

Harnessing the Power of Integrated Data

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Introductions



Molly Bailey
Senior Planning Manager



Verna Ehlen
Domain Analyst



Outline

- I. Who we are
- **II.** Objectives
- III. Identification of the Problem
- IV. Poll
- V. The Journey Begins
- VI. The Product Takes Shape
- VII. How you can Harness Your Data



Washington University Medical Campus

Corporate Partners Include:

BJC HealthCare

Barnes-Jewish Hospital





45-year affiliation agreement



\$2B Fee-For-Service Revenue \$7.5B Annual Economic Impact STL #2 in NIH Funding





26K employees across WUMC Over 2K Clinical Faculty





WUMC Covers 186 acres across 18 City Blocks
130 Clinical Sites (On & Off Campus)



PRIMARY and SECONDARY Service Areas



- Covers portions of Missouri and Illinois
- Adjacent to 7 states: Iowa, Kansas, Oklahoma, Arkansas, Tennessee, Kentucky, and Indiana
- 2.7M Primary Service Area (PSA)
 Population. Flat growth projected with select areas of growth within market
- Primary Service Area was the source of nearly 80% of WashU and BJC volumes and over 70% of revenue, respectively.

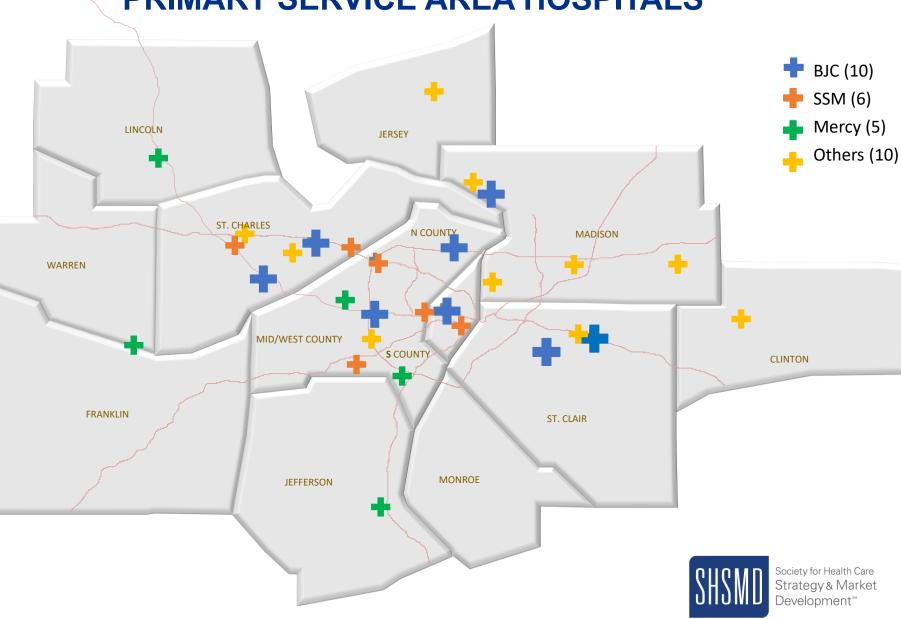


PRIMARY SERVICE AREA HOSPITALS

BJC, SSM, Mercy 80% of market

BJC (WashU) has
 10 sites BJC HealthCare

Academic and Community



Joint Office of Strategic Planning - Services

JOSP provides strategic advisory services including for the following:





Those services include (but are not limited to):

- Business development
- Service expansion
- Data analysis and interpretation
- Design and communication of business and strategic plans
- Financial proformas



:::

- Identification of metrics for success
- Identification of implementation strategies
- Leadership meetings facilitation
- Resource alignment/coordination
- Capital/Space Planning
- Industry Benchmarking



Objectives

Participants will:

- Understand steps to integrate data into a dashboard
- View ways to blend various data sources to create meaningful visualizations
- Walk through a case study to highlight how a dashboard can inform strategic decisions







So Many Data Sources and Formats

MARKET

Population & Age Service Line Demand Growth Estimates



INDUSTRY

External Claims Data Hospitals in Market Quality



BENCHMARKS

AAMC Compensation
MGMA Productivity
Vizient Quality
Patient Access &
Satisfaction



INTERNAL

Patient Access
Volumes
Finance
Productivity







Time Consuming & Inefficient





Manual and time intensive to gather and analyze





Combine in a Dashboard



Poll

Which key performance indicators (KPIs) do you consider most critical to integrate when making strategic decisions regarding geographic expansion?







