

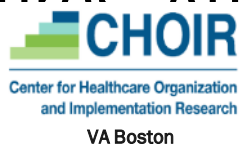
VHA Community Care Data

Todd H. Wagner
Erin Beilstein-Wedel
Warren B. P. Pettey

October 2019

Acknowledgements and Disclosures

- Funding from Health Services Research & Development (HSR&D) SDR 18-318
- The views expressed herein are not necessarily those of the Department of Veterans Affairs (VA) or other organizations
- Disclosures: Authors are researchers employed by VA



- Amy Rosen
- Michael Schwartz
- Erin Beilstein-Wedel
- Jeff Chan



- Megan Vanneman
- Warren Pettey
- Ying Suo



- Todd Wagner
- Jeanie Lo
- Elizabeth Gehlert

Presentation Outline

- Overview of VHA Community Care (Todd)
- Utilization and outcomes (Erin)
- Costs (Todd)
- Access and GIS (Warren)
- Questions
- Small group sessions

Background

VA Community Care Prior to FY2015

- Several names: Fee Basis, VA Purchased Care, Non-VA Medical Care
- VA paid non-VA health care providers for services in certain emergent/urgent cases or when VA could not offer the needed care
- Care commonly provided in the community: short-term acute inpatient care, community nursing home care, emergency outpatient treatment, home-based care, ongoing outpatient treatment where nearest VA facility is distant
- Accounted for approximately 11% of VA expenditures in fiscal year 2014

Veterans Choice Program (VCP)

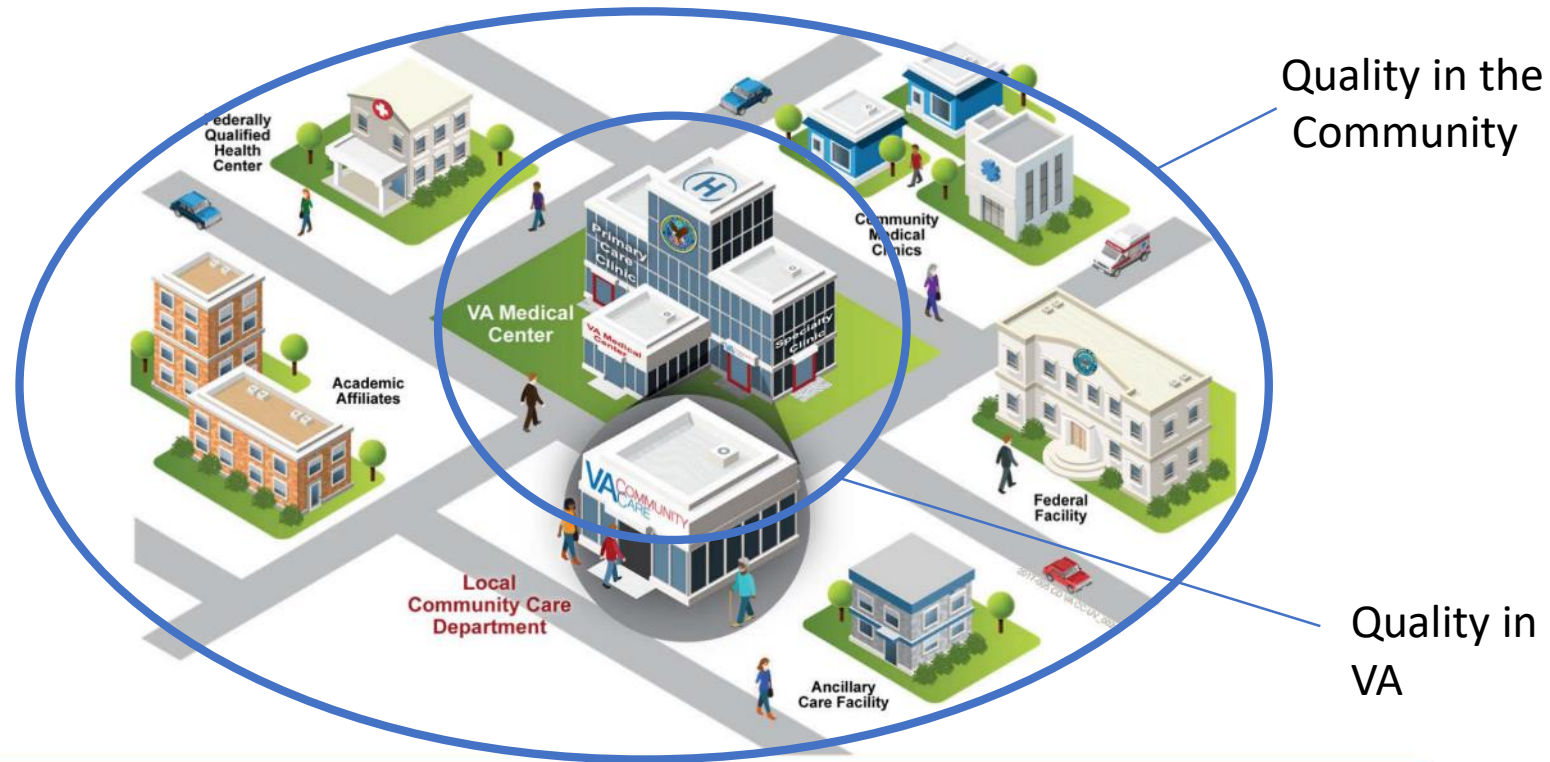
- Congress allocated \$10 billion for FY2015-17
- Paid for Veterans to receive care outside VHA
- Eligible if long wait times, large driving distances, and/or particular hardships
 - Wait-time qualify for specific services outside VHA
 - Mileage/hardship qualify for any services outside VHA

MISSION Act

- Established a VA Community Care Network (VCCP), a new, permanent discretionary community care program
- An additional >640,000 VA-enrolled Veterans are estimated to seek care through community care providers under MISSION*
 - ~1/3 of VA enrolled Veterans already access community care under Choice

*May be higher given newly-released access standards

VA Community Care: Moving Toward a High-Performing Network



Our future health care network will:



Evolve from fee-for-service reimbursement to preferred providers with value-based reimbursement



Develop processes to monitor healthcare quality, utilization, patient satisfaction, and value.



Transform our care model to support more personalized and coordinated Veteran care



Transition to more seamless electronic exchange of healthcare information

| | <u>VA Fee Basis/ Non-VA Medical Care Program</u> | <u>Veterans Choice Program (VCP)</u> | <u>VA MISSION Act/ Veterans Community Care Program (VCCP)</u> |
|---------------------------------|--|--|--|
| Years | 1947-present | 2014-2018 | 2019- |
| Eligibility Criteria | VA facility or services not “feasibly available” | <p>Unable to schedule appointment at VA within 30 days (“wait time eligibility”)</p> <p>Lives >40 miles from nearest VA facility (“distance eligibility”)</p> | <p>1) VA does not offer care at all or is unable to provide care within a specified wait time (proposed standard: 28 days for specialty clinics);⁶ or</p> <p>2) Veteran resides in a state lacking a full-service VA; or</p> <p>3) Veteran lives beyond a maximum drive time from a VA facility offering the care needed (proposed standard: 60-minute average drive time for specialty care); or</p> <p>4) VA cannot provide Veteran with care meeting specified VA quality standards; or</p> <p>5) Veteran and primary care provider determine it is in Veterans’ “best medical interest” to receive care in the community</p> <p>* Note: patients meeting distance eligibility criteria for care under VCP also may qualify for community care under VCCP if not otherwise eligible under a legacy provision.</p> |

VCCP Eligibility Criteria

| | <u>VA Fee Basis/ Non-VA Medical Care Program</u> | <u>Veterans Choice Program (VCP)</u> | <u>VA MISSION Act/ Veterans Community Care Program (VCCP)</u> |
|-----------------------|--|---|---|
| Years | 1947-present | 2014-2018 | 2019- |
| Key Points | <ul style="list-style-type: none"> • Individual contracting with local/regional providers • Pre-authorization required (except in emergency situations) • Each VA facility has separate criteria to determine eligibility • Claims for authorized care submitted within 6 years of service | <ul style="list-style-type: none"> • Primarily utilized 2 third-party administrators (TPAs) to coordinate care/create provider network • Significant implementation challenges, including delayed payment of claims | <ul style="list-style-type: none"> • 6 Community Care Network (CCN) regional provider networks facilitated by TPA contracts • Supplemented by individual contracting/local provider agreements • Access and quality standards to be defined in future regulations • Claims for payment submitted within 6 months of service • Payment mandated within 30 (electronic) or 45 days (paper) |

Community Care Network Regions

CCN Region 4

VISN 16

Houston, TX (580)

VISN 17

Amarillo, TX (504)
El Paso, TX (756)
Texas Valley Coastal, TX (740)
Central Texas (674)
North Texas (549)
South Texas (671)
West Texas (519)

VISN 19

Cheyenne, WY (442)
Grand Junction, CO (575)
Salt Lake City, UT (660)
Sheridan, WY (666)
Eastern Colorado, CO (554)
Montana (436)

VISN 20

Boise, ID (531)
Portland, OR (648)
Roseburg, OR (653)
Spokane, WA (668)
Puget Sound, WA (663)
Walla Walla, WA (687)
White City, OR (692)

VISN 21

Fresno, CA (570)
Honolulu, HI (459)
Reno, NV (654)
San Francisco, CA (662)
Northern California (612)
Palo Alto, CA (640)
Southern Nevada (593)

VISN 22

Loma Linda, CA (605)
Long Beach, CA (600)
New Mexico (501)
Northern Arizona (649)
Phoenix, AZ (644)
San Diego, CA (664)
Southern Arizona (678)
Greater LA, CA (691)

CCN Region 2

VISN 9

Lexington, KY (596)
Louisville, KY (603)

VISN 10

Chillicothe, OH (538)
Cincinnati, OH (539)
Cleveland, OH (541)
Columbus, OH (757)
Dayton, OH (552)
Detroit, MI (553)
Indianapolis, IN (583)
Saginaw, MI (655)
Battle Creek, MI (515)
Ann Arbor, MI (506)
Northern Indiana (610)

VISN 12

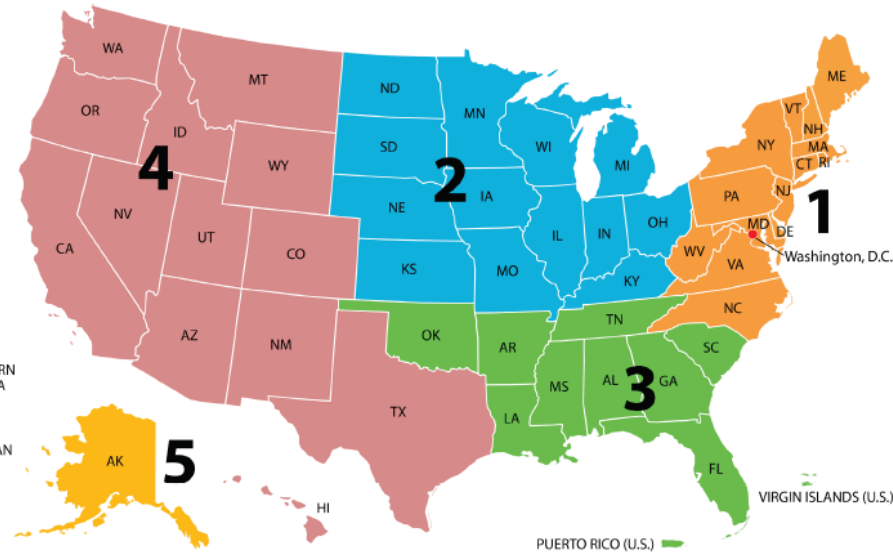
Hines, IL (578)
Iron Mountain, MI (585)
Madison, WI (607)
Milwaukee, WI (695)
North Chicago, IL (556)
Tomah, WI (676)
Chicago, IL (537)
Illiana, IL (550)

VISN 15

Columbia, MO (589)
Eastern Kansas (589)
Kansas City, MO (589)
Wichita, KS (589)
Marion, IL (657)
Poplar Bluff, MO (657)
St. Louis, MO (657)

VISN 23

Fargo, ND (437)
Des Moines, IA (636)
Iowa City, IA (636)
Minneapolis, MN (618)
Omaha, NE (636)
Sioux Falls, SD (438)
St. Cloud, MN (656)
Black Hills, SD (568)



CCN Region 3

VISN 7

Augusta, GA (509)
Birmingham, AL (521)
Charleston, SC (534)
Columbia, SC (544)
Atlanta, GA (508)
Dublin, GA (557)
Tuscaloosa, AL (679)
Central Alabama (619)

VISN 8

Bay Pines, FL (516)
Miami, FL (546)
N. Florida / S. Georgia (573)
Orlando, FL (675)
San Juan, PR (672)
Tampa, FL (673)
West Palm Beach, FL (548)

VISN 9

Memphis, TN (614)
Mountain Home, TN (621)
Tennessee Valley, TN (626)

VISN 16

Alexandria, LA (502)
Fayetteville, AR (564)
Jackson, MS (586)
New Orleans, LA (629)
Shreveport, LA (667)
Central Arkansas, AR (598)
Biloxi, MS (520)

VISN 19

Muskogee, OK (623)
Oklahoma City, OK (635)

