Travel Time Analysis of Medicaid Managed Care Plans in the District of Columbia

October 9, 2007

Brian Blankespoor, MS
Chanza Baytop, MPH, DrPH

Overview

- Background
- Methodology
- Results
- Lessons learned

Background:
DC Medicaid Managed Care Program

- The District's Medical Assistance Administration (MAA) administers two Medicaid managed care programs:
  - 1994 - DC Healthy Families Program (DCHFP) for eligible Medicaid beneficiaries;
  - 1996 - Children and Adolescent SSI Program (CASSIP) for children with special needs.
- DCHFP allows Medicaid beneficiaries to select from three managed care organizations (CASSIP offered by only one plan).

Background: DCHFP Evaluation

- 2006-2007 DC MAA contracted with Abt Associates to conduct an independent evaluation of its DCHFP
  - The evaluation consisted of four parts:
    - Access to care;
    - Quality of care;
    - Medical and administrative spending; and
    - Quality Improvement and Assessment.

Background:
DCHFP Evaluation – Access to Care

- Geographic proximity and travel time are used to measure access to care.
  - Physical distances measured in 2005-2006 evaluation
    - The four MCO contracts require that primary care providers be located within a short distance from beneficiaries' homes.
  - Current travel time analysis part of 2006-2007 evaluation
    - All DCHFP enrollees are able to choose between at least two primary care providers located within 30 minutes travel time of their place of residence by public transportation.

Travel Time Methodology

Data Sources

- 2005 enrollment files from each of the four managed care organizations (MCOs) containing:
  - Street addresses and zip codes
  - Age, gender
  - MCO membership
- 2005 provider network databases from each of the four MCOs containing:
  - Street addresses and zip codes
  - Specialties

Data Challenges
Conceptual and Technical

- Numerous specialties (>50) and no standard syntax
  - eg. Neo-natal medicine, emergency medicine, cardiology, etc.
  - eg. Family practice vs. general practice vs. internal medicine
- Multiple specialties listed for one provider entry
  - Group practices (Internal Medicine, OB/GYN, Cardiology)
- Providers often contract with more than one MCO network
- Providers with multiple addresses
- Addresses reported in various formats for beneficiaries and providers to import data
  - Missing quadrants (NW, SW)

Data Resolutions I:
Grouped and Limited Specialties

- Primary care
  - Family/general practice
  - Pediatrics (including adolescent medicine)
  - Adolescent medicine
  - Internal medicine
  - Geriatrics
  - Nurse practitioners
- Psychology and psychiatry
- Other mental health care providers (MSW, LSW)
- Dentistry
- Obstetrics and gynecology
- Nurse midwives

Data Resolutions II:
Defined Network and Specialty Measures

- Create standard provider network definitions
  - 1st mentioned specialty, only participate in one MCO ***(most restrictive)***
  - 1st mentioned specialty, can participate in multiple MCOs
  - Ever mentioned specialty, only participate in one MCO
  - Ever mentioned specialty, can participate in multiple MCOs ***(least restrictive)***

Data Resolution III: Unduplicated and Cleaned Addresses

- Providers with multiple addresses
  - Queried data for multiple records in MS Access
  - Kept unique addresses
- "Cleaning" addresses for beneficiaries and providers to import data
  - Standardized addresses into the same format

Data Approach: Geocoding

- Geocode standardized addresses to create locations using GIS (ArcGIS)
  - Geo-referenced streets data from DC GIS
  - Import all provider data (N = ~12,000)
  - Import all beneficiary data (N = ~100,000)

Python Script: Travel Time Assumptions

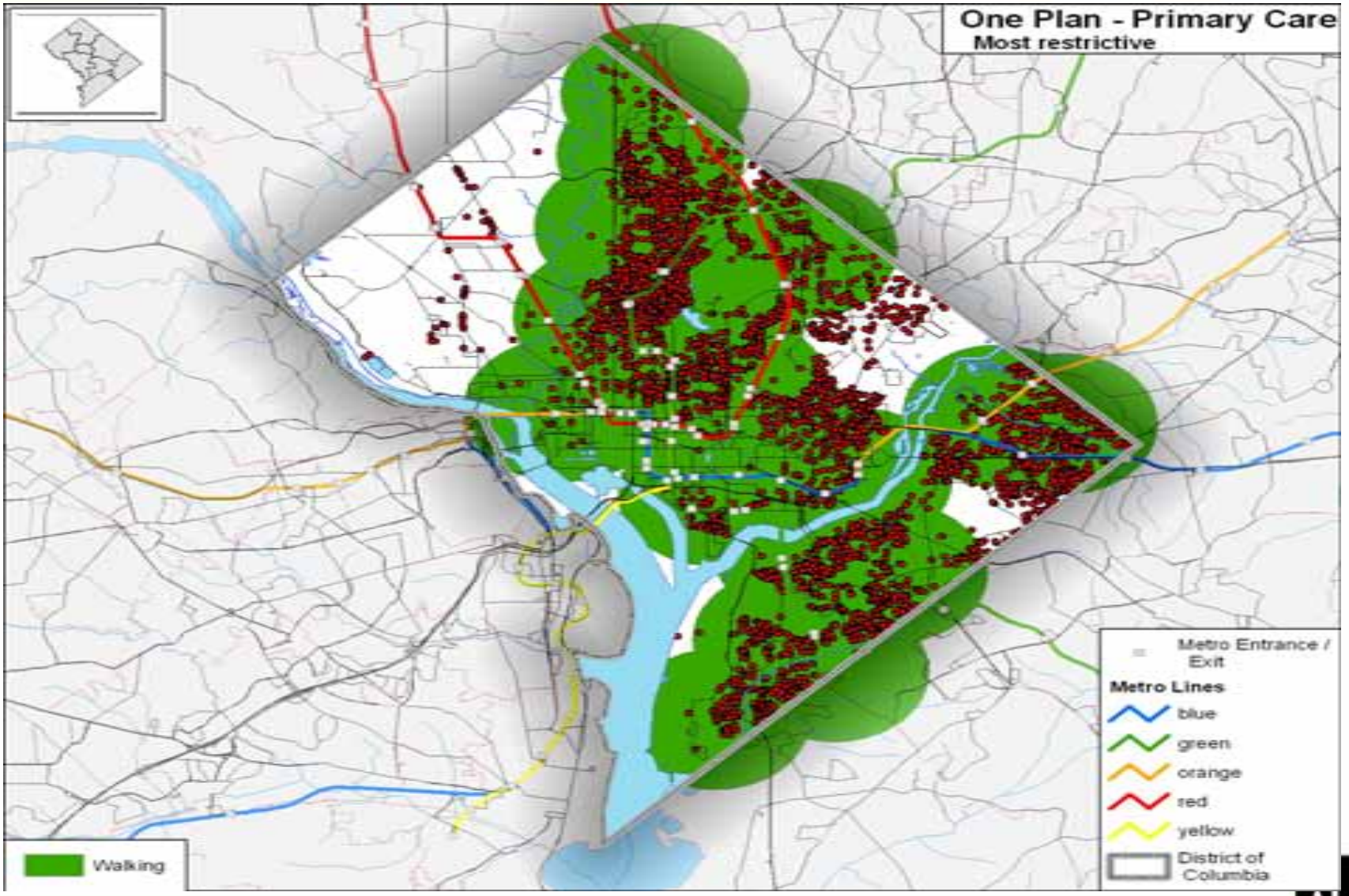
- Percentage of beneficiaries within **30 minutes** of nearest provider
  - ***Walking*** – 4 km per hour (2.48 miles per hour)
  - ***Driving***
    - 5 minutes to get to car (street parking)
    - 5 minutes to park car and reach provider's office
    - 15 km per hour (9.32 miles per hour)
  - ***Metro*** *(train only)*
    - 4 km per hour to walk to nearest station and then to provider's office
    - 2 minutes each to get in and out of system
    - Off-peak schedule with average waiting time for trains
    - 4 minutes to transfer to another train