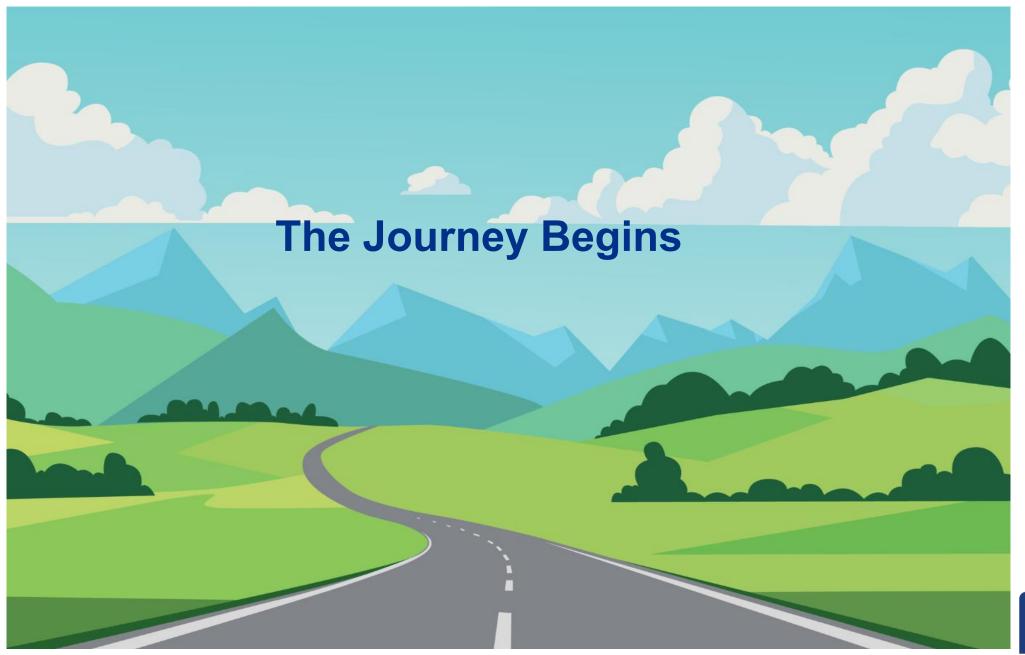


- Revenue and profitability by region
- Customer acquisition and retention rates
- All of the above



Poll Results



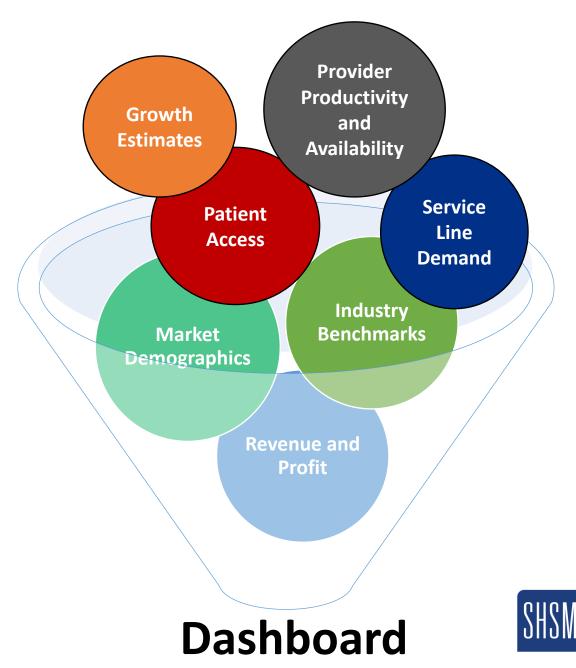




Create a Wish List

Which metrics would be most valuable to inform strategic decisions?