CCN Region 1

VISN 1

Bedford, MA (518)
Manchester, NH (608)
Central Western, MA (631)
Providence, RI (650)
Togus, ME (402)
Boston, MA (523)
Connecticut, CT (689)
White River Junction, VT (405)

VISN 2

Bronx, NY (526)
Albany, NY (528)
Bath, NY (528)
Canadagua, NY (528)
Syracuse, NY (528)
New York, NY (630)
Northport, NY (632)
Hudson Valley, NY (620)
East Orange, NJ (561)

VISN 4

Altoona, PA (503)
Butler, PA (529)
Coatesville, PA (542)
Erie, PA (562)
Lebanon, PA (595)
Philadelphia, PA (642)
Pittsburgh, PA (646)
Wilkes-Barre, PA (693)
Wilmington, DE (460)

VISN 5

Beckley, WV (517)
Clarksburg, WV (540)
Huntington, WV (581)
Martinsburg, WV (613)
Baltimore, MD (512)
Washington, DC (688)

VISN 6

Asheville, NC (637)
Durham, NC (558)
Fayetteville, NC (565)
Hampton, VA (590)
Richmond, VA (652)
Salem, VA (658)
Salisbury, NC (659)

CCN Region 6

VISN 21

Northern Mariana Islands (Saipan) (6307)
American Samoa (459)
Guam (459)

CCN Region 5

VISN 20

Alaska (463)

Research Teams to Date

- Network adequacy: Michelle Mengeling and Kristin Mattocks
- Quality, access, and cost with a focus on surgery and mental health: Amy Rosen, Megan Vanneman, Todd Wagner
- Care Coordination: Denise Hynes and Fran Weaver
- Measuring systems and networks: Eve Kerr
- Community care referrals for hip and knee pain and for heart failure: Susan Diem
- Quality of PTSD, depression, and chronic pain care: Jen Manuel (just funded)
- Coordinating Center – PEPReC: Steve Pizer, Melissa Garrido

Documentation

- We are working to document the Community Care data.
- Because the Community Care data are dynamic, we've set up internet and intranet sites that are updated and dynamic.

vaww.herc.research.va.gov/include/page.asp?id=choice-pit

www.herc.research.va.gov/include/page.asp?id=choice-pit

Community Care Data for Analyses

CC Make vs. Buy Group (PABSLC)

Erin Beilstein-Wedel

October 30, 2019

Outline

- Community Care Data Overview
 - Data sources
 - PIT overview
 - Challenges
- Data for Utilization and Complication Analyses
 - Research question
 - Data processing
 - Challenges
 - Other data

CDW Community Care Data

FEE

Vista Fee Purchased Care

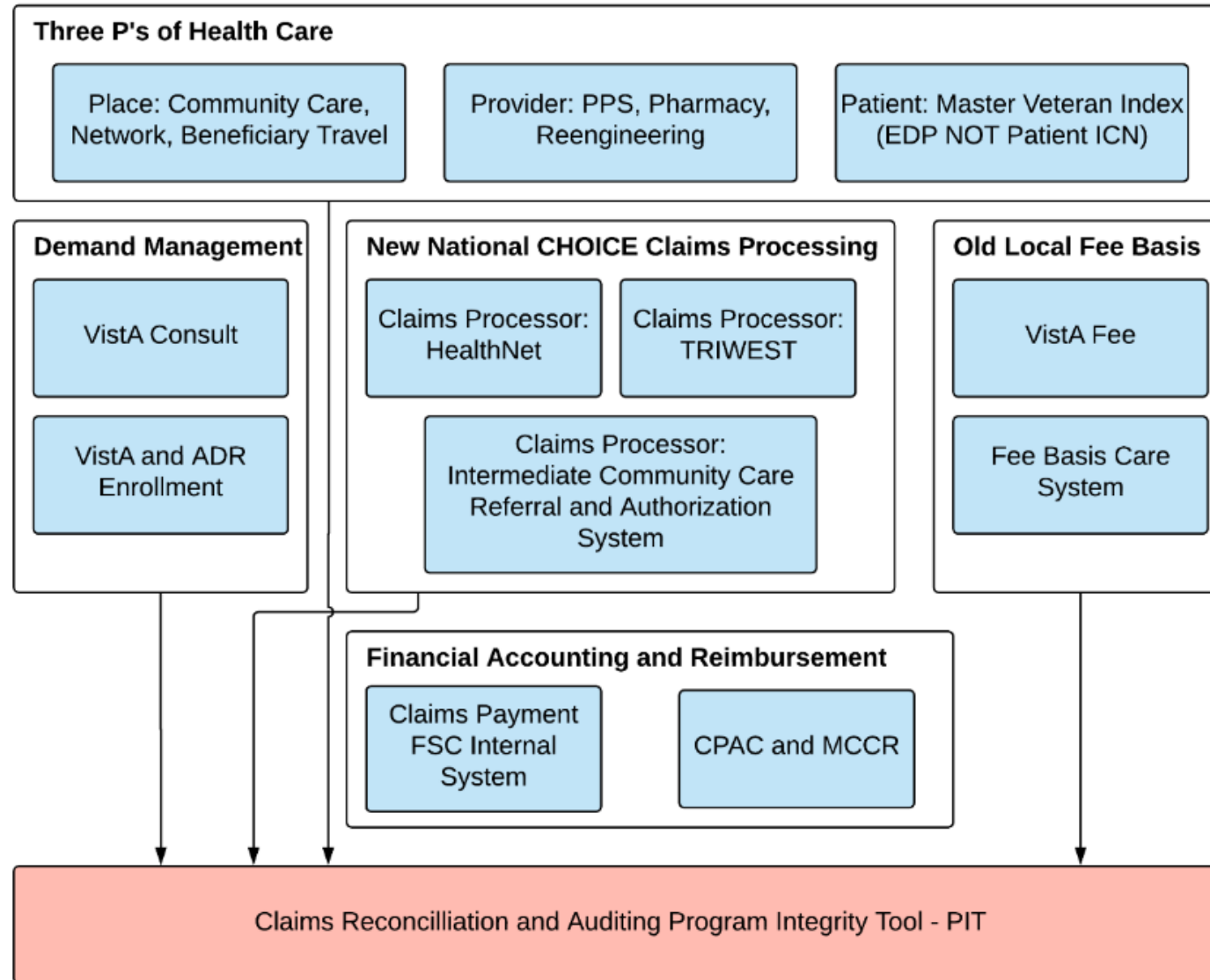
FBCS

Fee Basis Claims System

PIT

Performance Integrity Tool

Community Care Data Sources



PIT: structure & content

- Structure
 - Not connected to standardized CDW
 - No PatientSID
 - DIM tables are in NDim schema
 - Division of data follows standard medical billing process
 - Institutional: facilities (UB-92)
 - Professional: individual providers and ambulatory surgical centers (ASC) (HCFA-1500)
- Content
 - Almost all claims in Fee schema
 - Only “adjudicated” Choice claims (accepted or rejected)
 - Veteran and non-veteran care

PIT: variables of interest

| Category | PITInstitutional | PITProfessional |
|-----------|--------------------------------------|-----------------------------------|
| Dates | StatementFromDate StatementToDate | ServiceFromDate ServiceToDate |
| Procedure | PITProcedureCodeSID | PITProcedureCodeSID |
| Diagnosis | AdmittingPITDiagnosisCodeSID | PIT.PITProfessionalClaimDiagnosis |

PIT: variables of interest continued

| Category | PITInstitutional | PITProfessional |
|----------|--|--|
| Provider | AttendingPITProviderSID OperatingPITProviderSID | RenderingPITProviderSID |
| Biller | BillingPITProviderSID | BillingPITProviderSID RenderingFacilityPITProviderSID |
| Place | PITPlaceofServiceSID | PITPlaceofServiceSID |
| Payment | PaidAmount | AmountPaid PaidAmount |
| Other | CurrentFlag PayFlag ClaimStatus | IsCurrentFlag PayFlag ClaimStatus |

PIT: other variables of interest

| Category | Schema.Table | Variable | Use |
|---------------------|------------------------|------------------------------|-------------------------|
| Patient Identifiers | Sveteran.PITPatient | MemberID (SSN) PatientICN | Connect to SPatient |
| Authorization | PIT.PITVAAuthorization | AuthID | Connect claims together |
| Claim Information | PIT.PITClaim | VistaID | Connect to FBCS |
| Provider | SStaff.PITProvider | NPI | Connect to NPPES |

SSN: Social Security Number

PatientICN: Patient Integration Control Number

NPI: National Provider Identifier

NPPES: National Plan & Provider Enumeration System

PIT: opportunities & challenges

| Opportunity | Challenge |
|---|--|
| Location and type of provider | Multiple provider fields |
| Detailed information about service | Missing CPT modifiers Mixed procedure codes (ICD9/10, CPT) Missing diagnosis qualifier |
| Broader understanding of care received in community | Incomplete VistaID Missing AuthID Lag between appointment and data availability |

CPT: Current Procedural Terminology

ICD: International Classification of Diseases

Outline

- Community Care Data Overview
 - Data sources
 - Variables of interest
 - Linking variables
 - Challenges
- Utilization and Complication Analyses
 - Research question
 - Methods
 - Challenges
 - Other data

Our Question

- How do utilization and complication rates differ between VA and care purchased in the community?
 - Cataracts
 - Total Knee Replacements

Building a Cohort

- Dates
- Procedure
 - ICD
 - CPT
- Diagnosis
- Location
 - Ambulatory surgical centers, hospitals
 - Sta3n
- Types of providers

Building a Cohort

- **Dates**
- Procedure
 - **ICD**
 - **CPT**
- Diagnosis
- Location
 - Ambulatory surgical centers, hospitals
 - Sta3n
- Types of providers

Analysis plan

- Time period: FY15-FY19
- Procedures

| Procedure | CPT | ICD procedure |
|------------------------|--------------|------------------------------|
| Cataracts | 66984, 66982 | |
| Total Knee Replacement | 27447 | 0SRC07Z, 0SRC0J9, 0SRD0JZ... |

- Ma

| VA | Community Care |
|------------------------------------|----------------------------------|
| Surg.SurgeryProcedureDiagnosisCode | PIT.PITInstitutionalClaimDetails |
| Outpat.WorkloadVProcedure | PIT.PITProfessionalClaimDetails |
| Inpat.InpatientCPTProcedure | Fee.FeeInitialTreatment |
| Inpat.InpatientSurgicalProcedure | Fee.FeeServiceProvided |

Data Process

- Pull raw data from all tables (VA, Fee, PIT)
- Combine datasets

| VA | | | PIT | |
|-----------|-------------|-------------------------------------|-----------|-------------|
| PatientID | SurgeryDate | Modifiers ISSU & PI ies (C | PatientID | SurgeryDate |
| 4 | 2015-07-29 | | 1 | 2016-10-01 |
| 5 | 2014-12-25 | Issues | 1 | 2016-10-03 |
| 6 | 2019-01-11 | & PI | 2 | 2018-04-27 |
| 7 | 2018-09-30 | ies (C | 3 | 2017-01-15 |

• PIT claims not with: Paid=1 and
claimstatus='Accepted' and currentflag='Y'

| PatientID | SurgeryDate | Source |
|-----------|-------------|--------|
| 1 | 2016-10-01 | PIT |
| 1 | 2016-10-03 | PIT |
| 2 | 2018-04-27 | PIT |
| 2 | 2018-04-27 | FEE |
| 5 | 2014-12-25 | VA |
| 6 | 2019-01-11 | VA |
| 7 | 2015-03-12 | FEE |
| 7 | 2018-09-30 | VA |
| 9 | 2014-06-11 | FEE |
| 7 | 2018-09-30 | VA |
| 8 | 2016-12-05 | FEE |
| 9 | 2014-06-11 | FEE |

SSN: Social Security Number
PatientICN: Patient Integration Control Number
CPT mod: Current Procedural Terminology Modifier

Data Process

- Transpose data
- Remove records based on exclusion criteria
 - Surgeries too close clinically
 - Surgeries after first on side

| PatientID | | SurgeryDate1 | SurgeryDate2 | Source |
|-----------|---|--------------|--------------|----------|
| 1 | | 2016-10-01 | | PIT |
| 2 | | 2018-04-27 | 2018-04-27 | PIT, FEE |
| 5 | | 2014-12-25 | | VA |
| 6 | | 2019-01-11 | | VA |
| 7 | | 2015-03-12 | | FEE |
| 9 | | 2014-06-11 | | FEE |
| 7 | 7 | 2015-03-12 | FEE | |
| 9 | 7 | 2018-09-30 | VA | |
| | 9 | 2014-06-11 | FEE | |

Challenges Faced

- Identifying surgery records for inclusion
 - Use CPT modifiers
 - Use cost
- Missing side CPT modifier
 - Use diagnosis data
- Connecting Sveteran.PITPatient to Spatient.Spatient
 - MemberID = SSN
 - PatientICN is gold standard

SSN: Social Security Number

PatientICN: Patient Integration Control Number

CPT mod: Current Procedural Terminology Modifier

Other Data: Drive Distance & Provider Type

- Rendering and Attending Provider
 - NPI from SStaff schema
 - Historical NPPES data
 - Merged by NPI and FY
- Patient home address
 - PSSG Geocoded Enrollee Files

NPI: National Provider Identifier

NPPES: National Plan & Provider Enumeration System

PSSG: Planning Systems Support Group

Resources

- HERC: vaww.herc.research.va.gov/include/page.asp?id=using-choice-data-research
- VIREC: forthcoming documentation
- BISL:
<https://vaww.cdw.va.gov/metadata/default.aspx?RootFolder=%2Fmetadata%2FMetadata%20Documents%2FPIT%201%2E0&FolderCTID=0x0120007BD83FE7EC890F42B79E1DA11A744B1E&View=%7B528CEE B9%2DAC18%2D4BF7%2DA0C5%2D419A00917C4F%7D>

Acknowledgments

PABSLC

- Amy Rosen
- Todd Wagner
- Megan Vanneman
- Jeff Chan
- Michael Schwartz
- Jeanie Lo
- Warren Pettey

VIReC

- Noreen Arnold

Operational Partner:
OCC

Thank you

Erin Beilstein-Wedel

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Assessing the Costs of Community Care

Todd Wagner

CC Make vs. Buy Group (PABSLC)

Oct 30th, 2019



Costs

- Two projects to date.
- Cataracts (complete)
- Knee Replacements (in progress)

How Do you Define a Cataract?