Python Script: Travel Time Application

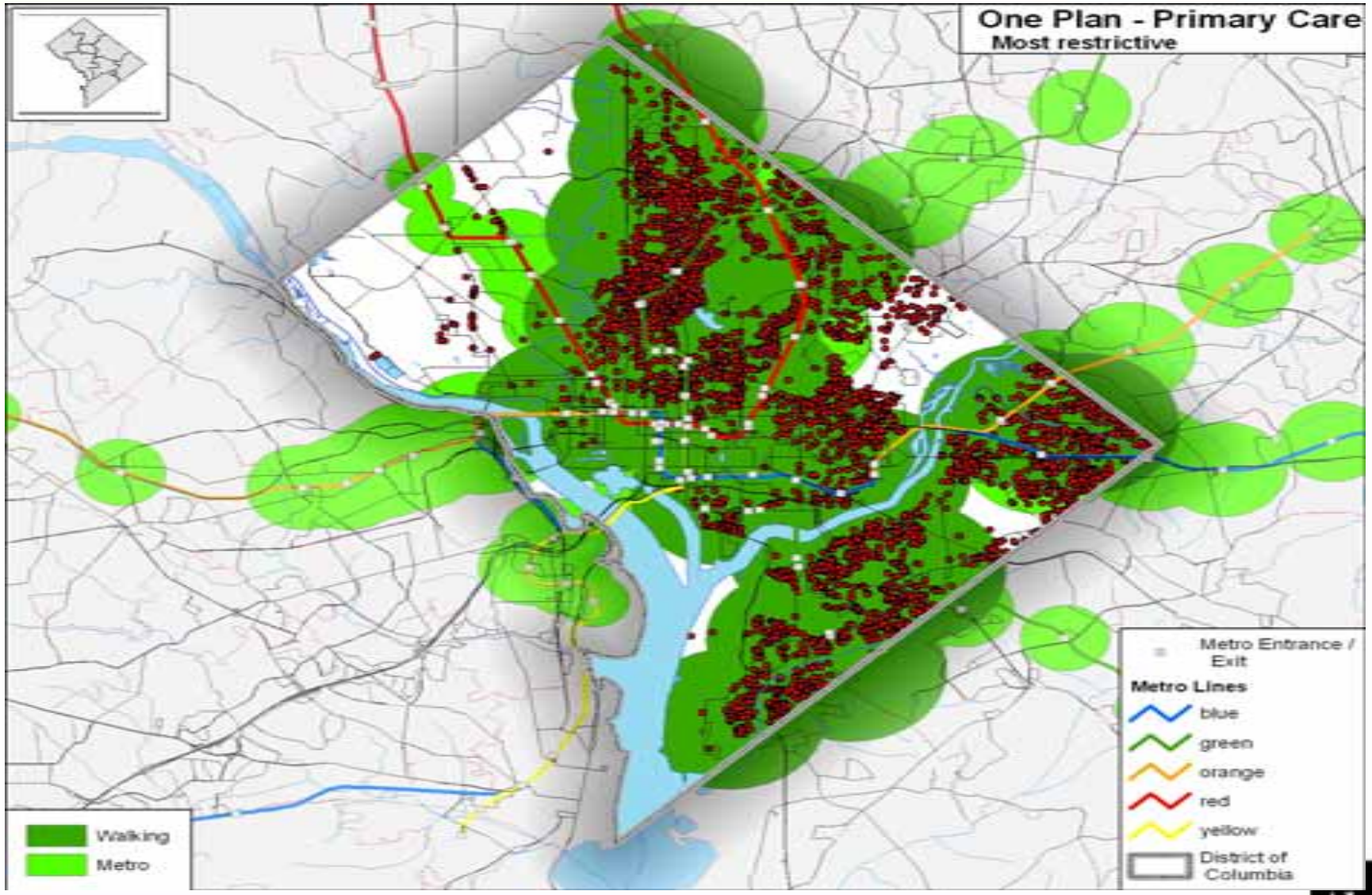
- Automate travel time calculation for walking, metro, and driving.
- Travel time for walking and driving are calculated by distances
- Metro travel time
  - Distance to nearest metro by walking
  - Metro time matrix (based on a downloaded timetable from DC Metro's website)
  - Buffer the remaining time with a walking speed