- Which geographic regions are growing and where is the market vulnerable?
- What service lines are in demand?
- How accessible are we to meet this demand? What do our wait times look like?
- Where are our patients coming from?
- How does our provider productivity compare to industry benchmarks?
- Where are the opportunities?

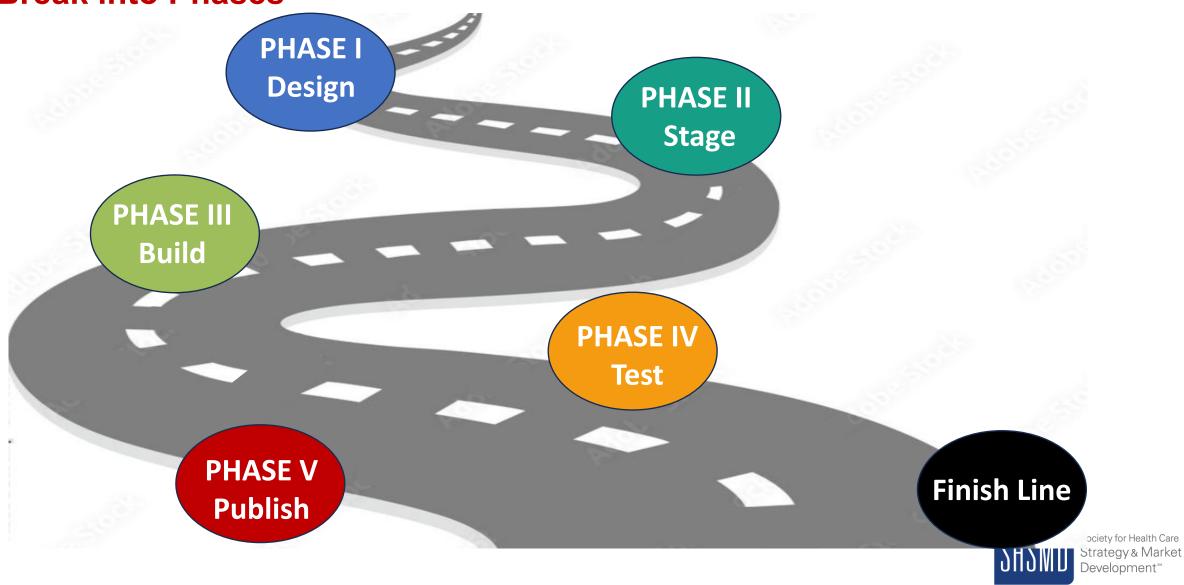


Strategy & Market

Development[™]

Where to Start?

Break into Phases



The Fun Begins! Phase 1: Design

- From the wish list, decide on content and prioritize
- Determine sources of truth and confirm standard definitions
 - O How will visits or new patients be defined?
 - Alignment internally
- Create template important to have a visual "roadmap" before starting the build phase
 - O What visuals will best tell the story?
- Choose a platform
 - O Which platform will best suit our needs?





Next Phases

- Phase II Staging check data to ensure in desired format before loading
- Small changes may need to be made to create relationships and link to other data sets



- Phase III Building
 - Progress over perfection
 - It may take a few tries before getting it right, but you won't know until the dashboard is put into action
 - Phase IV Testing
 - Focus Group feedback is invaluable!





Final Phase: Publishing

- Phase V Publishing
 - Determine Access & Security

THE FUTURE

- Governance Ongoing Support
 - Updates and edits
 - Timing of refreshes some metrics update annually while others may be monthly
 - Security addition of new users, etc



Landing Page

MARKET ANALYSIS 2025 - ST LOUIS & SURROUNDING REGIONS

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Market Demographics

Inpatient Market

WU Metrics



Gary C. Werths Building at Siteman Cancer Center, opened 2024 - WU Medical Campus, St. Louis MO