- The most common way is to use CPT codes
 - 66984 Basic cataract
 - 66982 Complex cataract
- What about CPT modifiers?
 - Modifiers are codes that are used to reflect the main service (i.e., the cataract, but are not the surgery itself).
 - Common modifiers are
 - 55 Preoperative care (measuring the lens)
 - 56 Post operative care
- These CPT modifiers are critical,
but they are often missing



Why Do missing Modifiers Matter?

- Preoperative and postoperative care averages \$120. If you treat this as a standalone cataract
 - You will misrepresent the number of cataracts done
 - Your average costs per cataract will be off, perhaps way off
- You must develop plans for handling this type of missing data.
- Same is true for location of care.

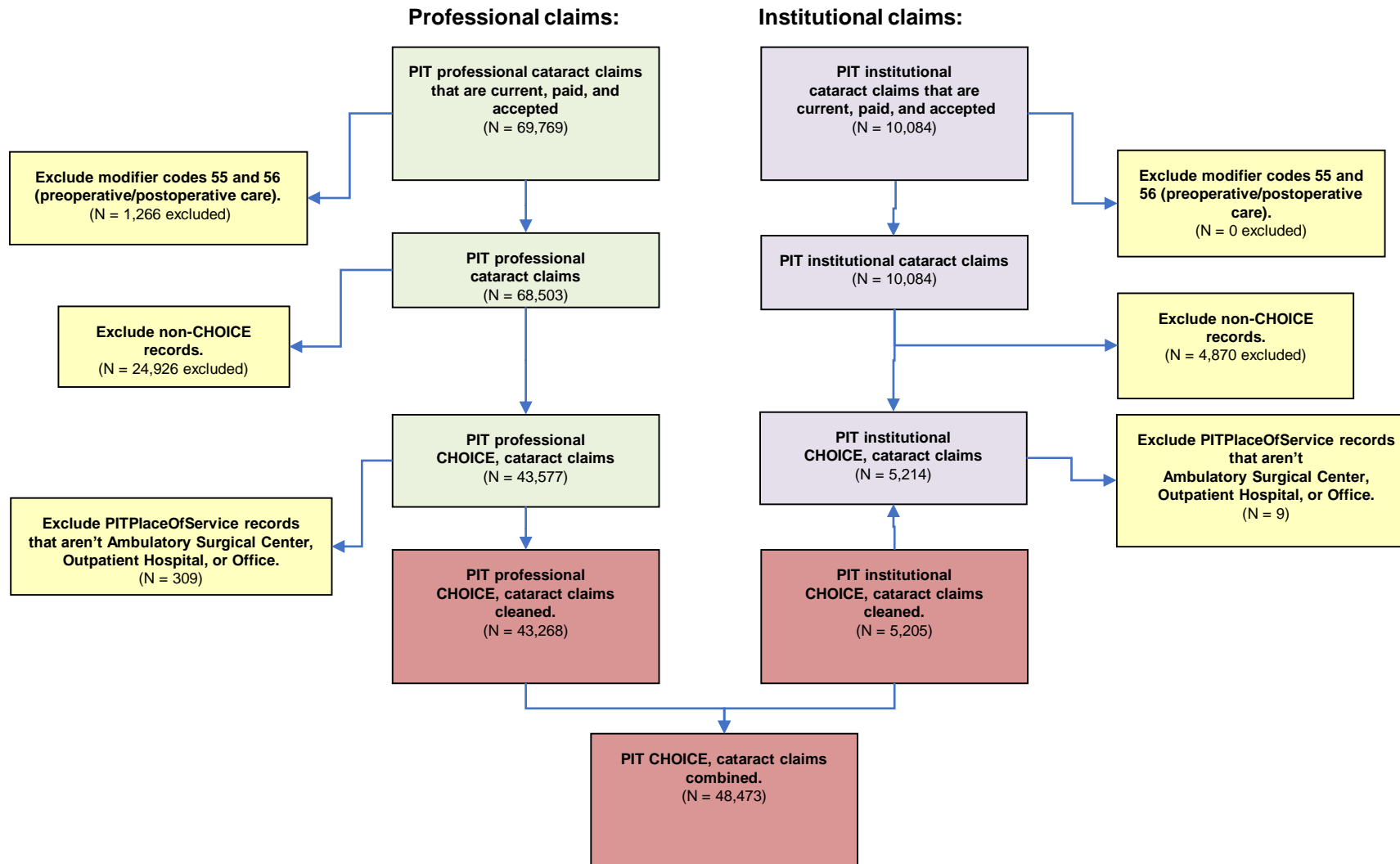
Payment Rules

- Cataract payments rule differ by location of care
 - Ambulatory Surgical Centers— one payment to the provider
ASCs provide same-day surgical care
 - Clinic— one payment to the provider
 - Outpatient hospital— one facility payment and one payment to the provider

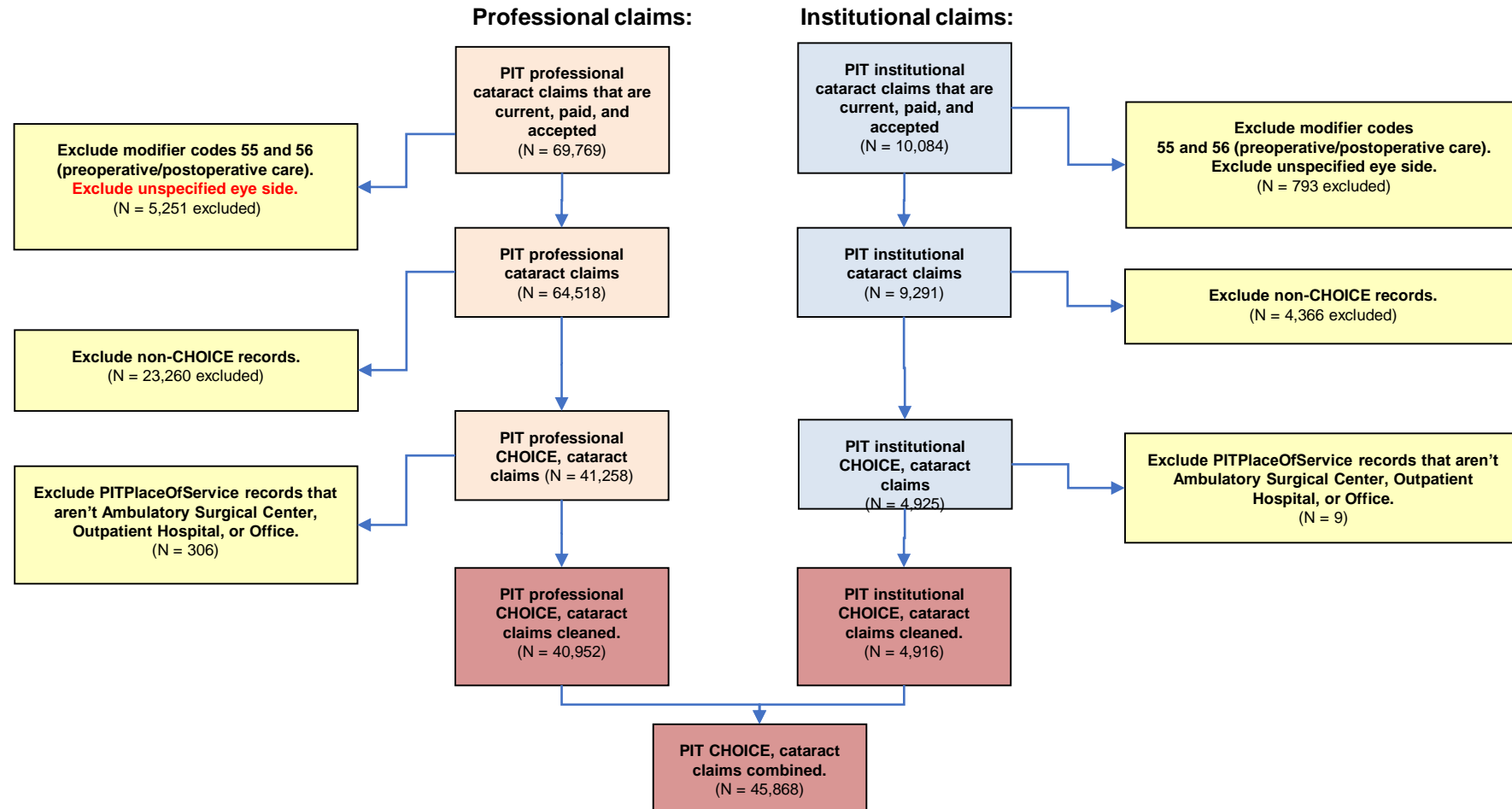
Recommendation: triangulation

- You will need to build samples using inclusion and exclusion criteria (standard algorithms).
- Each algorithm makes different assumptions.
- Create different target samples using different assumptions.
- Triangulate.

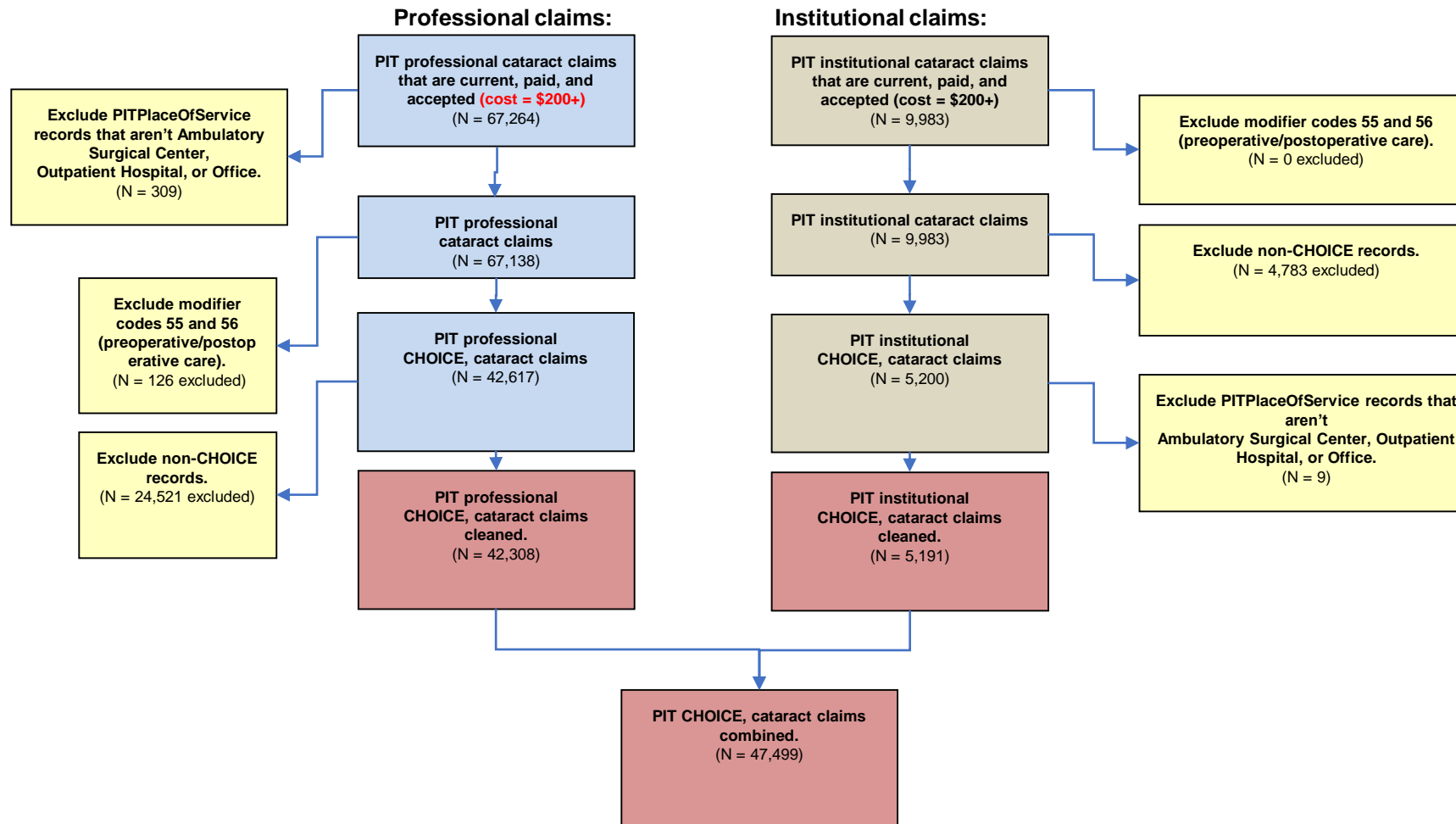
Algorithm A: Trust Data



Algorithm B: Excluding Missing Eye Side



Algorithm C: Trim Low Cost Records



PIT Data: À la Carte

- These algorithms only extracted payments for CPT 66982 and 66984.
- There may be other paid procedures that were concurrent with these cataracts
 - Anesthesia
 - Measuring the lens
- PIT data are like an À la Carte Menu, whereas VA is a fix-price menu.