Results of Beneficiary Travel Time Analysis

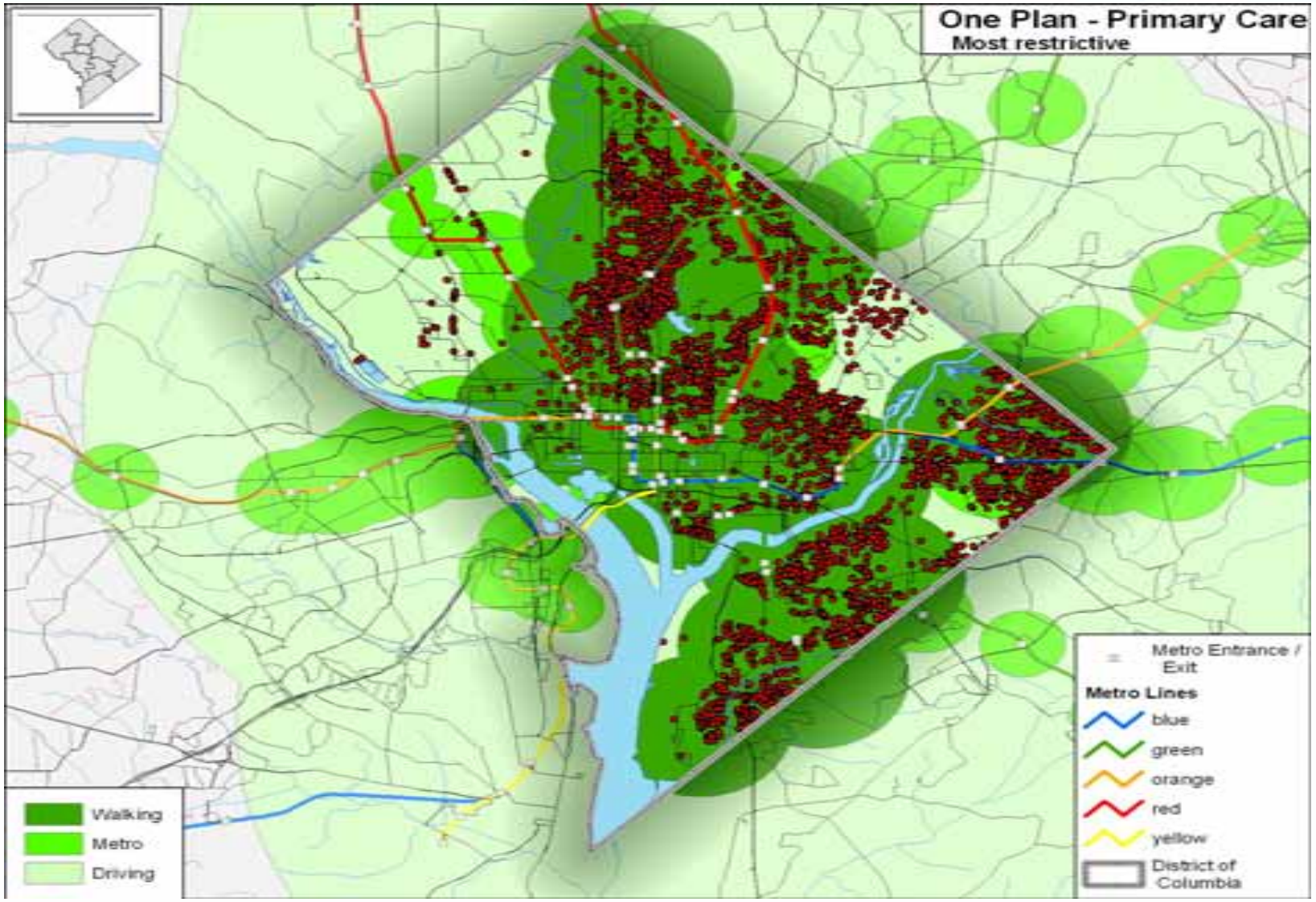
Primary Care – Walking



Primary Care – Walking and Metro

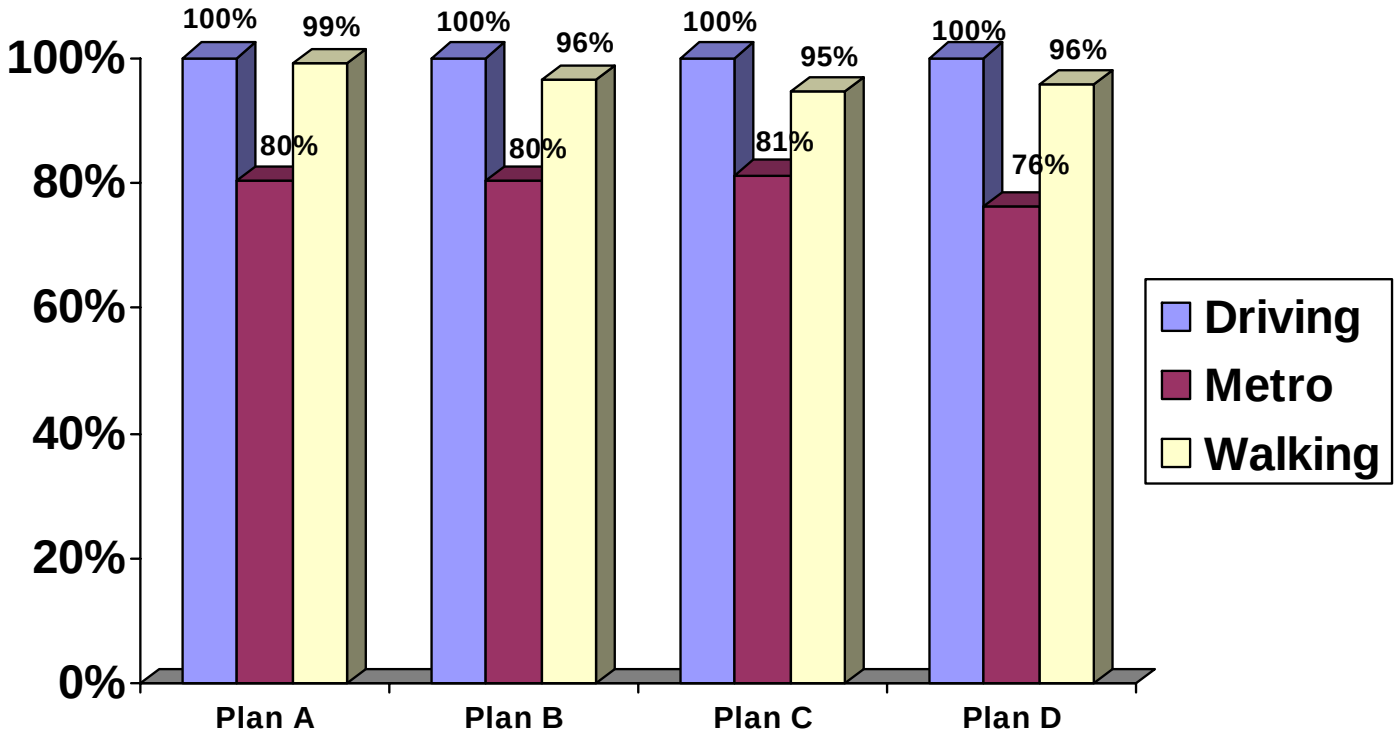


Primary Care – Walking, Metro, and Driving



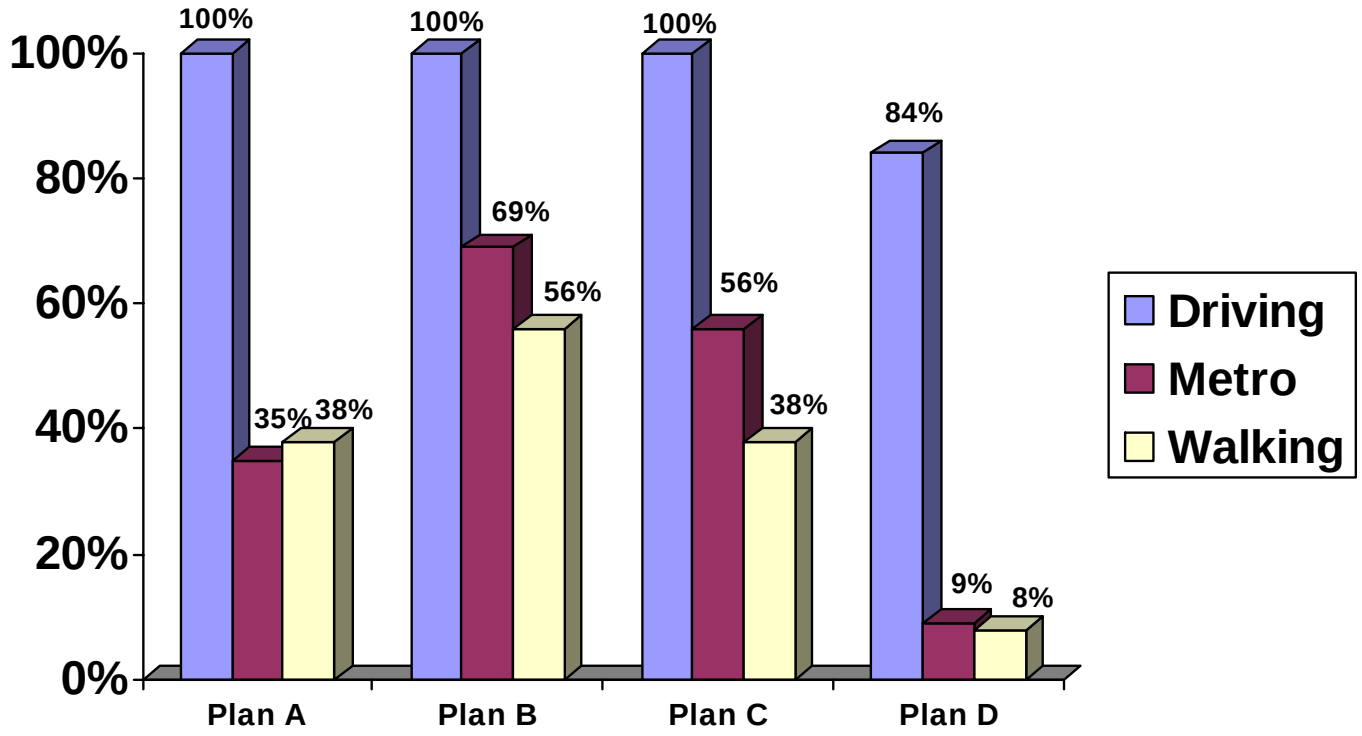
Travel Time to Primary Care Providers

Percentage of Beneficiaries for Each Healthy Families MCO That Live Within 30 minutes Travel Time of the Nearest Primary Care Provider