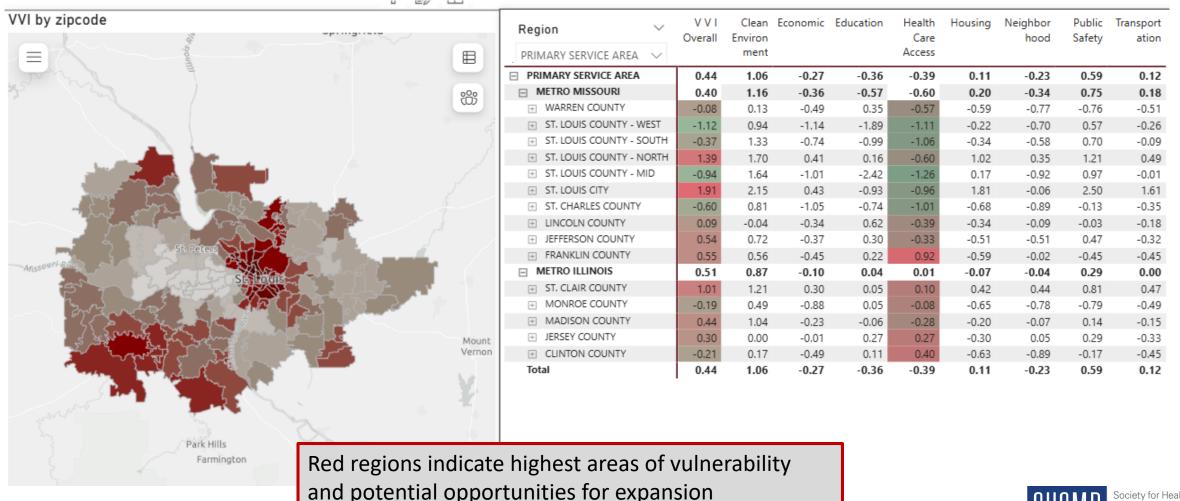
Where is the market vulnerable?



MARKET SDOH - VIZIENT VULNERABILITY INDEX (VVI) 2025

The VVI assesses obstacles to healthcare that may influence a person's overall health based on 9 domains of social needs (see table below).

The national mean = 0. A score > 1 is considered "high vulnerability"



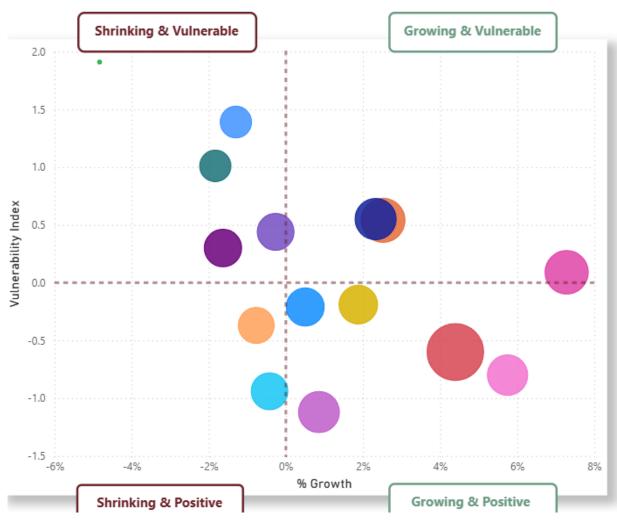
What geographic areas are growing and where is the market vulnerable?