Concurrent Procedures

- PIT has a variable called authorization key.
- We pulled all care that shared authorization keys for cataracts.
- You see
 - Lens fitting
 - Anesthesia
- But you also see
 - Acupuncture
 - PT
 - Ambulance rides

Define Related Procedures

- We identified cataract surgeries at VA hospitals using procedure codes plus clinic stop.
- We identified all CPT codes that were used with these procedure codes.
 - A clinician reviewed this list
 - These became our definition of **related procedures**

Cataracts in PIT

1. We extracted all cataracts in PIT.
2. We used the authorization key to pull all CPT codes and payments that shared the cataract authorization.
3. We excluded CPT codes and payments if they were not on our related procedure list.
4. We did this for each of the 3 algorithms.
5. We summed up those costs to represent the total payment for the cataract.

Total Payment Vs Total Cost

- The total payment in PIT *excludes*
 1. Administrative fees to third party administrators (TPAs). +30%
 2. The cost of running the Office of Community Care. +?%
- If you want the total payments for community care, multiple the payments by 1.3 (add 30% to each payment).
- This still does not include the cost of the Office of Community Care. We're estimating that now through the ALBCC.

Payments for Cataracts Performed in an ASC

FY2018

| | N | Mean | 5th Pctl | 25th Pctl | Median | 75th Pctl | 95th Pctl |
|---|--------|-------|----------|-----------|--------|-----------|-----------|
| A | 20,684 | 1,139 | 712 | 979 | 1,155 | 1,254 | 1,593 |
| B | 20,484 | 1,083 | 704 | 854 | 1,133 | 1,230 | 1,414 |
| C | 20,675 | 1,139 | 714 | 980 | 1,155 | 1,254 | 1,593 |

Includes TPA fees

Payments for Cataracts Performed in an Outpatient Hospital

FY2018

| | N | Mean | 5th Pctl | 25th Pctl | Median | 75th Pctl | 95th Pctl |
|---|-------|-------|----------|-----------|--------|-----------|-----------|
| A | 5,729 | 2,861 | 740 | 2,053 | 2,532 | 3,156 | 3,934 |
| B | 5,503 | 2,485 | 739 | 2,012 | 2,837 | 3,144 | 3,911 |
| C | 5,728 | 2,861 | 740 | 2,053 | 2,533 | 3,156 | 3,934 |

Includes TPA fees

Payments for Cataracts Performed in an Clinic

FY2018

| | N | Mean | 5th Pctl | 25th Pctl | Median | 75th Pctl | 95th Pctl |
|---|-----|------|----------|-----------|--------|-----------|-----------|
| A | 221 | 789 | 379 | 714 | 798 | 829 | 996 |
| B | 207 | 814 | 468 | 730 | 790 | 833 | 991 |
| C | 219 | 790 | 421 | 716 | 804 | 831 | 1,008 |

Includes TPA fees

PIT Cataract Payments

- Even with this triangulation, we see odd payment data
 - Lowest cost “cataract” was \$18.20
 - 1st percentile was \$578
- We think the average is pretty accurate given it is stable across the algorithms

Limitations with PIT

- The data are not well documented
 - “Member id” holds the SSN, not the “SSN” variable.
- The data can change rapidly
- The data are messy
- ICD and CPT procedure codes are stacked in one variable

Small Samples

- We chose cataract because it was a common procedure
 - Always outpatient
 - Always done by an ophthalmologist
 - Only 2 CPT codes
- If you are working with less common procedures, you will need to be more concerned with outliers

Next Up: Knee Replacement

- We're tackling in much the same way.
- Now, however, we need to include inpatient care and all services that were billed for that stay.

Questions

- Todd Wagner
- Todd.wagner@va.gov

Presentation Outline

1. Overview of VHA Community Care
2. Utilization and outcomes (Erin)
3. Costs (Todd)
4. Access and GIS (Warren)
5. Small group sessions

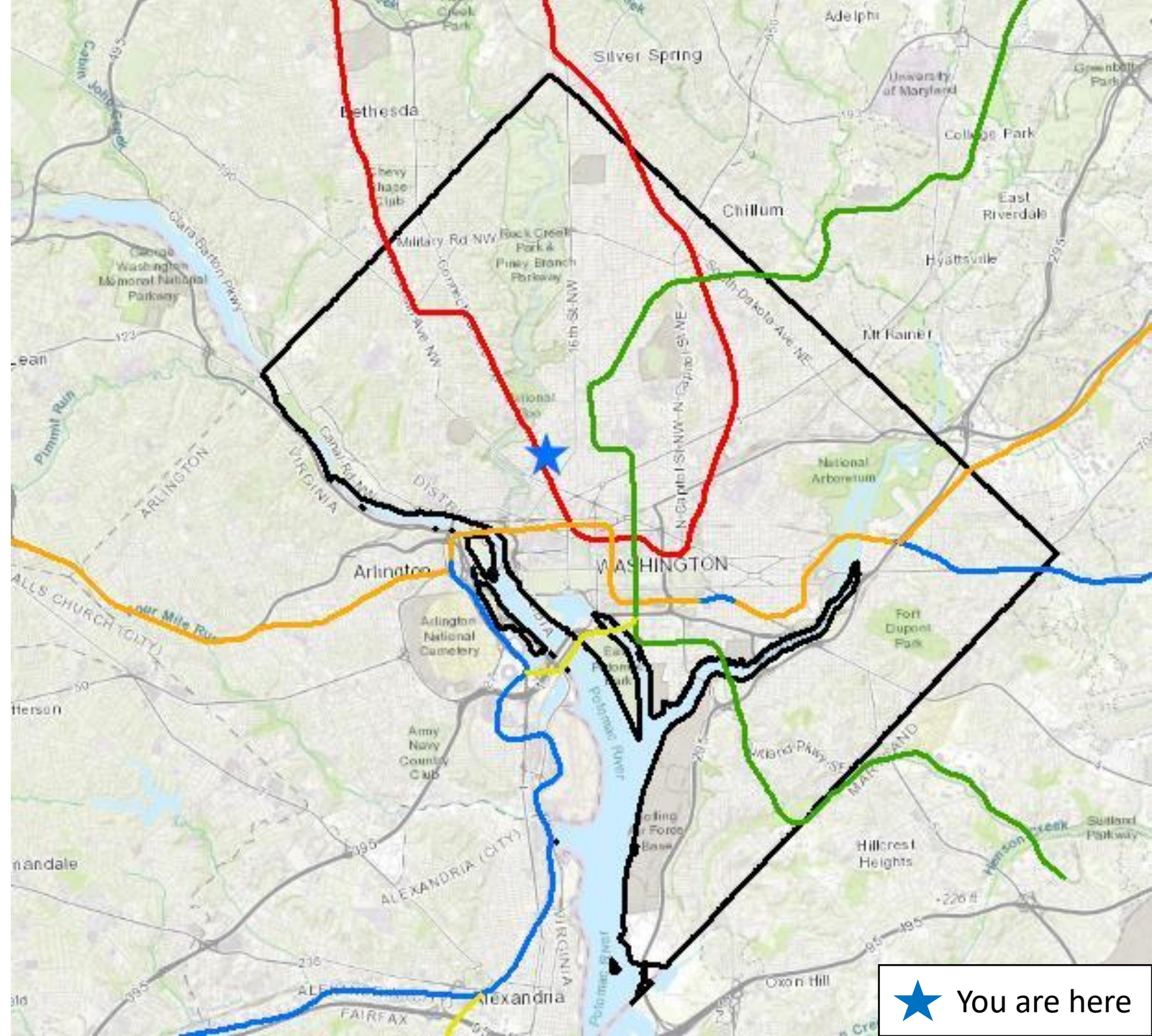
Using GIS to Investigate Travel Burden in VA and Community Care: Drive Distance and Time to Cataract Surgery Providers

CC Make vs. Buy Group (PABSLC)

Warren Pettey
October 30, 2019

Presentation Outline

- Brief review of relevant travel burden policies
- Research question
- Approach to comparing distances
- Theory into Practice: A look at cataract surgeries in VA



Review of Select Travel Burden Community (private) Care Eligibility Policies

Veterans Choice Program (2014-2019)

- Travel Burden: 40 or more miles from the nearest VA clinic
 - Geodesic (“as the crow flies”): Nov 2014-Mar 2015
 - Manhattan: Apr 2015-May-2019

MISSION Act (2019-Present)

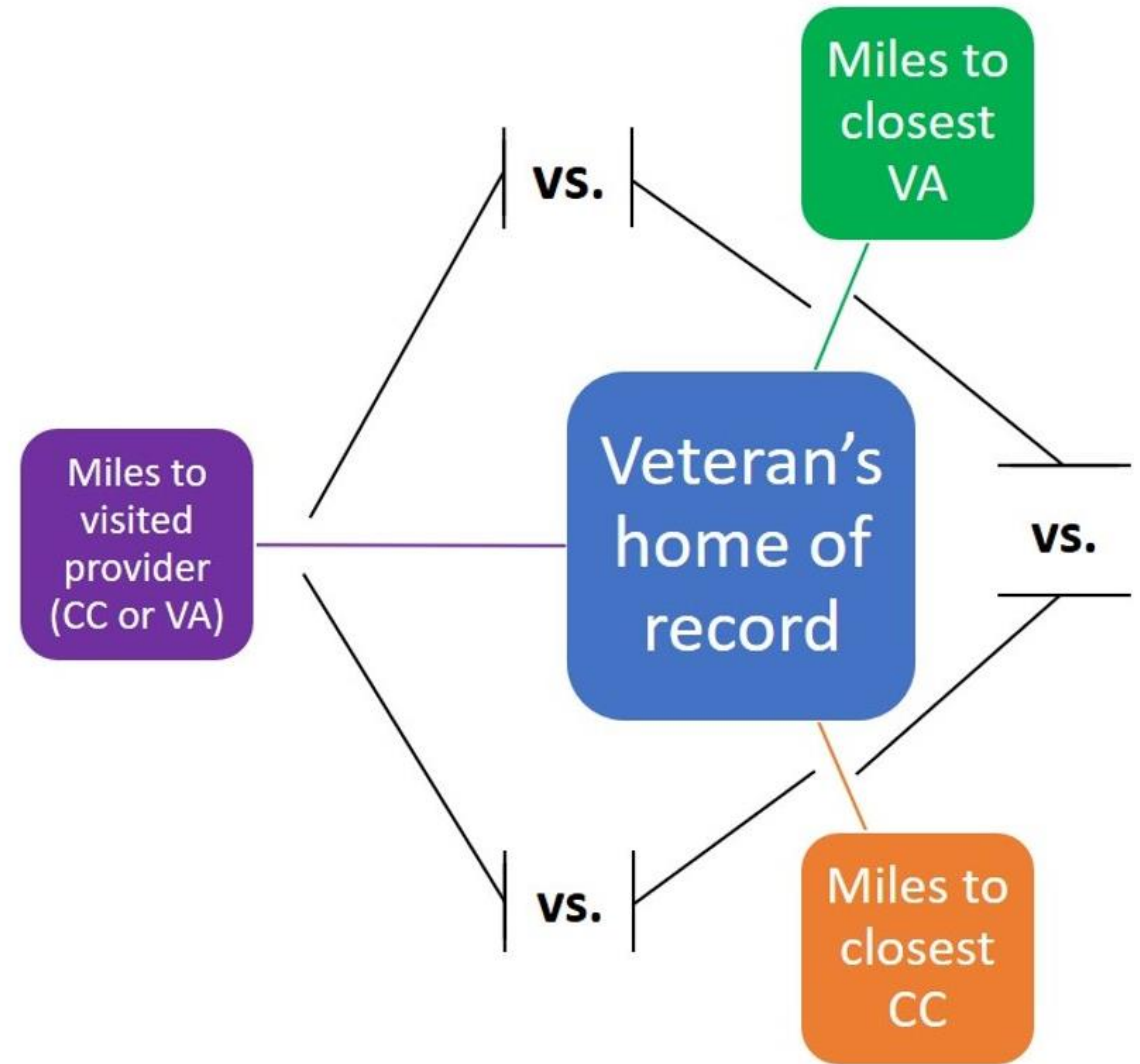
- Travel Burden:
 - Primary Care & Mental: 30-minute average drive time
 - Specialty Care: 60-minute average drive time

Note: Both VCP and the MISSION Act include additional travel burden eligibility criteria for Community Care, such as having no full-service VA facility in a Veteran’s state or excessive travel burden (driving a mountain pass or taking a ferry, for example).