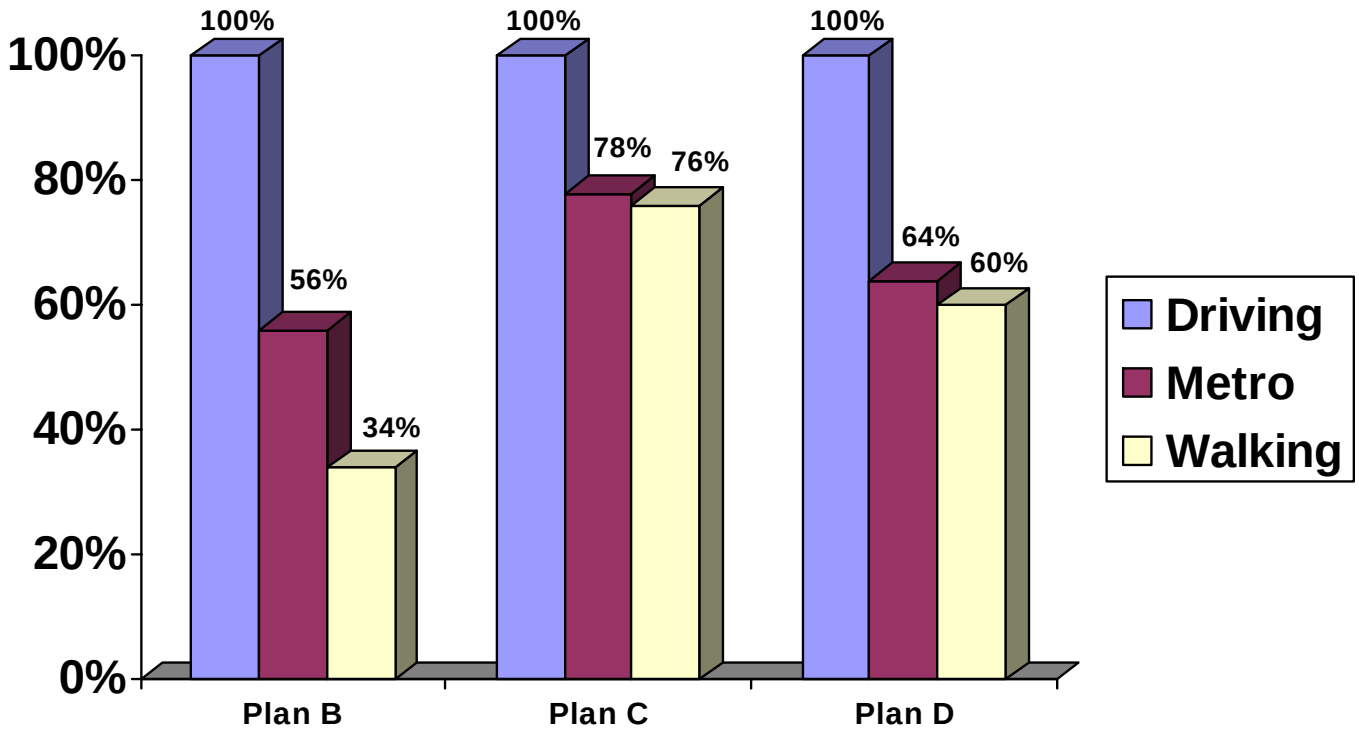
Travel Time to Obstetrician/Gynecologist

Percentage of Beneficiaries for Each Healthy Families MCO That Live Within 30 minutes Travel Time of the Nearest OB/GYN



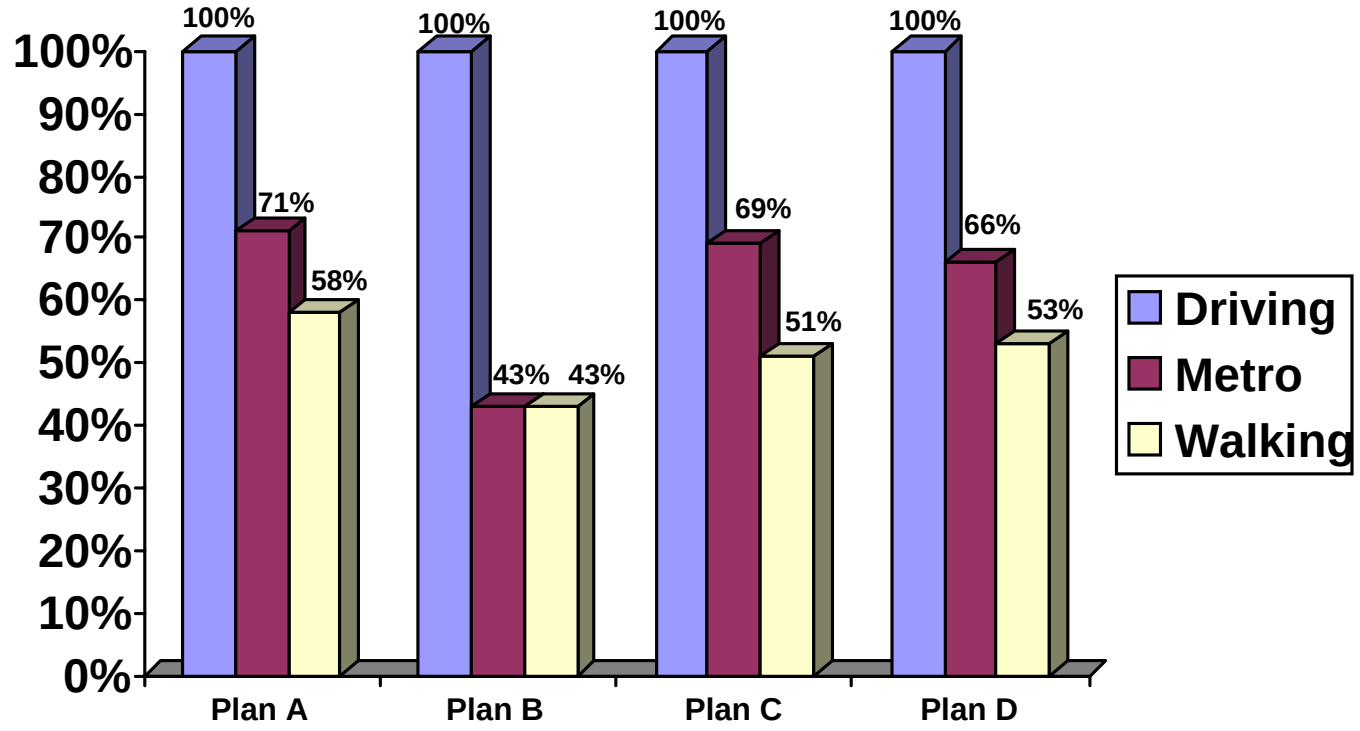
Travel Time to Dentist

Percentage of Beneficiaries for Each Healthy Families MCO That Live Within 30 minutes Travel Time of the Nearest Dentist