Market Forecast - Population & Healthcare Vulnerability (VVI) - PSA

5 Year Population Growth

PRIMARY SERVICE AREA

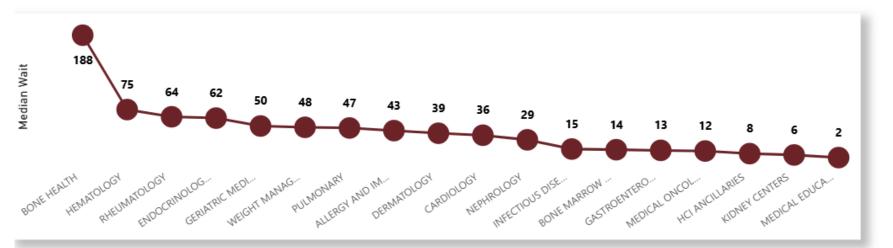


Region	2024 Population	2029 Estimated	Population Change	% Growth	VVI
□ PRIMARY SERVICE AREA	2,724,791	2,735,863	11,072	0.41%	0.44
	594,544	589,886	-4,658	-0.78%	0.51
JERSEY COUNTY	16,978	16,701	-277	-1.63%	0.30
CLINTON COUNTY	31,228	31,385	157	0.50%	-0.21
MONROE COUNTY	34,801	35,455	654	1.88%	-0.19
ST. CLAIR COUNTY	245,067	240,582	-4,485	-1.83%	1.01
MADISON COUNTY	266,470	265,763	-707	-0.27%	0.44
	2,130,247	2,145,977	15,730	0.74%	0.40
WARREN COUNTY	36.080	38.155	2.075	5.75%	-0.08
LINCOLN COUNTY	62,773	67,345	4,572	7.28%	0.09
FRANKLIN COUNTY	116,031	118,732	2,701	2.33%	0.55
ST. LOUIS COUNTY - SOUTH	184,704	183,286	-1,418	-0.77%	-0.37
ST. LOUIS COUNTY - MID	194,692	103,868	-824	-0.42%	-0.94
JEFFERSON COUNTY	203,529	208,661	5,132	2.52%	0.54
ST. LOUIS CITY	271,922	258,782	-13,140	-4.83%	1.91
ST. LOUIS COUNTY - WEST	294,217	296,743	2,526	0.86%	-1.12
ST. LOUIS COUNTY - NORTH	344,000	339,541	-4,459	-1.30%	1.39
ST. CHARLES COUNTY	422,299	440,864	18,565	4.40%	-0.60
Total	2,724,791	2,735,863	11,072	0.41%	0.44



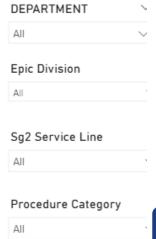
What services are in demand and how accessible are we to meet that demand?

Service Line Growth & New Patient Access



9	% Group
,	All
	Department
1	MEDICINE
	2034 Est Growth

SG2_SL2	WashU Volume CY24	5 Yr WashU Growth	10 Yr Sg2 Est Growth	WUSM Est 10 Yr Volume	Est 10 Yr Increase
⊕ Cardiology	802,229	28.3%	21.5%	12,832,638	2,269,754
⊞ Behavioral Health	163,165	28.3%	20.3%	12,709,690	2,146,806
⊞ Hepatology	91,413	28.3%	18.6%	12,528,118	1,965,234
■ Nephrology	1,414,595	28.3%	18.3%	12,500,893	1,938,009
	1,544,722	28.3%	17.2%	12,377,298	1,814,414
⊕ Vascular	254,862	28.3%	17.2%	12,376,672	1,813,788
⊕ Genetics	45,904	28.3%	17.1%	12,369,059	1,806,175
	1,901,923	28.3%	16.0%	12,256,590	1,693,706
Total	27,309,065	28.3%	10.2%	11,639,078	1,076,194





Where are our patients coming from?