There are also non-travel related parts of each policy, such as for appointment wait times and medical necessity.

Research Questions:

- Primary: What is the travel distance from **Veterans' homes** to the locations (VA or CC) where the **cataract surgeries took place**, compared to the travel distance to the **closest VA cataract surgery provider** and compared to the travel distance to the **closest CC cataract surgery provider**?
- Secondary: Same as the primary research question, except for drive time.



An aerial photograph of a city grid, likely in the UK, showing streets, buildings, and green spaces. A prominent blue text box is overlaid on the lower-left portion of the map. The map includes labels for streets such as '500 South', '800 South', 'Sunnyside Avenue', and 'Fountain Drive'. Various landmarks and areas are also labeled, including 'Woodbury', 'Vale Park', 'Vale Gardens', 'Valecroft', and 'Vale Heights'.

There are three main components to route finding

This map does not
show real Veteran
home locations.



Origins: Veteran Homes



This map does not show real Veteran home locations.

Destinations: VHA Facilities & CC Facilities



This map does not
show real Veteran
home locations.

Road Network

Roads are broken into segments, and the segments have an impedance, or cost for traversing that segment. A route solver will accumulate distance and time between an origin and a destination, based on the impedance.

500 feet
25 MPH

550 feet
20 MPH

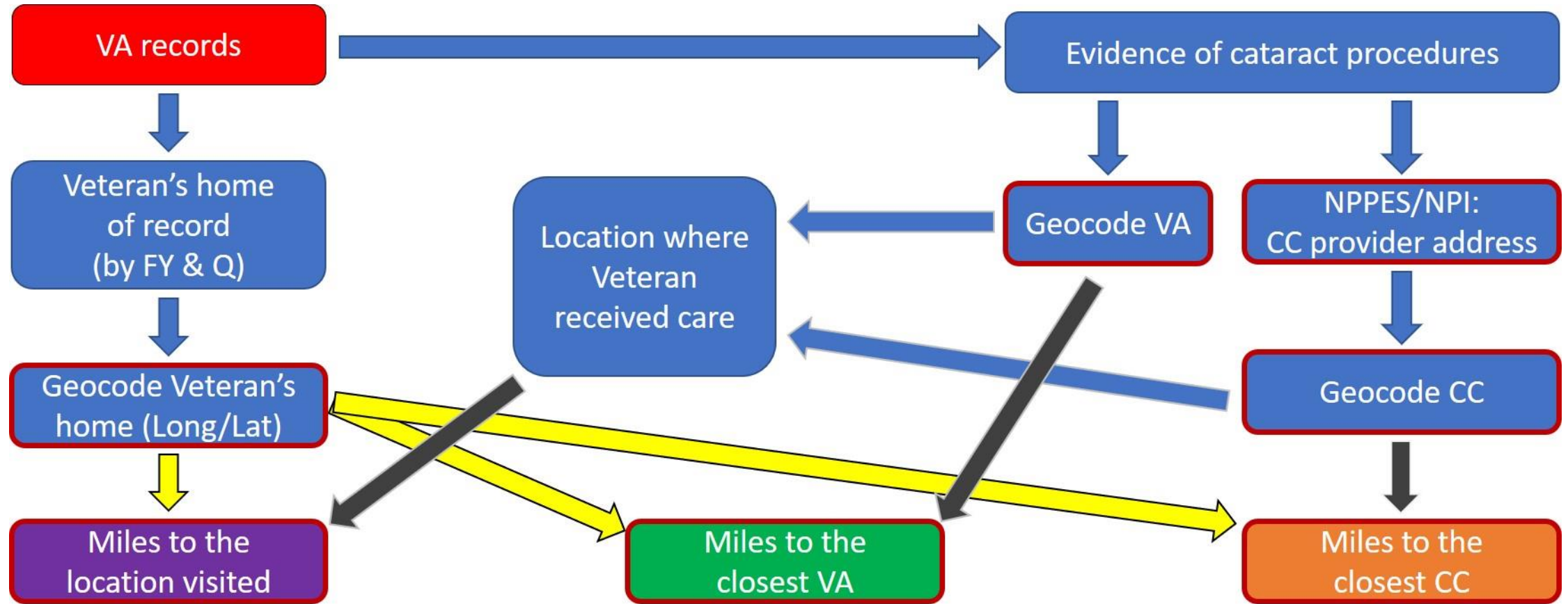
750 feet
25 MPH

500 feet
40 MPH

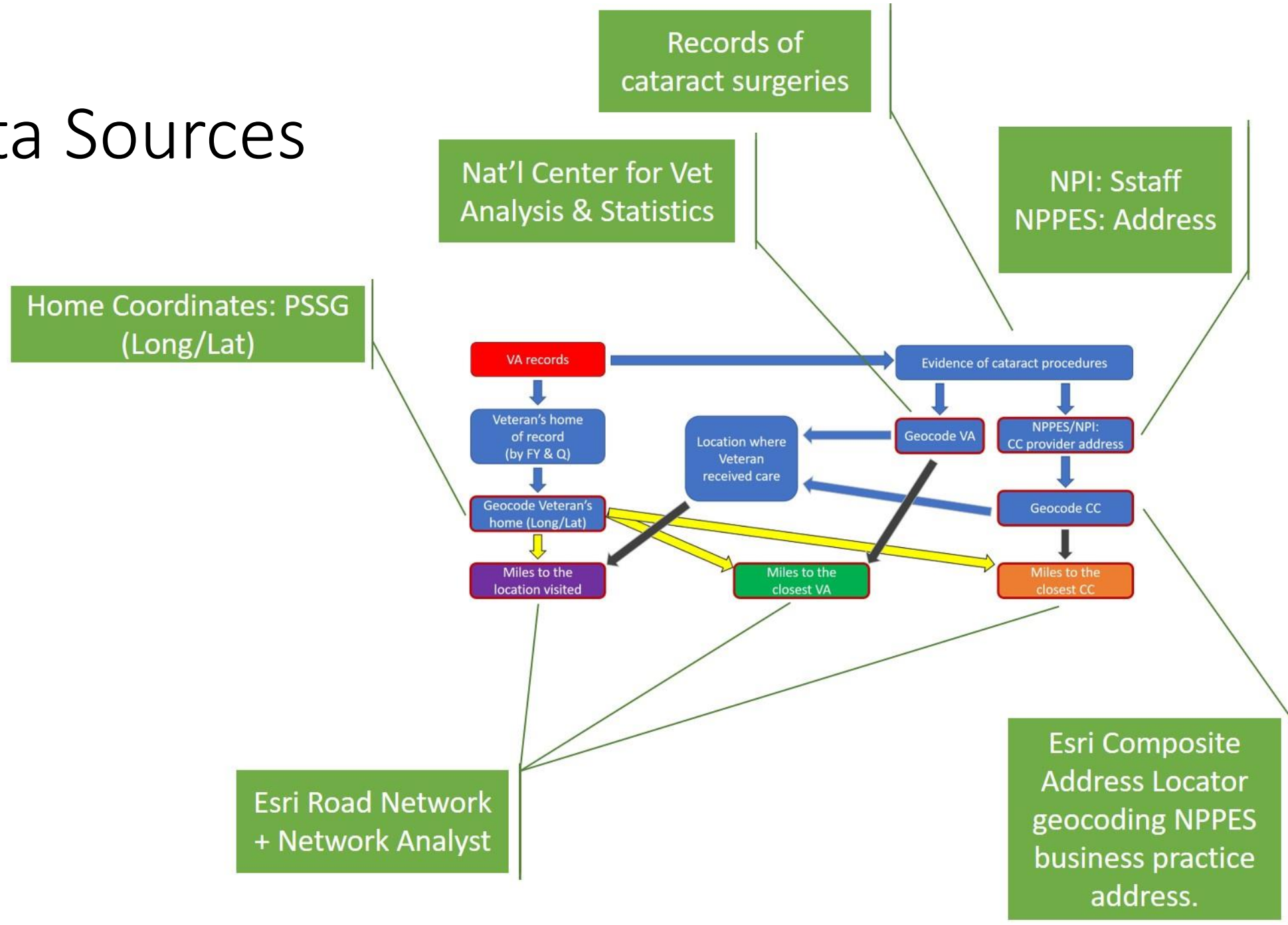
400 feet
25 MPH

This map does not
show real Veteran
home locations.

Identifying the required analysis data



Data Sources





Miles to the
closest VA

This map does not
show real Veteran
home locations.



Veterans Health
Administration



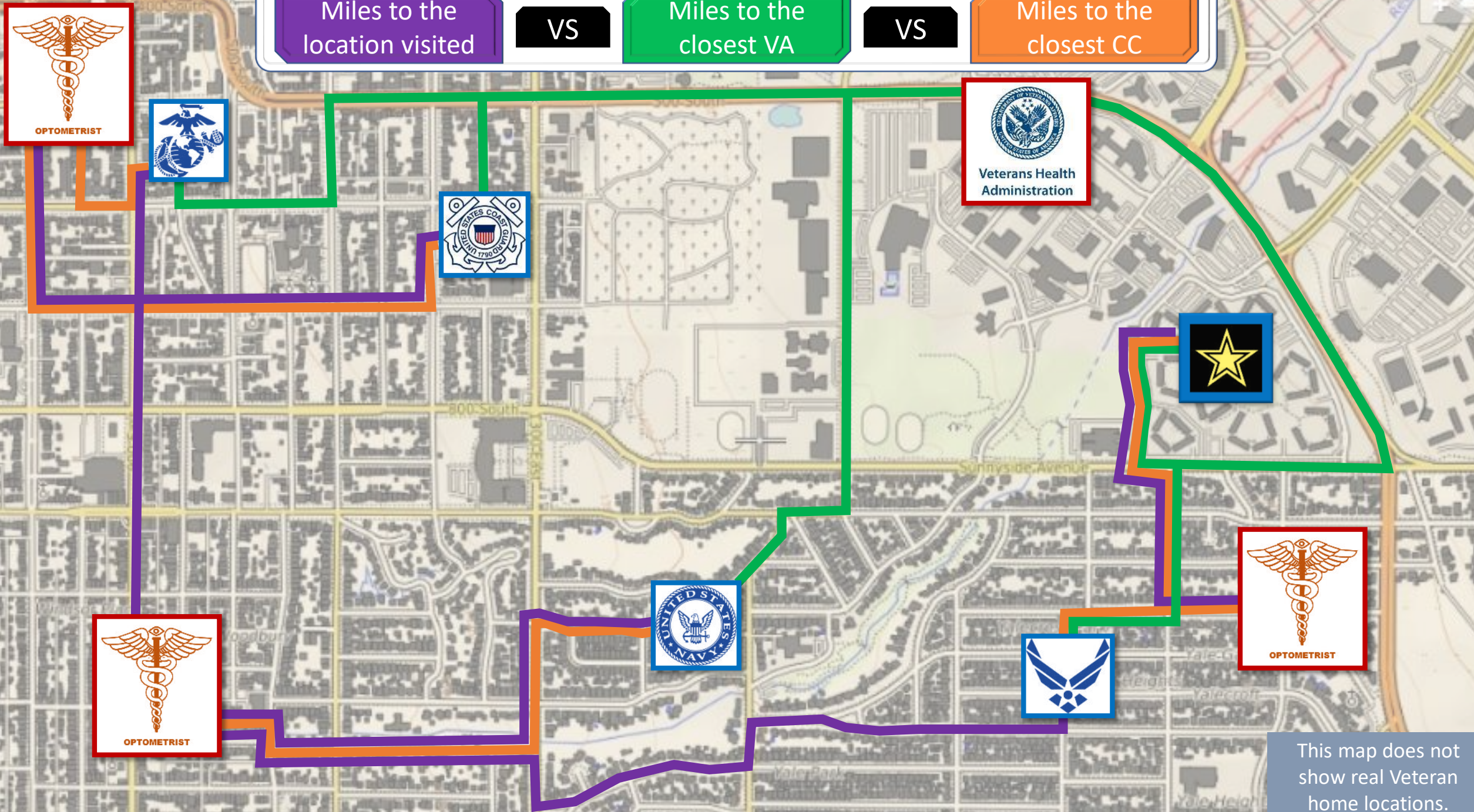
Miles to the
closest CC

This map does not
show real Veteran
home locations.



Miles to the location visited

This map does not show real Veteran home locations.