Travel Time to Psychiatrists/Psychologists

Percentage of Beneficiaries for Each Healthy Families MCO That Live Within 30 minutes Travel Time of the Nearest Psychiatrist/Psychologist



Summary

- Almost all beneficiaries live 30 minutes or less by car from all provider types

- 30 minute travel time is harder to meet by Metro train or walking (less than 50% for the following)
  - OB/GYN
    - Metro train and walking (two plans)
  - Dentist
    - Walking (one plan)

Lessons Learned

- GIS can improve access to care
  - Gaps in service capacity
    - Spatial gaps of coverage by travel time

Next Steps

- Standardizing definition of specialties
- Develop comprehensive database of providers in DC metro area
  - To direct DCHFP provider network expansion
    - Map “universe” of providers vs. DCHFP provider network
  - To assist beneficiaries in locating providers (eg. “store” locator)
- Map service utilization patterns among beneficiaries
  - To identify under used providers in DCHFP network
  - To assess any demographic trends in utilization

Co-Authors

- Brian Blankespoor, MS, Spatial Analysis Expert
  - World Bank
  - BBlankespoor@worldbank.org
- Chanza Baytop, MPH, DrPH, Associate
  - Abt Associates Project Manager, DC Medicaid Evaluation
  - Chanza_Baytop@abtassoc.com

Additional Slides for Q & A:

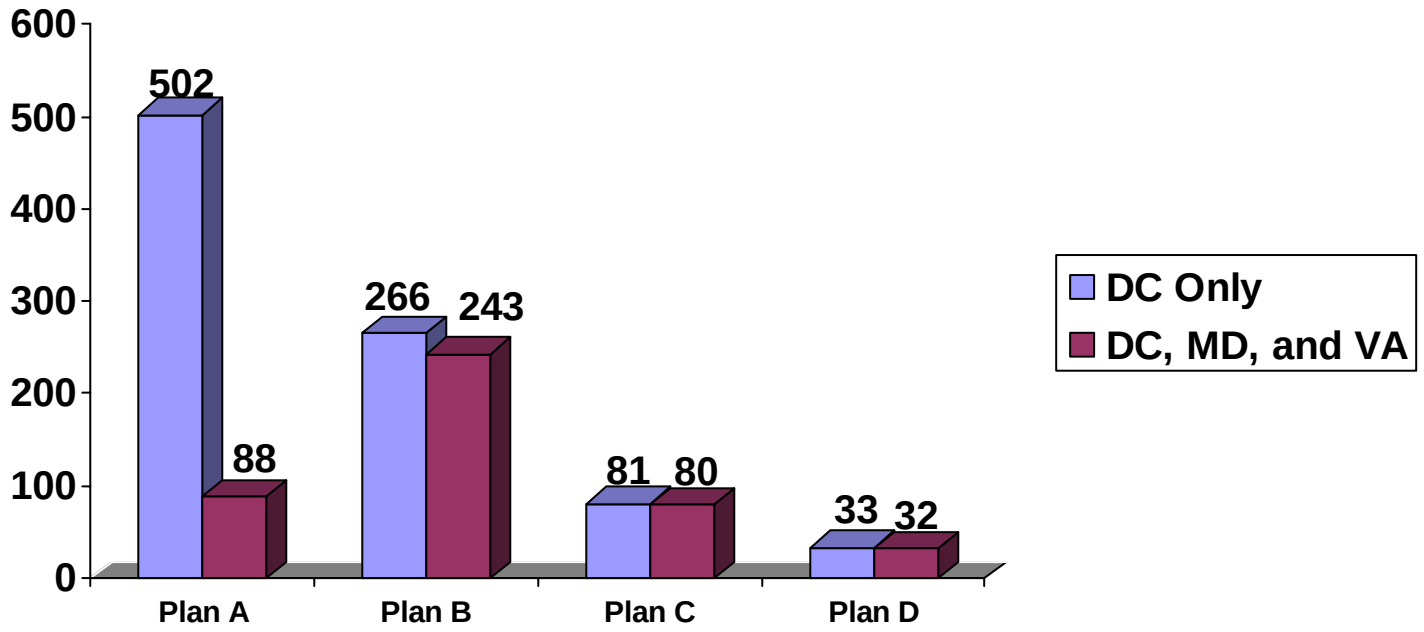
Provider Network Adequacy Assessment

Provider Networks Across DC Healthy Families MCOs

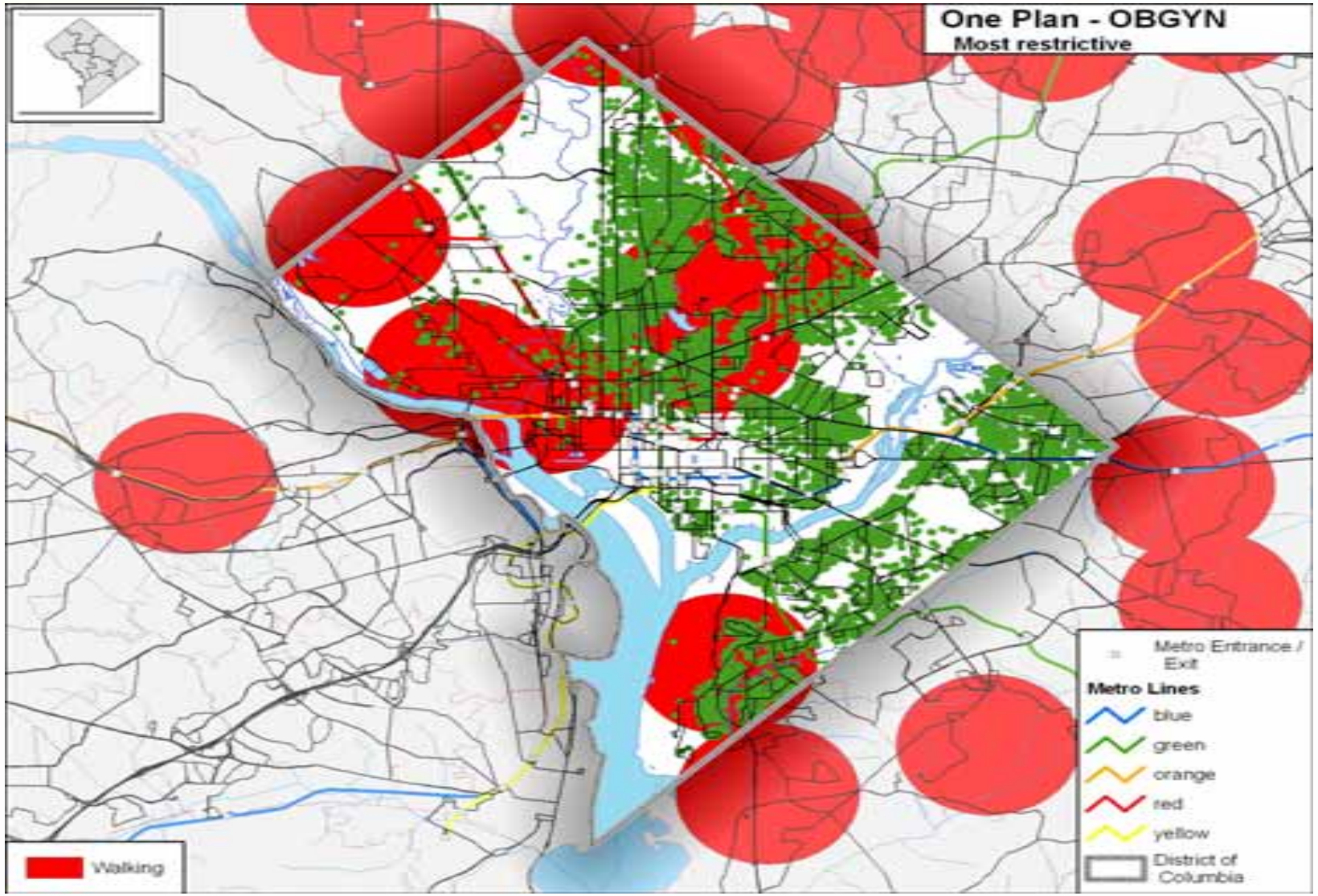
Specialty	1st Mentioned, Only One Network	Ever Mentioned, Can Participate in Multiple Networks
Primary Care (All)	912	1,579
Family/General Practice	196	340
Pediatrics (Including Adolescent Medicine)	374	596
Adolescent Medicine	5	25
Internal Medicine	298	579
Geriatrics	6	22
Nurse Practitioner	32	69
Psychiatrist/Psychologist	142	206
Dental	59	44
Obstetrician/Gynecologist (OB/GYN)	152	230
Nurse Midwives	16	92