WashU Patients CY24 - On

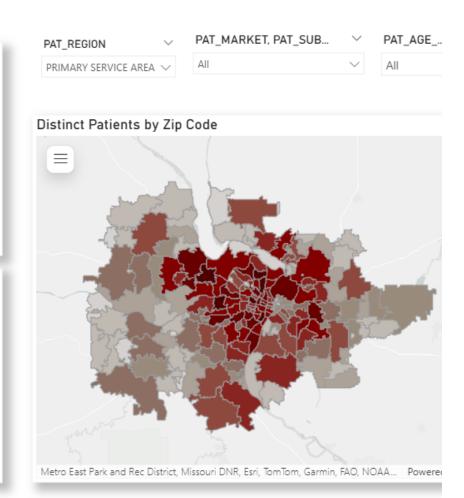


WashU Patients CY24 - Origin and Volumes by Clinic Region

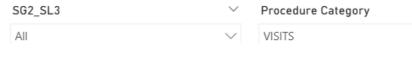
DEPARTMENT	~
All	~

DISTINCT PATIENT COUNTS			:	Site of	Care			
PAT_JE_REGION	ED	Hospital OP/ASC	Hosptal Inpatient	NULL	Office/Clinic	Other	Virtual	Total ▼
WEST REGION	24,412	8,644	7,646	125	84,903	157	39	100,148
NORTH REGION	33,656	11,021	10,921	62	40,362	214	38	70,051
CENTRAL REGION	31,393	13,717	11,191	62	43,721	410	16	69,577
ST CHARLES REGION	11,882	5,353	7,380	34	52,650	45	172	63,186
SOUTH REGION	11,169	5,379	4,725	29	48,716	81	24	56,306
METRO IL MID	15,406	5,346	7,866		38,320	110	360	52,751
METRO IL NORTH	8,171	5,359	6,030	1	39,915	85	372	46,608
FRANKLIN COUNTY	1,650	798	1,008	4	6,331	13	90	7,696
Total	137,739	55,617	56,767	317	354,918	1,115	1,111	466,323

PAT_SUBMARKET	ED	Hospital	Hosptal	NULL	Office/Clinic	Other	Virtual	Tota
		OP/ASC	Inpatient					•
ST. LOUIS CITY	60,565	40,421	146,561	615	220,720	5,007	34	473,923
ST. LOUIS COUNTY - NORTH	56,897	30,044	131,758	392	144,039	2,502	84	365,716
ST. CHARLES COUNTY	14,562	9,673	64,651	234	161,767	477	369	251,733
ST. LOUIS COUNTY - MID	19,498	10,037	40,135	903	175,426	1,063	30	247,092
ST. CLAIR COUNTY	23,833	10,570	77,544		116,161	1,256	1,012	230,376
ST. LOUIS COUNTY - WEST	18,610	9,413	38,075	398	159,019	728	83	226,326
MADISON COUNTY	11,442	11,088	67,470	1	124,207	894	549	215,651
ST. LOUIS COUNTY - SOUTH	8,951	7,232	25,167	208	88,381	686	11	130,636
Total	227,709	138,013	653,940	2,776	1,321,870	13,502	2,660	2,360,47





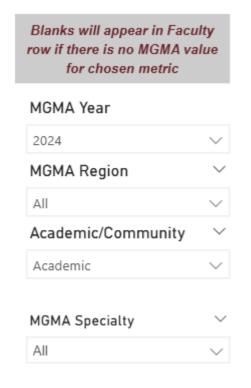




Provider Productivity – How do we compare to industry benchmarks?

	FT	E		Work l	RVUs		WUSM Payments
Department & MGMA Specialty Workday Primary CCH L4	Clinical Mission FTE	FN16 FTE	Work RVUs	wRVU / FN16	MGMA Median	75th %tile	FFS Net Pmts / Pmts / FFS Net Pmts FN16 wRVU Pmts wo Drugs
☐ CH00411 Department of Medicine	388.67	304.2	1,890,690	6,216			
Hospitalist: Internal Medicine	100.43	83.9	292,830	3,491	3,287	3,882	A Work BVIIs someoned to
Hematology/Oncology: Oncology (Only)	51.50	45.1	272,254	6,035	5,771	7,004	 Work RVUs compared to MGMA Median &
⊕ Cardiology: Noninvasive	31.46	25.6	230,020	8,991	7,018	9,116	75%th benchmark
⊕ Gastroenterology	27.20	21.0	179,852	8,547	7,174	9,315	75/och Benemiark
	25.27	12.3	55,007	4,471	3,276	4,865	
	23.69	15.0	82,332	5,504	4,785	5,747	Drill down to provider
	21.84	15.4	96,760	6,293	4,805	5,723	level
⊕ Pulmonary Medicine: General	20.51	17.6	120,303	6,826	4,650	6,468	
→ Nephrology	20.16	14.7	131,785	8,955	6,348	8,017	Easy to visualize if
	9.89	7.1	39,156	5,507	4,180	5,126	opportunities for
⊕ Dermatology	7.95	6.5	89,512	13,779	7,975	10,934	
⊕ Cardiology: Electrophysiology	7.84	6.8	54,730	8,051	8,843	11,192	improvement
Allergy/Immunology	7.09	6.3	31,854	5,020	4,671	6,103	
Gastroenterology: Hepatology	6.08	4.9	26,377	5,438	5,395	7,140	
Cardiology: Invasive-Interventional	5.79	4.6	41,115	8,974	8,601	11,383	
Palliative Care	5.04	3.2	8,434	2,609	1,778	2,437	
Total	1,268.72	1,055.1	7,936,787	7,522	6,571	8,544	