Miles to the location visited

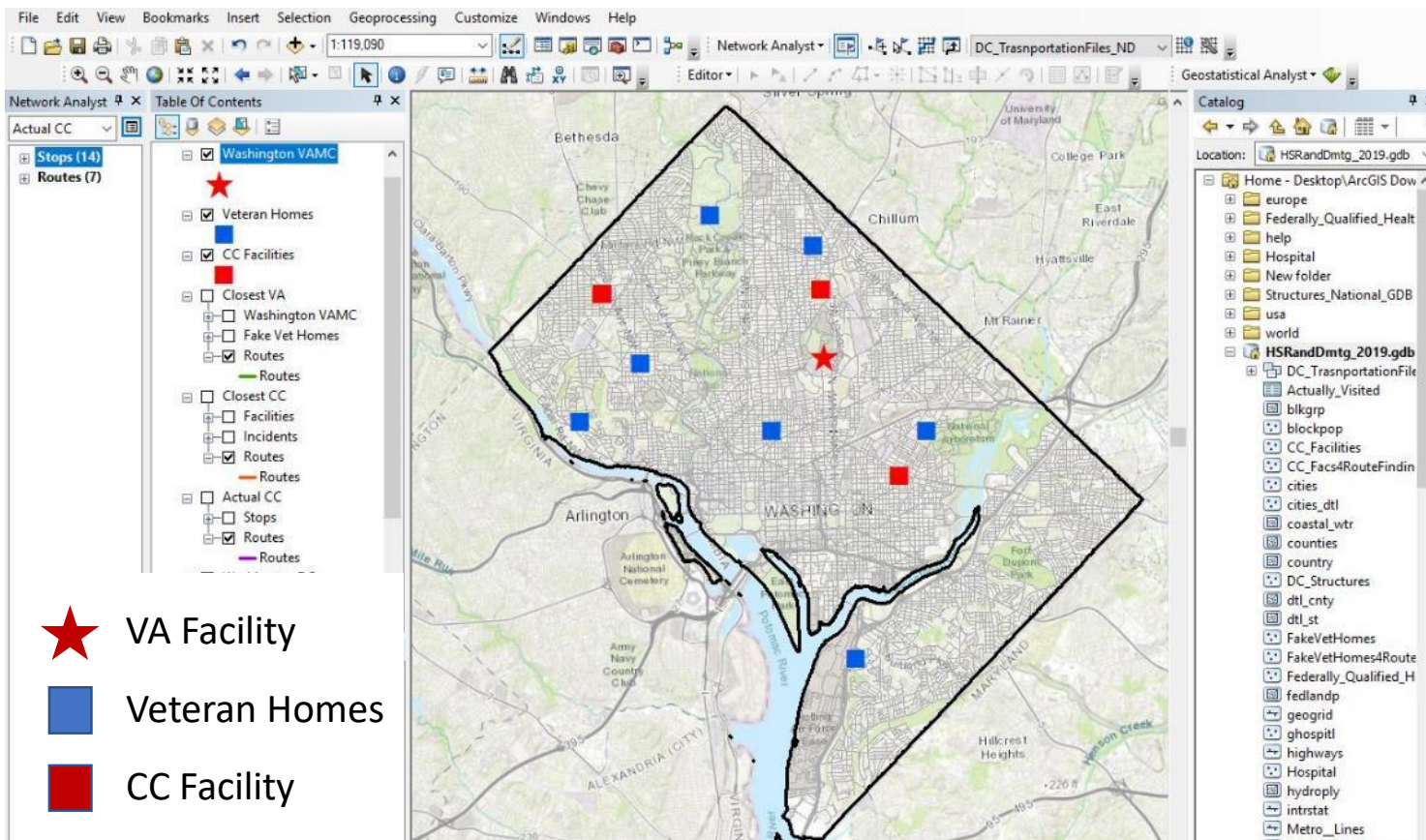
VS

Miles to the closest VA

VS

Miles to the closest CC

This map does not show real Veteran home locations.

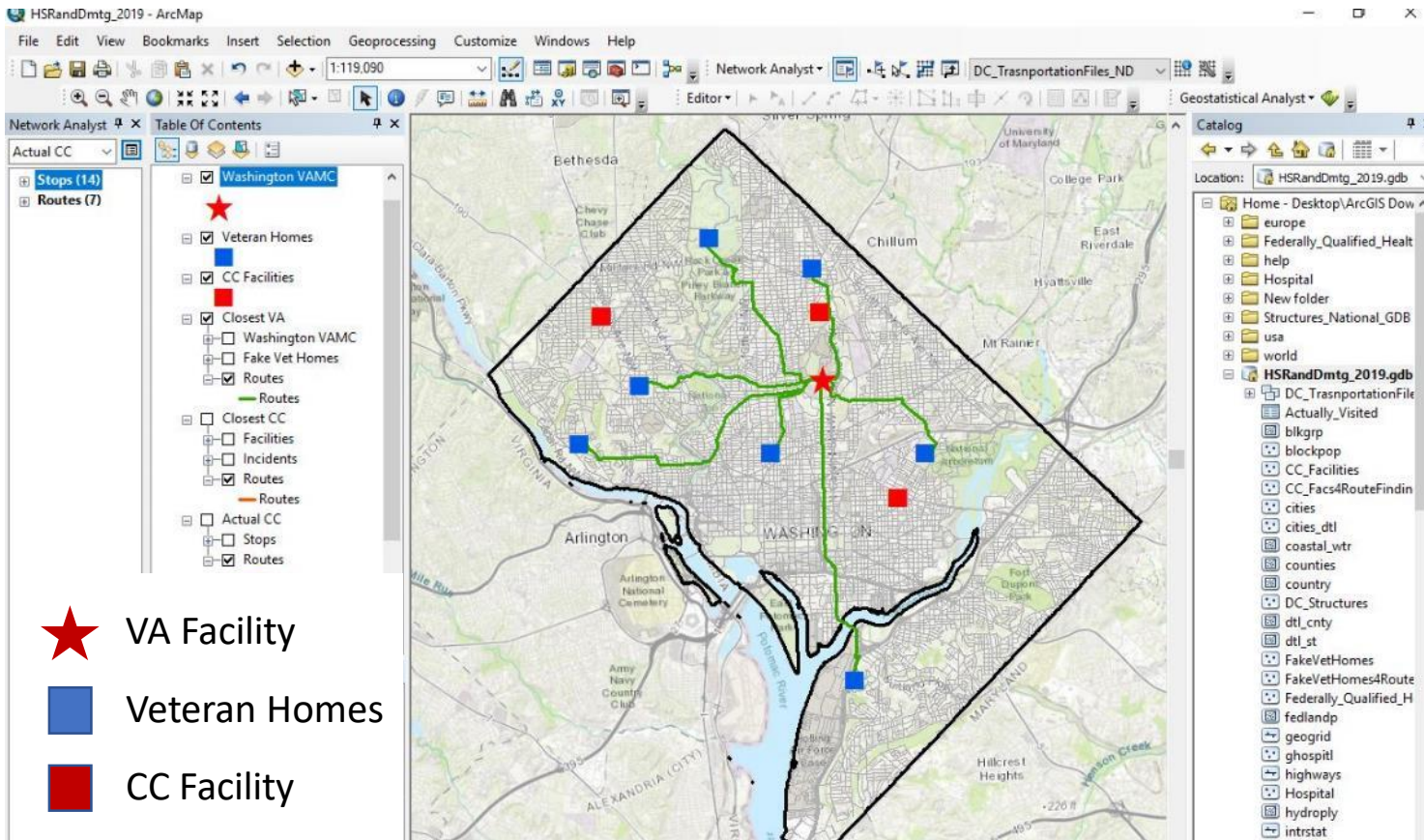


Example: Prepare to find the shortest routes between origins and destinations in Washington DC

Preparation

Network Analyst extension

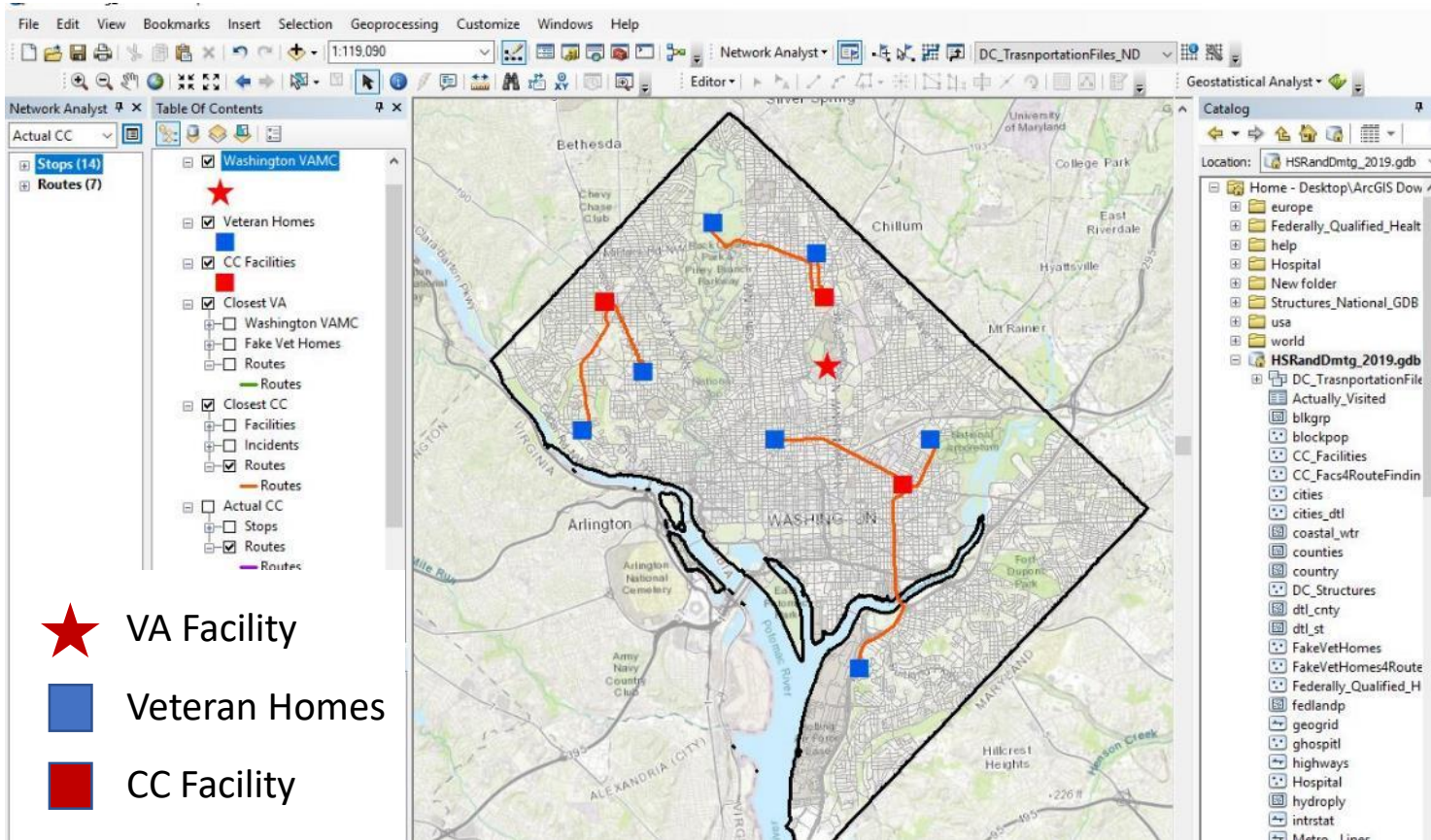
- Arm the extension
- Add the toolbar
- Add the Network Analyst window
- Add the road network dataset
- Geocoded pointfiles
 - Add Veteran homes
 - Add the Washington DC VAMC
 - Add the CC facilities
- Make sure nothing is selected
- Save your map file



Example: Discover the shortest routes from Veteran homes to the Washington DC VAMC

Execution

- Network Analyst
 - Select the New Closest Facility procedure
 - Load Veteran homes as incidents
 - Load the VAMC as the facility
 - Configure the run properties
 - Press the Run icon ... and wait
- Save your work
 - Mapfile
 - Origins
 - Destinations
 - Routes



Example: Discover the shortest routes from Veteran homes to the closest Community Care facilities