Provider Ratios: Primary Care
(Standards: 387 for Adults and 301 for Children)

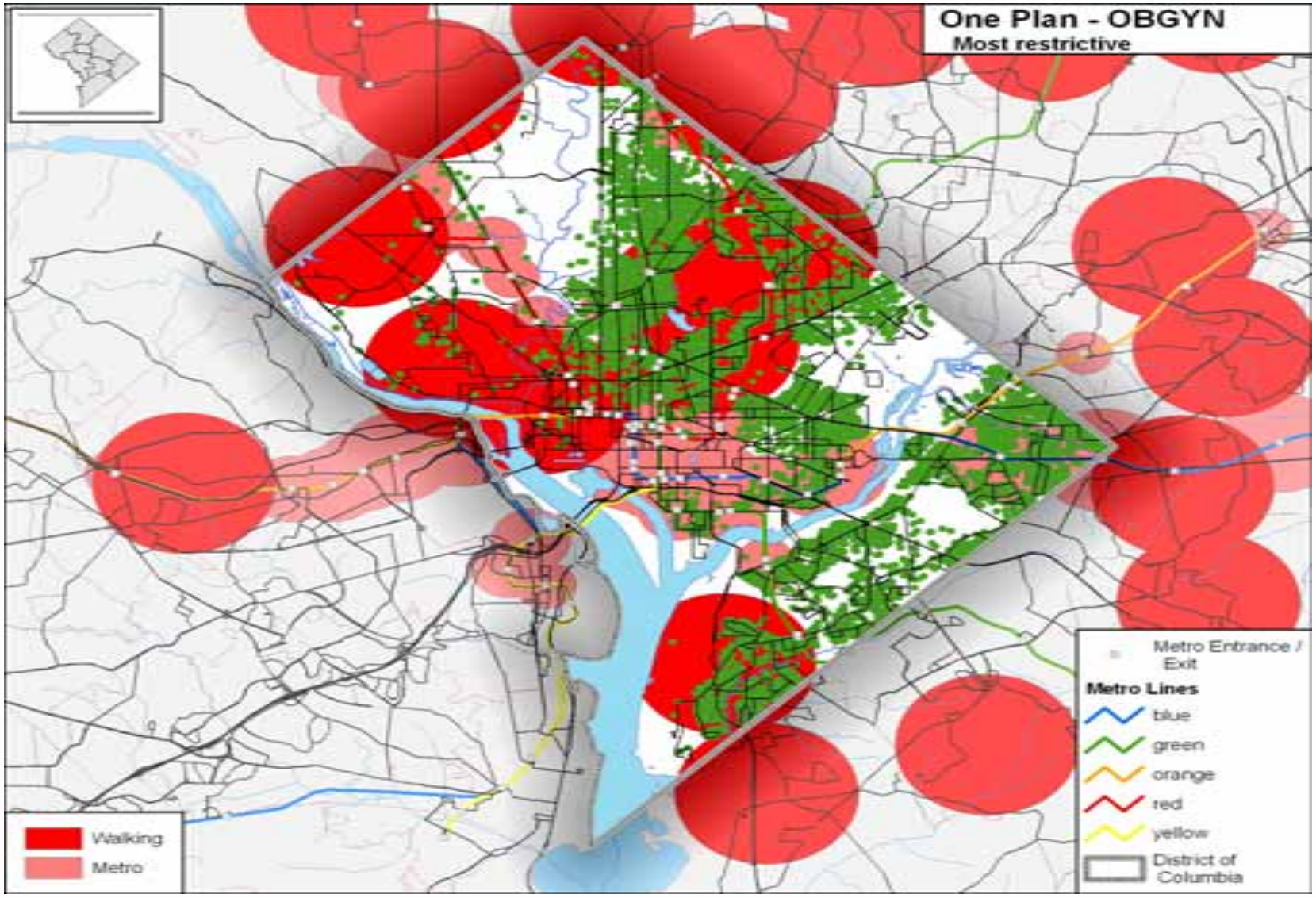
Beneficiary to Primary Care Ratios by MCO:
All (Adult and Children) Beneficiaries 1st Mentioned and Only One Network