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- ze if for





The Product Takes Shape Case Study for Utilization



Case Study – Sustainable Ambulatory Expansion



Unique Opportunity: Presented with an opportunity to acquire +100K sqft building in market where our affiliated system is underrepresented

Priority Rationale:



- Decant low acuity procedural and imaging cases from a major tertiary hospital in the system
- Build upon success at the ambulatory location further south in the market
- Opportunity to grow BJC/WashU market share to targets
- Ability to increase Multi-D care and leverage affiliation by the co-location of primary care (BJCMG) and specialty care (WashU)

Scope



- Primary and 5 Specialties
- Operating Rooms, GI, Imaging, Infusion, Clinics, Support Spaces
- 35-40 clinical FTEs in the new site (primary care and multi-specialty care



Exploring Sustainable Expansion – Utilizing Integrated Data

- External
 - What markets can support healthcare access expansion?
 - What care is needed by this community?
 - What role should we play?
- Internal
 - How do we currently serve patients in this market?
 - Is the market currently sustainable for the system with this population?
- Optimize Provider Deployment Who is caring for these patients and how?



Exploring Sustainable Expansion – External Analysis

- What markets can support healthcare access expansion?
 - Market Share
 - Population
 - Demographics
- What care is needed by this community?
 - Market Volumes
 - Service Line Demand
- What role should we play?
 - Geographic landscape and distribution of services



External Analysis

Primary Service Area - COUNTY Population & Household Income

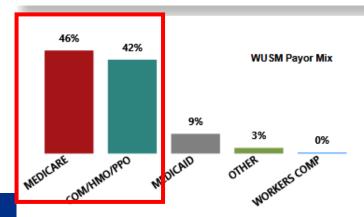


ST. LOUIS COUNTY - SOUTH

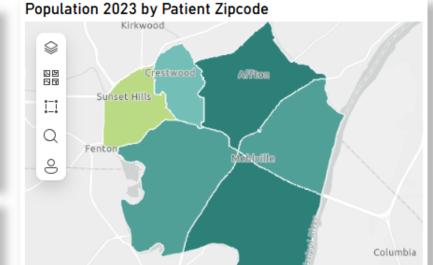
Market Population						
Age Group	County Population 2023	% Total	Unique Patients			
45-64	46,703	25.04%	6,078			
25-44	46,314	24.84%	4,621			
65+	44,068	23.63%	8,861			
00-17	36,041	19.33%	7,528			
18-24	13,356	7.16%	1,393			
Total	186,482	100.00%	28,481			

	Current	Income &	Poverty
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Median Household Income		% Persons in poverty	Fertility Rate	
	89,261	5.9%	55.8	
MISSOURI	61,043	12.8%	58.4	
ILLINOIS	78,433	11.9%	53.	







Age Group	2000	2010	2020	2023	Change 2020-2023	% Change
All Ages	183,502	181,009	182,522	186,482	3,960	2.2%
Adult	144 028	145 018	148 932	150 441	1 509	1.0%
Pediatric	39,474	35,991	33,590	36,041	2,451	7.3%

Missouri Dept. of Conservation, Missouri DNR, Esri, TomTom, G... Powered by Esri

Arnold

Source: US Census 2000- 2020 Est. Sg2 projections for 2023-2028 Estimates

Fertility Rate from health.mo.gov/data. Rate is birth/pregnancy per 1,000 females age 15-44.

