-2010										Average household size renter occupied, 2010, 2000	Population 16+ by Employment: No in Labor Force, 2000	t	Personal health care - Sales	
Direct Available sqft	Safety from traffic		g cap rate - annual 2010										Population in Owner Occupied Housing Units, 2010, 2000 Population in Renter Occupied			Personal health care - Employees	
Sublet Available sqft	Diversity		les volume 2000-2010 sessed Gross Value SFR,		-								Housing Units, 2010, 2000			Gasoline - Total Count	
Net Absorption 2010Q22- 2011Q1, 2006Q1-Q4	Disorder		ndo, Duplex/Triplex, Other & tal; 2010, 2005 lue/sqft SFR, Condo,													Gasoline - Sales	
Net Absorption (total) Last 4 quarters, 2006	Aesthetics total		plex/Triplex, Other & Total; 10, 2005					'	٠.	1						Gasoline - Employees	
Construction Starts 2006-2011	Physical Activity Facilities		stimate SFR, Condo, iplex/Triplex, Other & Total; 10. 2005				D)ep	end	ent Va	riable	es – Sc	ocial Equ	uity		Clothing/Sporting goods/etcTotal Count	
Deliveries 2006-2011	WALK SCORE							1								Clothing/Sporting goods/etcSales Clothing/Sporting	
FAR #Units SFR, Condo,																goods/etcEmployees Grocery stores - Total Count	
Duplex/Triplex, Other & Total; 2010, 2005			Deper	ndent	l											Grocery stores - Sales	
Sqft SFR, Condo, Duplex/Triple Other & Total; 2010, 2005	×,		Variak	nlas —												Grocery stores - Employees	
Avg sqft SFR, Condo, Duplex/Triplex, Other & Total; 2010, 2005																Hotels - Total Count	
Totalsqft Region SFR, Condo, Duplex/Triplex, Other & Total;			Econo	mic													
2010, 2005 Total housing units, 2010, 2000 Owner occuptied units, 2010,	0															Hotels - Sales Hotels - Employees	
Renter occuped units, 2010,			Pertoi	rmance	I											_	
Vacant housing units, 2010, 2000																	
2000 Population growth rate, 2000- 2010																	
Household growth rate, 2000- 2010	+	ļ			-			-									
Families growth rate, 2000-201 Owner occupied housing units	🟪 Indeper	ndent	l ——														
by value base, 2010, 2000 Average value of owner occupied housing units, 2010,																	
2000 Aggregate Value of Owner Occupied Housing Units, 2010,		-5 —															
2000 Specified Owner Occupied HUs	+ Onerati	onal						_									
by Mortgage Status Base, 2000 Specified Owner Occupied HUs with a Mortgage, 2000	-																
Spec Owner Occ HUs w/Mortgage: Monthly Owner	─ Definition	on															
Costs Base, 2000 Average Monthly Owner Costs for Spec OOHUs w/Mortgage,	+																
2000 Aggregate Monthly Owner Cos					\vdash			\vdash						-			
for Spec OOHUs w/ Mortgage, 2000 Spec Owner Occ HUs w/No																	
Mortgage: Monthly Owner Costs Base, 2000																	
Number of units: rental housin occupied Number of units: rental housin	8.							-									
vacant	.60							-						1			
Rental rates: rental housing/sq Square footage: rental housing	3							E									

Universe of Product Types

Owner-User Products

- For-sale residential *
- Office-private/institutions**
- Office-public/schools**
- Retail **
- Industrial (warehouse, flex, heavy, civic)**
- Cultural/sports***
- Religious***
- Higher education**
- Medical**

Income Products

- Rental residential *
- Office *
- Retail *
- Hotel--phase II data
- Industrial (self-storage, warehouse, flex, heavy) *
- Retirement (independent, assistant, nursing)—phase II data
 - * Available data
 - ** Derivative data (tax assessor data)
 - ***Custom insert data

Datasets/points Nearing Completion

Economic Indicators

- Owner-user (derivative data**), based upon tax assessor data
- Fair share index (FSI)—
 growing or losing market
 share over time
- Cap rates

Social Equity Indicators

- WMATA ridership survey of destination Metro stations by purpose of trip – to be analyzed
- Brookings transit
 accessibility data to be
 analyzed

Irvine Minnesota Inventory

- 162-item audit-tool
- Reliable measure
- Collects an inventory of objective built environment characteristics related to physical activity
- Has been used widely to test relationship between built environment and walkability
- Captures "micro" scale features
 - E.g. Sidewalks, street trees, bars on windows, etc.