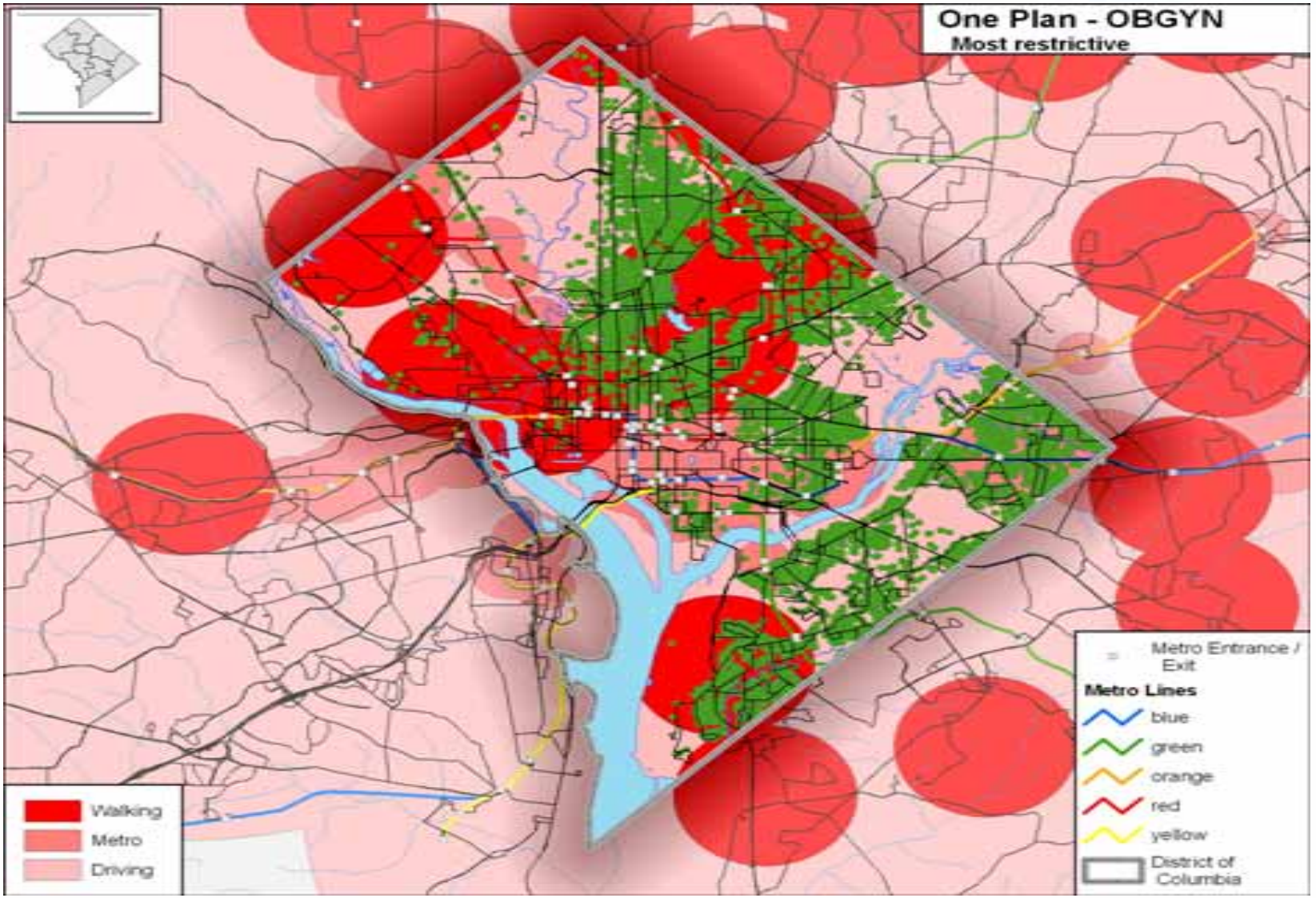
OBGYN – Walking



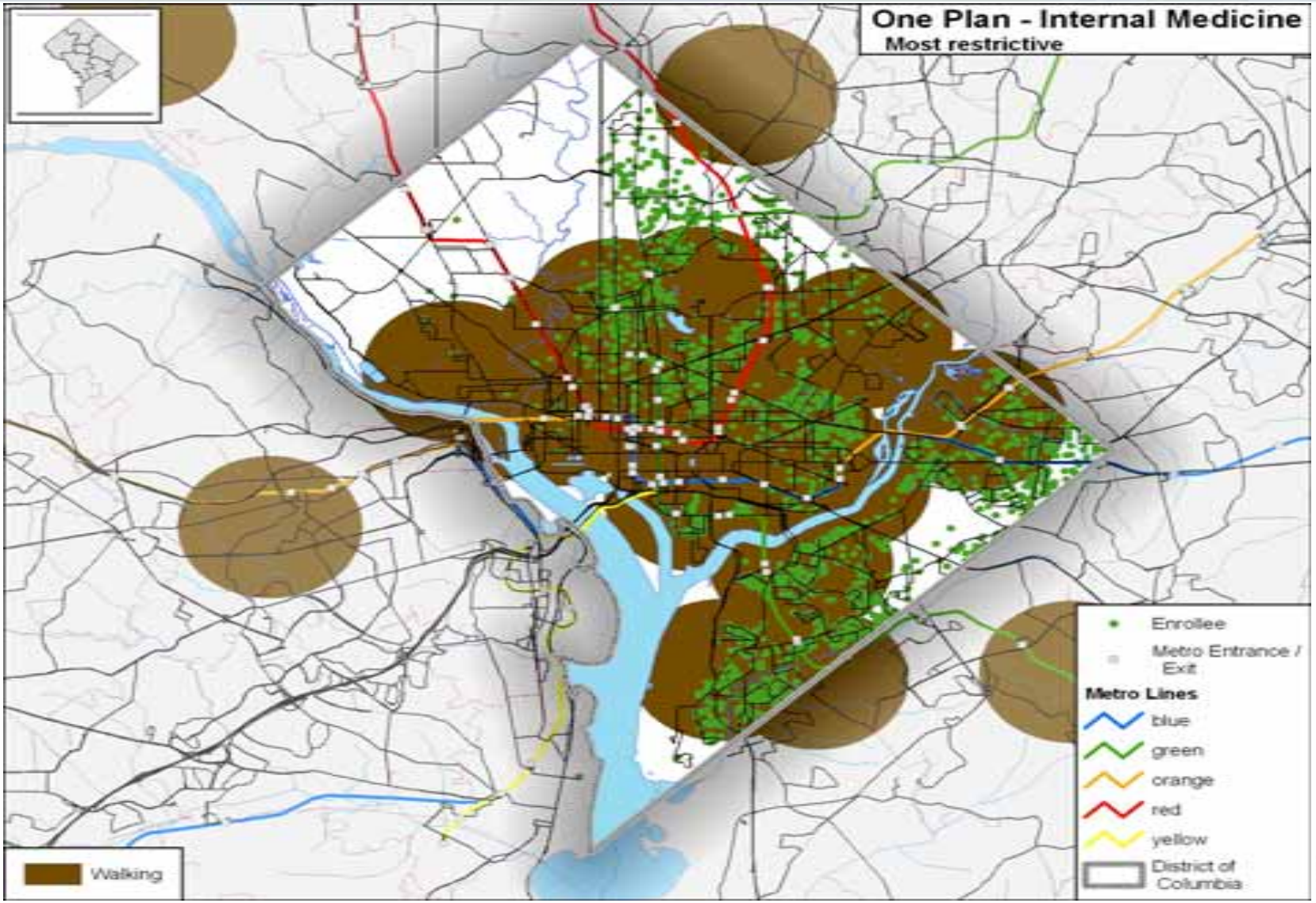
OBGYN – Metro


One Plan - OBGYN
Most restrictive
Walking
Metro
Metro Entrance / Exit
Metro Lines
blue
green
orange
red
yellow
District of Columbia