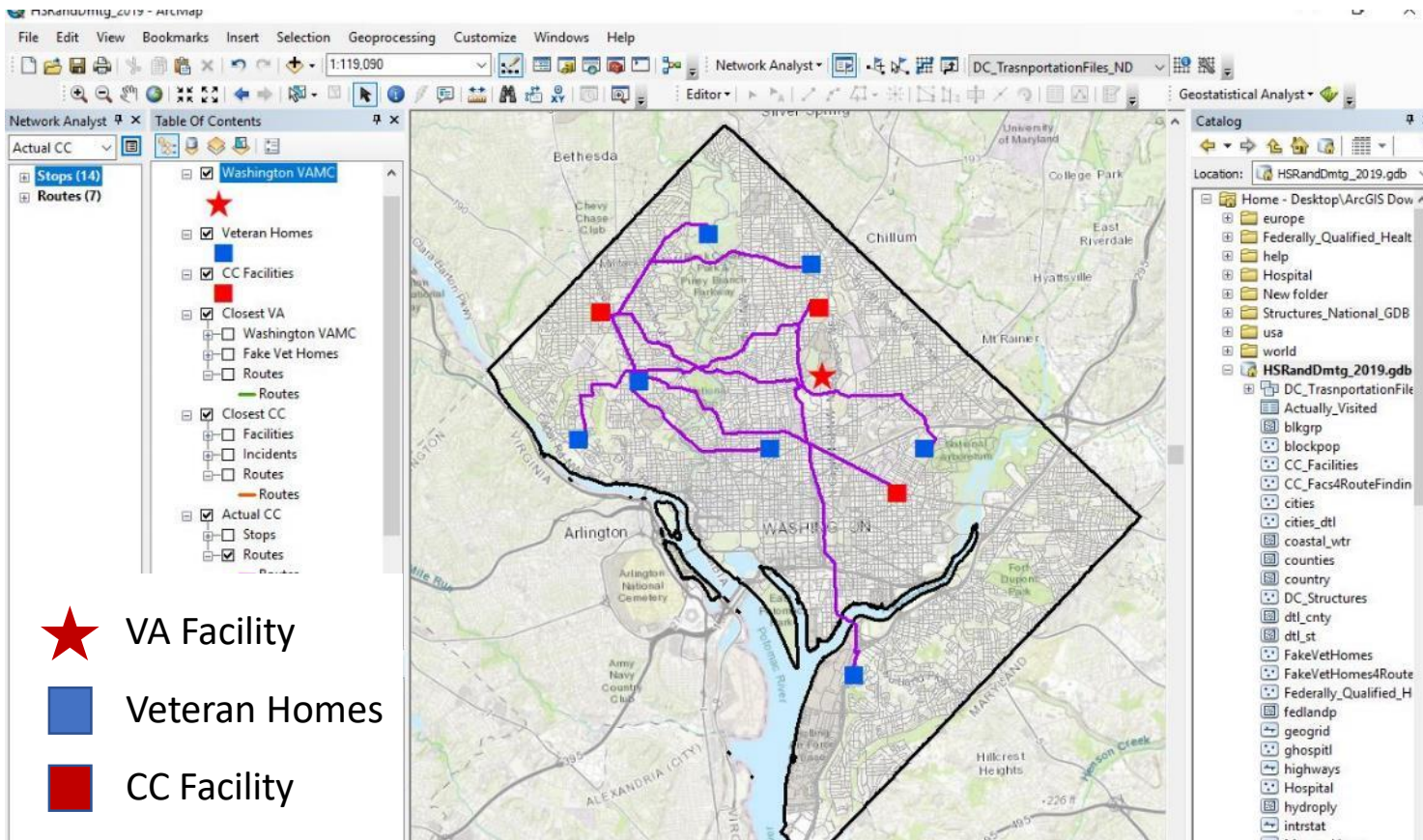
Execution

• Network Analyst

- Select the New Closest Facility procedure
- Load Veteran homes as incidents
- Load the CC facilities as the facilities
- Configure the run properties
- Press the Run icon ... and wait

• Save your work

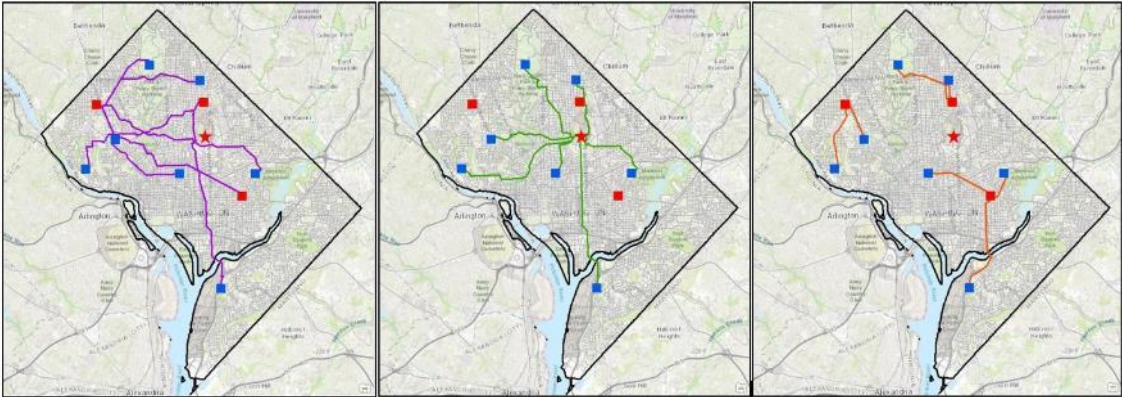
- Mapfile
- Origins
- Destinations
- Routes



Example: Discover the shortest routes from Veteran homes to the facilities where they received care

Execution

- Network Analyst
 - Select the New Route procedure
 - Configure pointfiles so that origins and destinations share a visit identifier
 - Load Veteran homes first, and then CC facilities
 - When loading the points, select the visit identifier as the RouteName in the Location Analysis Properties window
 - Configure the run properties
 - Press the Run icon ... and wait
- Save your work
 - Mapfile
 - Origins
 - Destinations
 - Routes



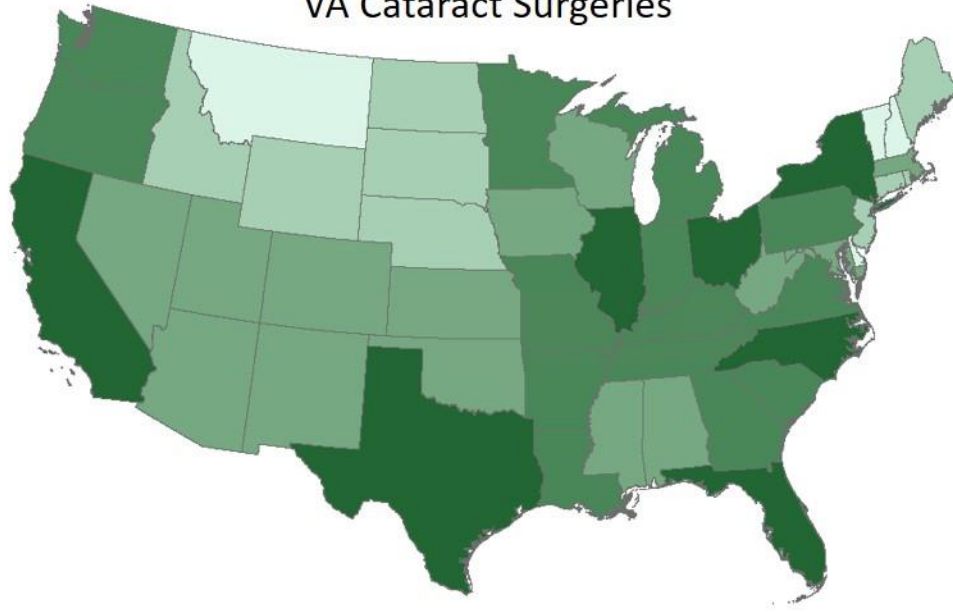
| Actual | Closest VAMC | Closest CC |
|--------|--------------|------------|
| 4.4 | 2.0 | 1.1 |
| 7.3 | 2.9 | 4.3 |
| 5.4 | 3.4 | 2.0 |
| 7.3 | 5.7 | 5.7 |
| 6.1 | 5.4 | 3.0 |
| 2.9 | 4.0 | 4.3 |
| 4.3 | 2.3 | 3.8 |



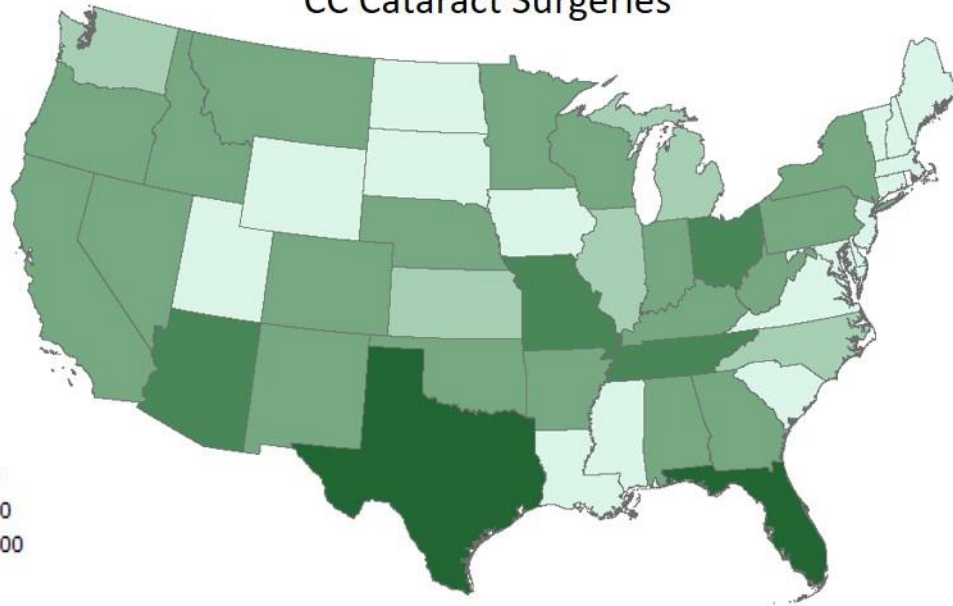
Comparing the Distances

This is an example with practice data. The results do not reflect runs with real data.

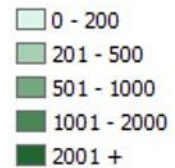
VA Cataract Surgeries



CC Cataract Surgeries



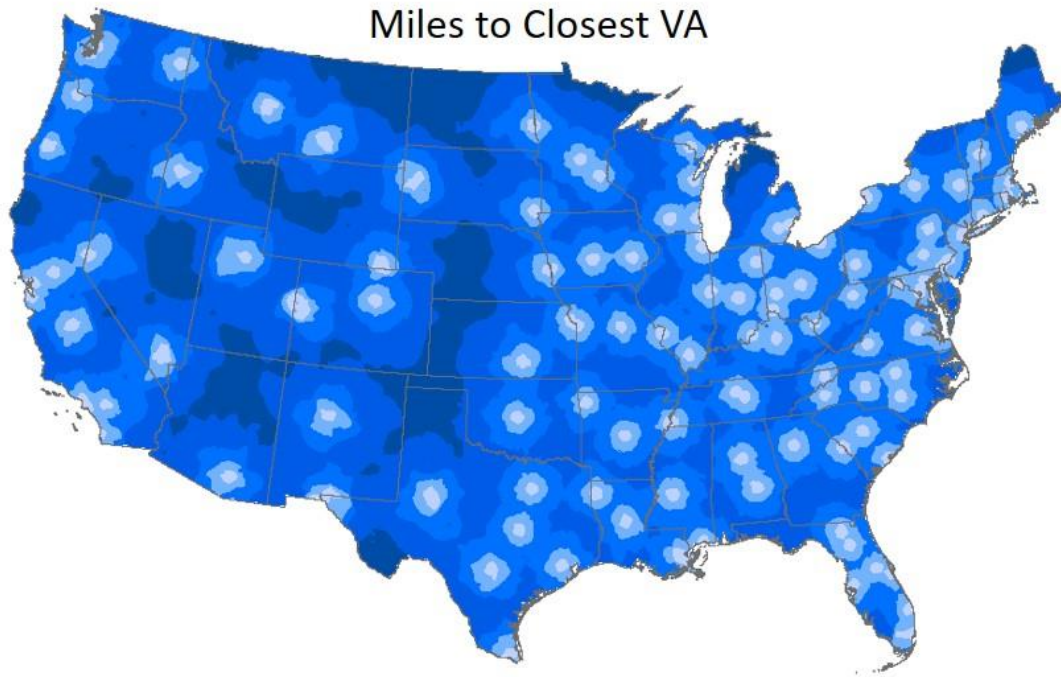
Count



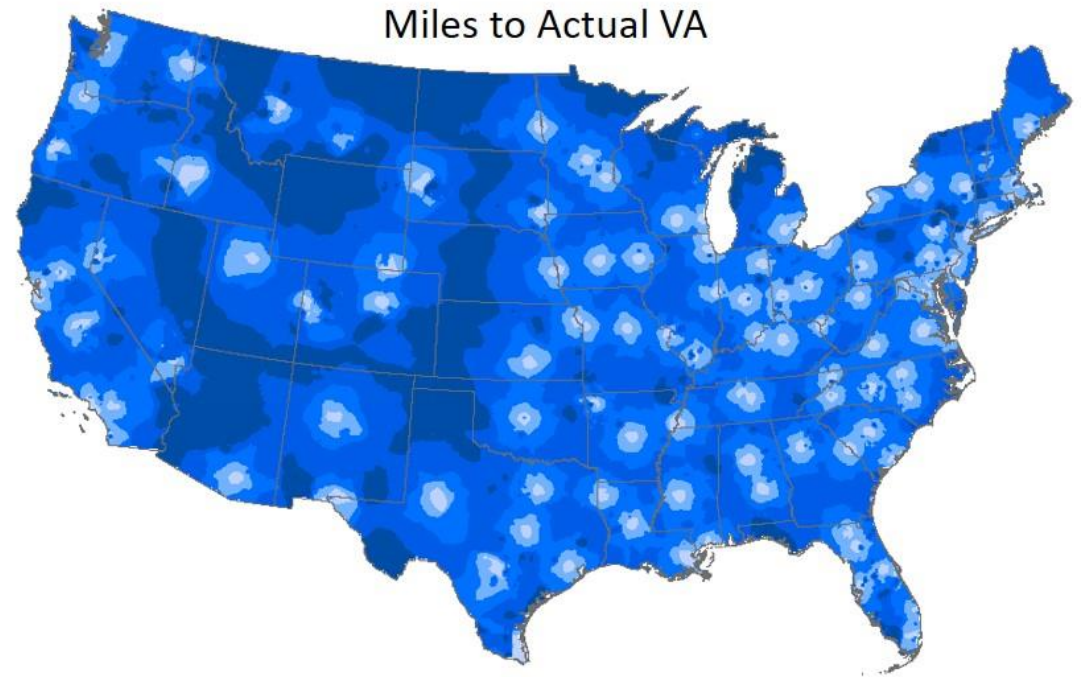
Count of Veteran cataract surgeries in FY2015

| | VA | CC | Total |
|------------|--------|--------|--------|
| Facilities | 123 | 2,668 | 2,791 |
| Veterans | 44,544 | 17,202 | 61,746 |
| Complex | 10,162 | 3,808 | 13,970 |
| Simple | 47,888 | 22,017 | 69,905 |
| Total | 58,050 | 25,825 | 83,875 |