IMI - Dimensions

Dimensions	Example Items
Density	Percent of Block with Buildings, Building Height
Proximity (ALL)	Includes all non-residential land uses; no "form" related items
Proximity	Includes neutral, non-residential land uses; no "form" related items
Form	Includes variables related to form (e.g., Drive-thrus, Strip Malls)
Total Non Residential	Includes all non-residential land uses (form & function)
Total Residential	Includes all residential uses
Non-residential/Residential	Index of non-residential to residential uses
Connectivity	Measure of disconnectivty; Potential Barriers (e.g., six-lane roads)
Parks	Parks, Playgrounds, Plazas, Playing Fields
Pedestrian Infrastructure/Amenities	Slope, Curbcuts, Sidewalks, Street Furniture, Bike Racks
Personal Safety	Graffiti, Litter, Windows with Bars
Traffic Measures	Traffic Signal, Stop Sign, Speed Limit, Traffic Calming
Aesthetics (Pleasurability & Maintenance)	Attractiveness, Open Views, Front Porch, Outdoor Dining
Physical Activity Facilities	Gym/Fitness Facilities, Other Recreational Uses

IMI Total Score Calculation

Density + Proximity – Form – Connectivity +
 Parks + Pedestrian Infrastructure/Amenities +
 Personal Safety + Traffic Measures +
 Aesthetics (Pleasurability & Maintenance) +
 Physical Activity Facilities

Current Economic Performance Metrics

- Average Office Rents/Sq. Ft.
- Average Retail Rents/Sq. Ft.
- Retail Sales
- Average Rental Residential Rates
- Average For-Sale Residential Home Value/Sq. Ft.
- Residential Property Tax
- Fair Share Index
- Cap rates

Current Social Equity Metrics

- Affordability
 - Transportation costs as %AMI
 - Housing costs as %AMI
 - Housing + Transportation costs as %AMI
- Accessibility*
 - Access to a metro/bus
- Diversity
 - Diversity Index
 - Percent change race/ethnicity (2000 vs. 2010)
 - Education
- Income/Wealth
 - Average household income
 - Per capita income
 - Unemployment rate

^{*}Still to be analyzed

Regionally Significant vs. Local Serving

	Regionally Significant – Tier One ("Super" Regional)	Regionally Significant – Tier Two (Regional)	Local Serving
Office (Based on statistically significant difference in Average Office Rents)	> 6 mil Sq. Ft. RBA	> 1.4 mil Sq. Ft. RBA	< 1.4 mil Sq. Ft. RBA
Retail (Based on statistically significant difference in Retail Sales)	> 2.3 mil Sq. Ft. RBA	> 340k Sq. Ft. RBA	< 340k Sq. Ft. RBA

Regionally Significant Office

	Local	Regional	Significance
RBA Office (sq ft)	341,266	6,740,059	p=.001
Market share Office	0.07%	1.44%	p=.001
Net Absorpion Rate	-0.70%	1.97%	p=0.01
Acreage	338	515	p=.063
% Office	8.85%	24.50%	p<.001
Avg Rent Office	\$28.85	\$37.03	p<.001
Employees	2,951	20,218	p=.001
Percent Residential	42.30%	17.30%	p<.001

OFFICE

First Tier (Super-Regional)