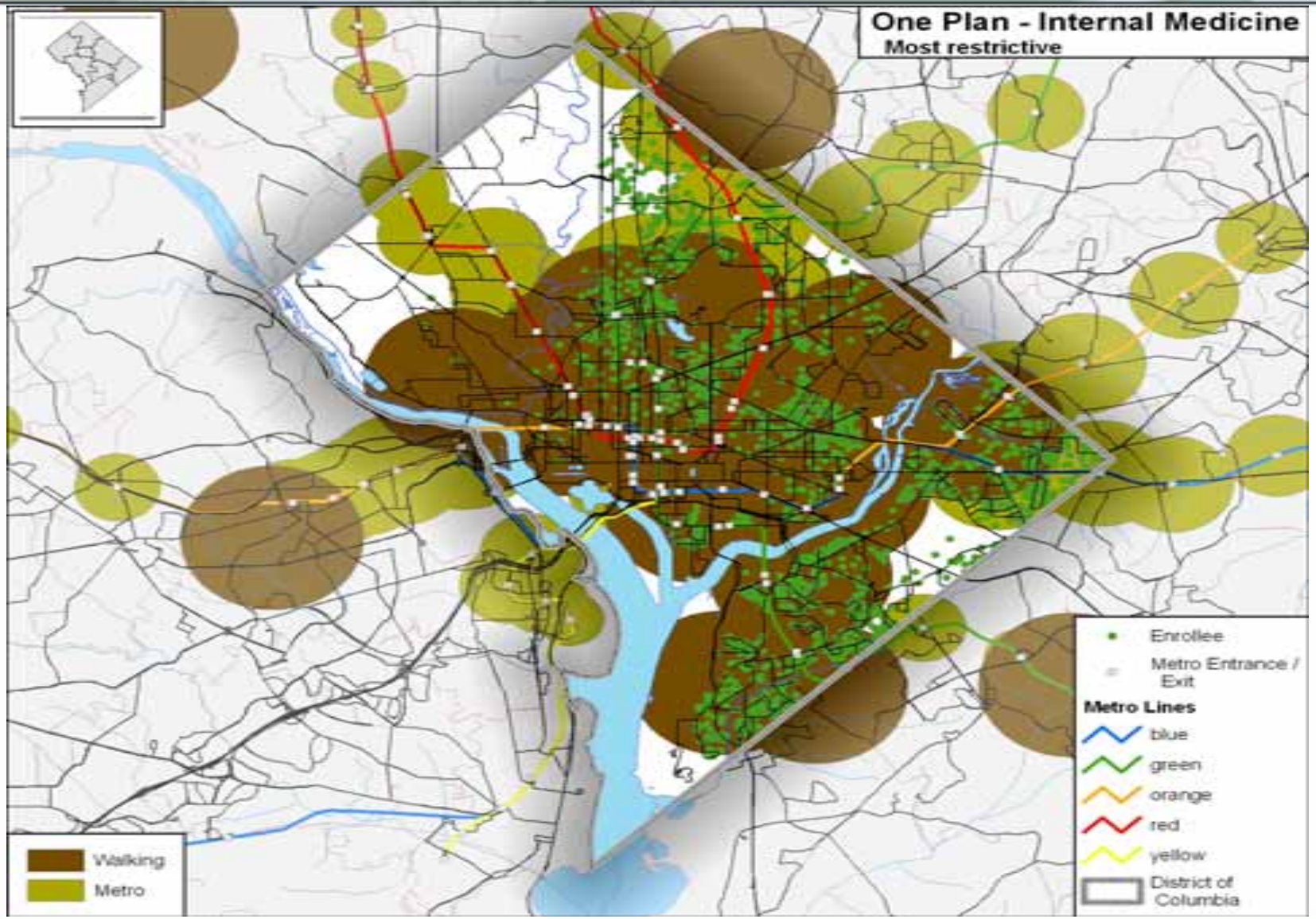
OBGYN – Driving



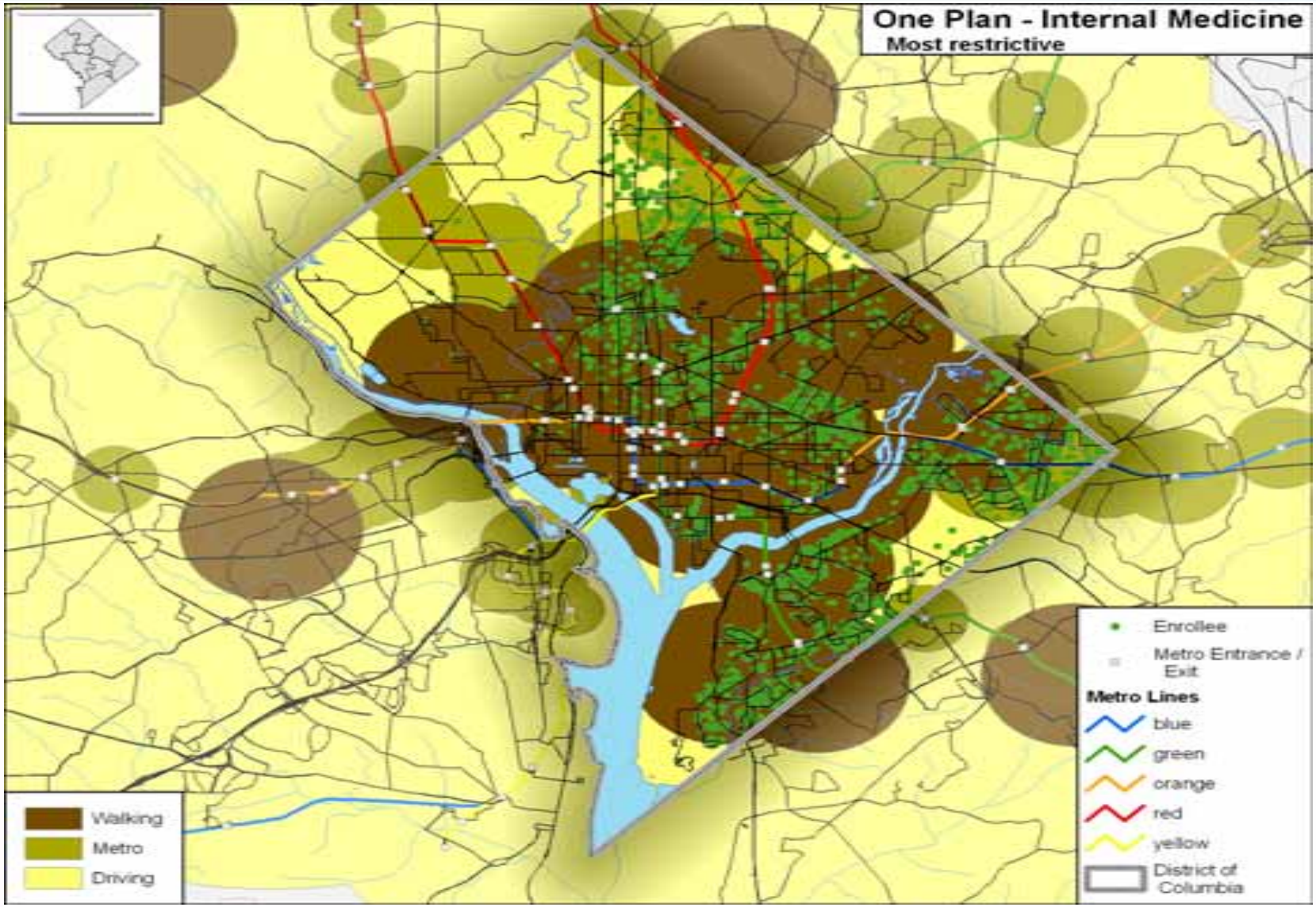
Internal Medicine – Walking



Internal Medicine – Metro



Internal Medicine – Driving



Plan D – Psychiatry and Psychology – Ward 8