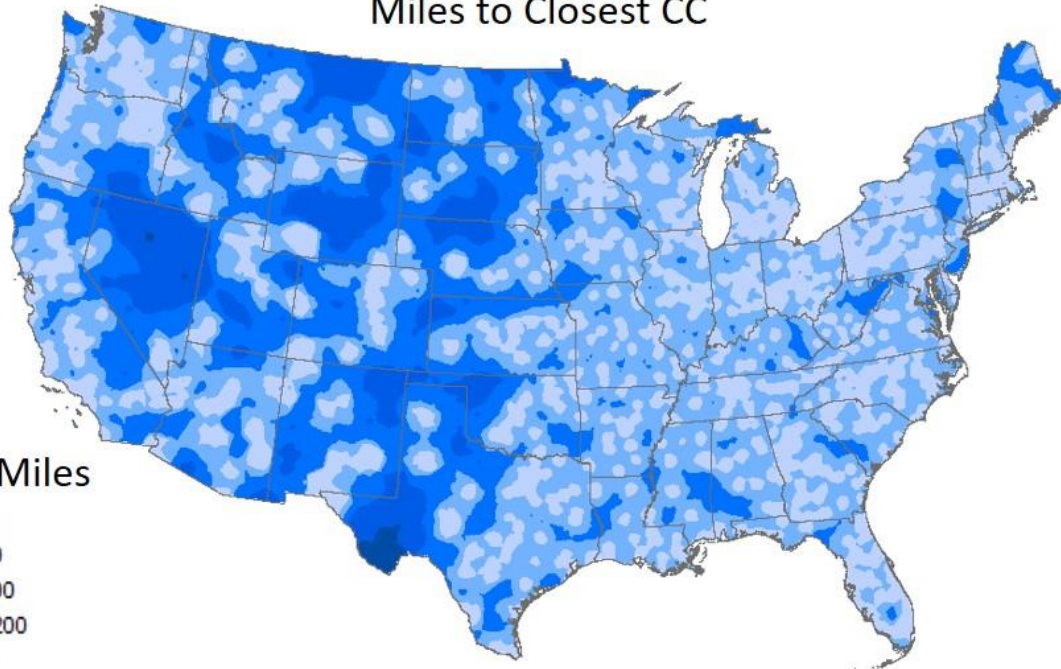
Miles to Closest VA



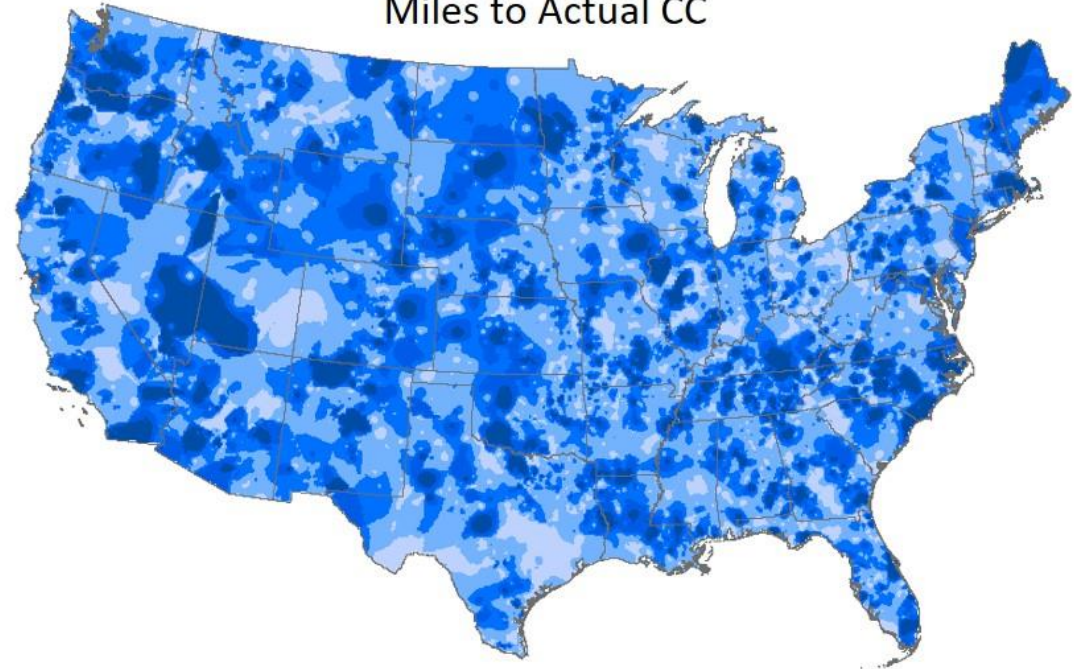
Miles to Actual VA



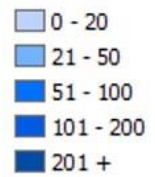
Miles to Closest CC

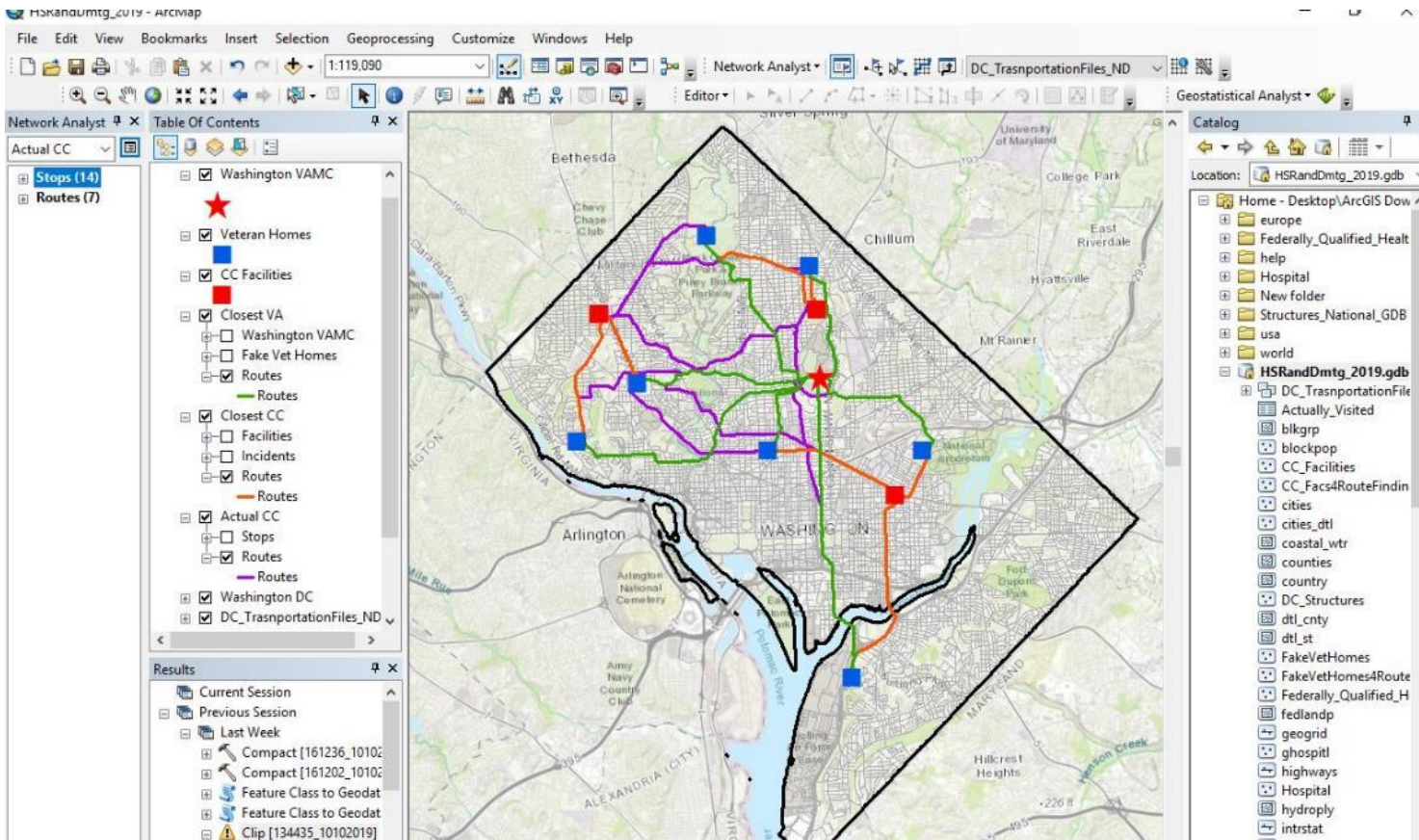


Miles to Actual CC



Drive Miles





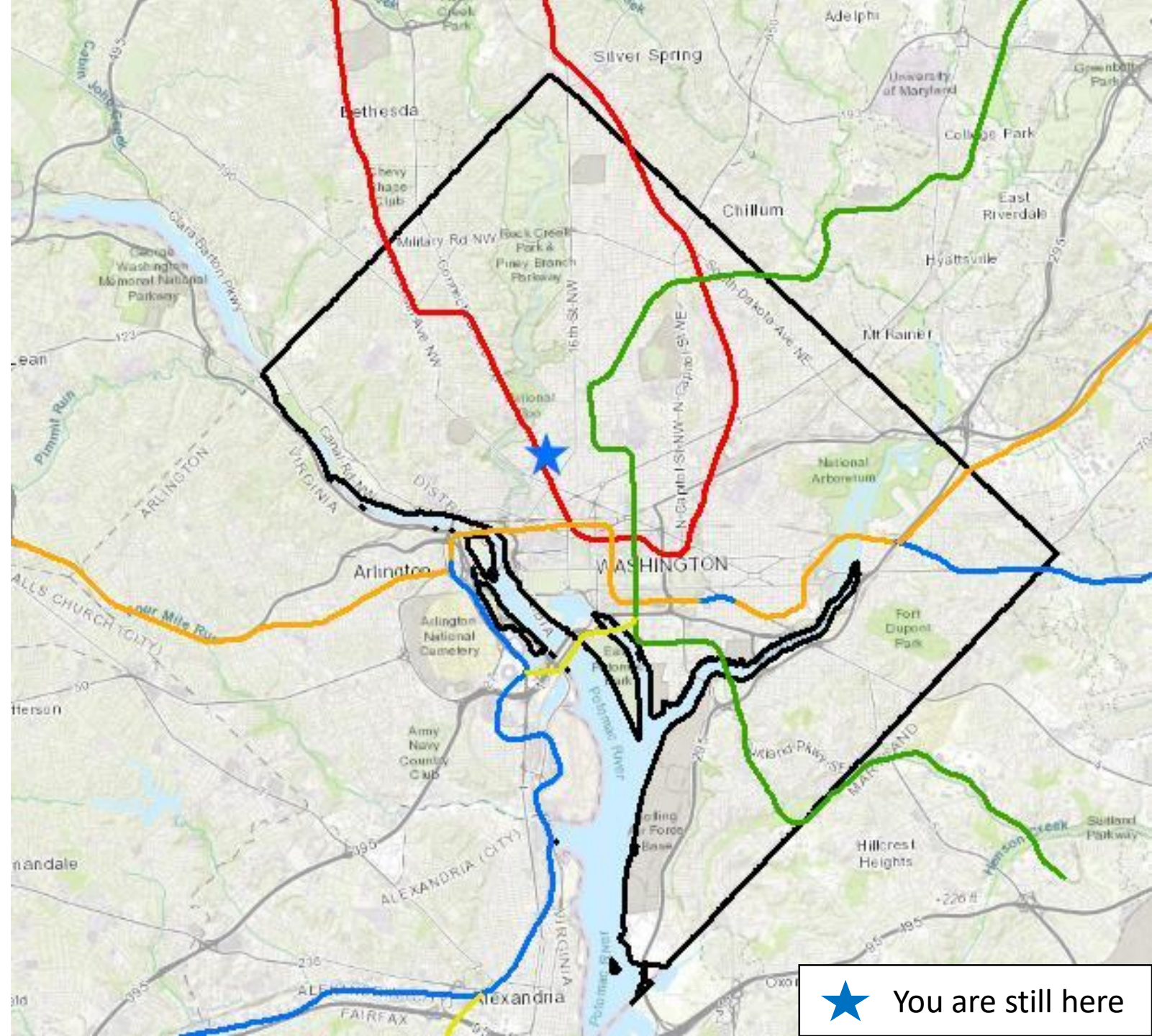
Limitations

- Time and travel are not the only factors in deciding on healthcare
- Cars and roads are not the only way to travel
- Possibly changes in map data and Veteran home address
- There is a limit to the number of surgeons and time for surgeries
- Our study covered a complicated period in healthcare (e.g., Affordable Care Act)

Thank you

Warren Pettey

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★ You are still here

Small Group Sessions