- Greater than 6 million SF

Second Tier Regional Significance

- Between 1.4 and 6 million SF

Ballston

Bethesda

Crystal City

Downtown

Dupont Circle

Foggy Bottom

NoMA

Penn Quarter/Chinatown

Rosslyn

Silver Spring

SW Federal Center

Tyson's Corner

Beauregard

Capitol Hill

Capitol Riverfront

Carlyle

Courthouse

Dulles West

Flint Hill Suburban

Center

Frederick

Friendship Heights

Georgetown

Historic Fairfax City

Judiciary Square

King Street

Largo Town Center

Merrifield

New Carrollton

Pentagon City

Prince George's Plaza

Reston Town Center

Rockville

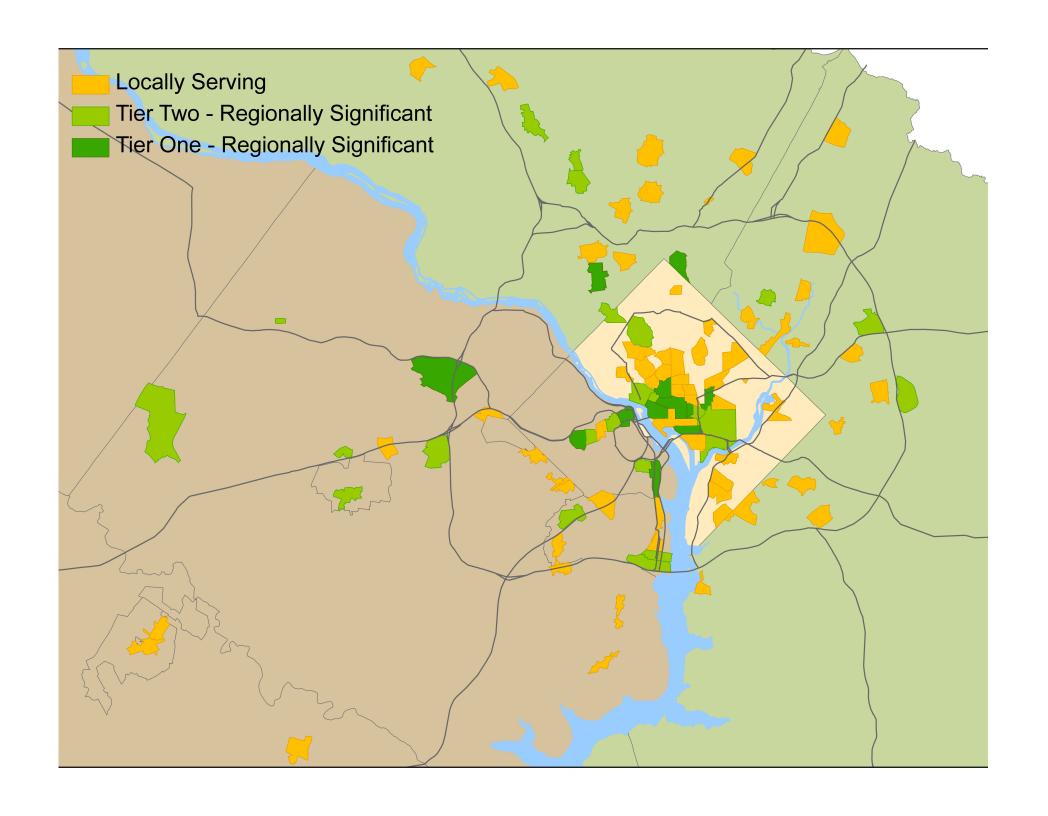
Twinbrook

Van Ness

Virginia Square

West End

White Flint



Regionally Significant Retail

	Local	Regional	Significance
RBA Retail (sq ft)	109,397	1,383,999	p<.001
Market share Retail	0.04%	5.35%	p<.001
Acreage	320	492	p=.026
% Retail	3.00%	12.50%	p<.001
Avg Rent Retail	\$33.74	\$31.17	p=0.388
Sales (\$000)	\$539,374	\$2,185,685	p=.003
Percent Residential	39%	25.90%	p=.021

RETAIL

First Tier Regional Significance

- Greater than 2.3 million SF

Bethesda Silver Spring Tyson's Corner **Pentagon City** Seven Corners CBC Wheaton

Second Tier Regional Significance – Between 340,000 and 2.3 million SF

Adams Morgan

Bailey's Crossroad H Street/Atlas District

Bailey's West Ballston

Beacon/Groveton CBC

Benning Road

Braddock

Branch Avenue

Brookland

Capitol Hill

Capitol Riverfront

Carlyle

Clarendon

Columbia Heights

Crystal City

Downtown

Dulles West Dupont Circle

Frederick Friendship Heights

Gateway Arts District

Georgetown

Greenbelt

Kensington

Kentlands

King Street

Landmark/VanDorn

Largo Town Center

Logan Circle

Mathis Avenue

Merrifield

New Carrollton

Penn Quarter/Chinatown

Potomac Yard

Prince George's Plaza

Reston Town Center

Rhode Island Ave Metro

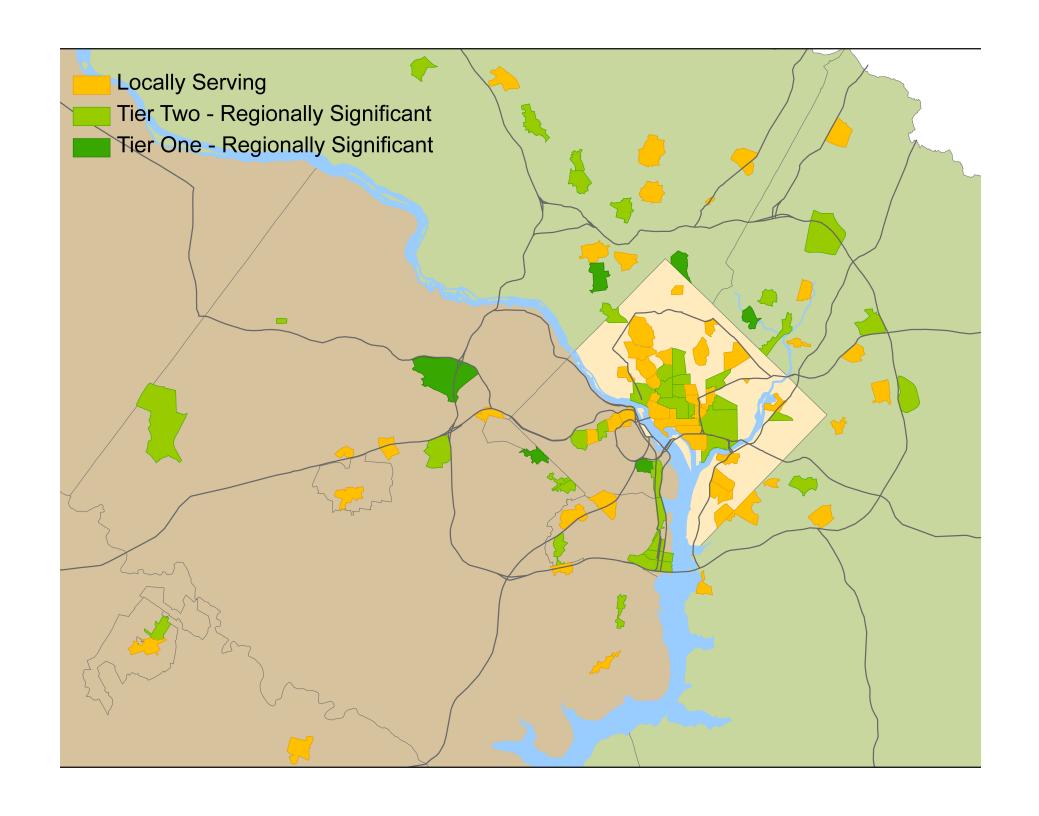
Rockville

Suitland

Twinbrook

U Street

White Flint



"Other" Regionally Significant Places

Other Land Use Type **Emerging Planned Armed Forces Retirement** Mount Vernon Konterra Home – Hospital Campus **National Harbor** Saint Elizabeth's FedEx Field Shirlington? Woodley Park? **Medical Center** PW Government Center M Square Research Park Walter Reed

Locally Serving Places

Addison Road

Anacostia

Bladensburg Town Center

Burnt Mills Commercial

Center

Chevy Chase Lake

Cleveland Park

Congress Heights

Downtown Manassas

Fort Totten

Glenmont

Glover Park

Kalorama

King Farm

Landover Road Metro Area

Minnesota Avenue

Mount Pleasant

Naylor Road

New York Avenue

Paint Branch

Rolling Acres

Shaw

South County Center CBC

Southern Avenue

Van Dorn Transit Area

Vienna Transit Station Area

Washington Highlands

West Falls Church Transit Area

West Hyattsville

Retail Office **Product Mixes** Industrial Flex Res-Sale Office Residential Retail **Mixed Use Res-Rent Pentagon City Columbia Heights Seven Corners CBC Downtown** Regionally Significant **Burnt Mills** Kalorama **Frederick Commercial Center Local Serving**

Regionally Significance & Land Use Diversity Index (LUDI)

	LUDI = 0 (>80% of one use)	LUDI = 1 (<80%, >50% one use)	LUDI = 2 (<50% of one use; no majority use)
Local Serving	25 places	18 places	5 places
Regionally Significant	7 places	28 places	20 places

^{*}Regionally significant places that focus on one use tend to be more economically successful

Walkability and Regional Significance

IMI Levels	0	1	2	3	4
IMI Total Mean = -3.39	Lowest thru -43.39	-43.4 thru -23.39	thru	-3.4 thru 23.39	thru
Regionally Significant	0 (0%)	4(13.8%)	7(24.1%)	14(48.3%)	4(13.8%)
Locally Serving	3(9.4%)	2(6.3%)	17(53.1%)	9(28.1%)	1(3.1%)

Regionally Significant Walkable Urban Places*

IMI Level 4 IMI Level 3 IMI Level 2 IMI Level 1 **Columbia Heights** H Street/Atlas District **Gateway Arts District** Downtown **New Carrollton Adams Morgan Benning Road** Georgetown **Judiciary Square** Kentlands Kensington Beacon/Groveton Penn Quarter/ **Rhode Island Avenue** Wheaton CBC Chinatown White Flint Mathis Avenue Metro Historic Fairfax City Bailey's West **Dupont Circle Dulles West** Carlyle West Fnd Bethesda King Street **Crystal City** Rockville NoMA SW Federal Center

^{*}From sample of 66; not the entire "universe" of walkable urban places

IMI & Economic Performance*

	+1 pt	+10pts	Moving to Next Level of IMI (+20pts)
Average Office Rents***	\$.444	\$4.44	\$8.88
Average Retail Rents**	\$.346	\$3.46	\$6.92
	\$58,387.12	\$583,871.20	' '
Retail Sales**	(+4%)	(+40%)	(+80%)
Residential Rents***	\$15.88	\$150.88	\$301.76
Residential Property Tax			
Value/Sq.Ft. For-sale	44 77	440.77	404 54
Residential***	\$4.77	\$40.77	\$81.54

^{*}Controlling for Average Household Income; **p<.01; ***p<.001

IMI Dimensions & Economic Performance*

	Form	Dens	Prox	Conn	Parks	Peds	Safe	Traff	Aest
Average Office									
Rents	(-)	(+)	(+)	(-)	(+)	(+)		(+)	(+)
Average Retail									
Rents	(-)	(+)	(+)	(-)		(+)			(+)
Retail Sales		(+)	(+)			(+)			(+)
Residential Rents		(+)	(+)		(~+)	(+)	(+)	(+)	(+)
Residential Property									
Tax									
Value/ Sq.Ft. For-									
sale Residential	(-)	(+)	(+)	(-)	(+)	(+)		(+)	(+)

^{(+) =} positively significant; (\sim +) = trending positively; (-) = negatively significant;

^{*}Controlling for Average Household Income; **p<.01; ***p<.001

IMI & Social Equity - Affordability

IMI Levels	0	1	2	3	4
%AMI Transportation Costs*(-)	14.7%	15.9%	15.7%	12.7%	12.3%
%AMI Housing Costs***(+)	16.9%	19.0%	24.7%	30.1%	31.7%
%AMI Housing					
+Transportation Costs	31.6%	35.4%	40.6%	44.0%	40.8%

^{*}p<.05; ***p<.001; IMI 0+1 vs. 2+3+4

IMI & Social Equity - Diversity

IMI Levels	0	1	2	3	4
Diversity Index	23.0%	74.6%	51.8%	48.4%	47.1%
%Change White***(+)	30.9%	33.1%	38.7%	121.9%	148.9%
%Change Black	18.8%	-15.4%	.02%	-35.0%	-19.5%

^{***}p<.001; IMI 0+1 vs. 2+3+4

IMI & Social Equity – Income/Wealth

IMI Levels	0	1	2	3	4
Per Capita Income*** (+)	\$21,687	\$25,173	\$34,097	\$49,075	\$56,247
Average Household Income***(+)	\$53,068	\$69,252	\$88,395	\$93,145	\$103,145
Average Disposable Income**(+)	\$41,773	\$55,799	\$69,364	\$74,234	\$77,523
Unemployment Rate~	23.2%	9.1%	10.5%	8.4%	11.2%

^{**}p<.01; ***p<.001; IMI 0+1 vs. 2+3+4

Next Steps – Phase One

- Walkable Urban Definition
 - Add Transit, Density, and Size components
 - Refine five "types" of walkable urban places
 - Place IMI scores on a "curve"
- Metrics
 - Establish top five metrics for Economics & Social Equity
 - Decide whether metrics can translate into an "index," score, or levels of economic prosperity and social equity

Next Steps – Hypothesis Testing

- Does "agglomeration" of walkable urban places impact economic performance?
- Does social equity vary based on Regional Significance? A place's product mix? Place Type?
- What factors could account for the difference between walkable urban places that are more socially equitable vs. those that are less socially equitable?
- What is the relationship between economic performance and social equity?
- Do places low on social equity tend to have a specific IMI profile/score?

Questions for Panel

- Definition of Place
- Definition of emerging and planned places
- Walkability Cut points WU & D SU
- Cut points between
 RS & LS
- Cut points for Land Use Diversity

- Owner-user \$/square foot of improvements
- Social Equity metric "score?"