WUSM Payor Mix is % of WUSM billed Gross Charges



IP Discharge Year	
2023	~

Hospital Name	Discharges ▼	% Total	ADC
Mercy-South	9,838	44.3%	143.0
Mercy-St Louis	3,139	14.1%	42.6
MO BAPTIST ST LOUIS-ST LOUIS CO	1,954	8.8%	22.3
BJH-ST LOUIS CITY	1,566	7.1%	27.6
ST CLARE FENTON-ST LOUIS CO	1,510	6.8%	18.5
Total	22,192	2.6% 100.0%	7 º 330.4

SG2_SL2	Discharges	% Total	ADC
	2,877	13.0%	54.2
⊕ CARDIOLOGY	2,307	10.4%	32.0
⊕ BEHAVIORAL HEALTH	1,851	8.3%	31.1
⊕ OBSTETRICS	1,785	8.0%	14.8
⊕ NEUROSCIENCES	1,700	7.7%	31.2
⊕ NORMAL NEWBORN	1,676	7.6%	18.4
⊕ GENERAL MEDICINE	1,518	6.8%	18.4
⊕ GENERAL SURGERY	1,370	6.2%	19.8
⊕ ORTHOPEDICS	1,290	5.8%	21.4



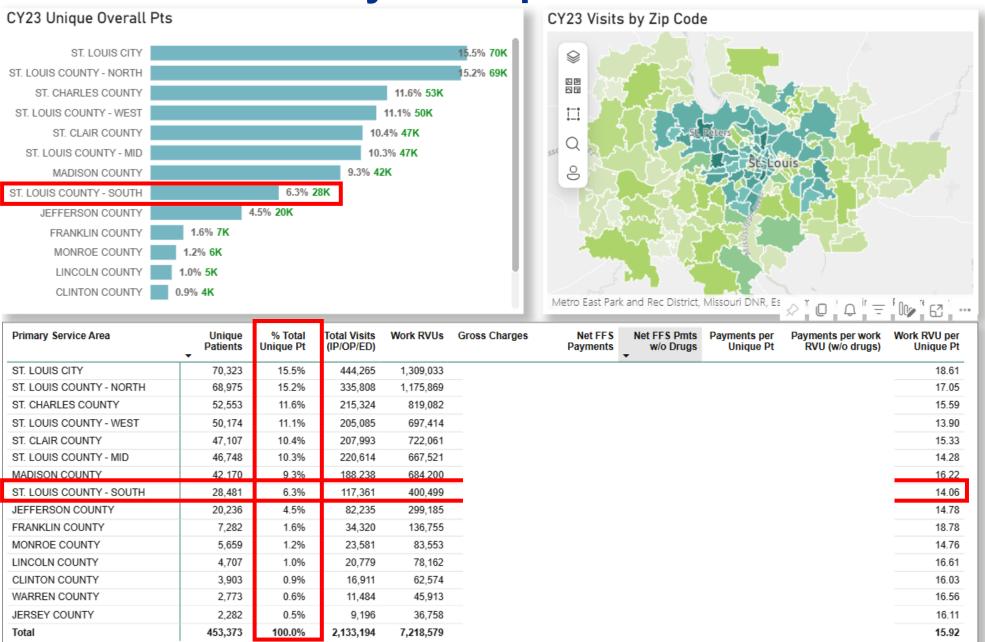
Exploring Sustainable Expansion – Internal Analysis

- How do we currently serve patients in this market?
 - Lives served
 - Volumes
 - Retention Rates
 - Current Care Ecosystem

- Is the market sustainable for the system?
 - RVUs and Payments Generated
 - Historical Performance
 - Capacity



How do we currently serve patients in this market?





Optimize Provider Deployment Who is caring for these patients and how?

- Is there bandwidth to add additional lives served with current providers?
 - Clinical full-time equivalents (CFTE)
 - RVU generation
 - Provider productivity
- How does the care provided change the economic impact of the opportunity?
 - Demand
 - Payments and RVU per unique patient
 - Downstream Impacts to System
 - Population payor mix
 - Compensation



Optimize Provider Deployment

125

67

2425

68

65

1841

52

64

1761

30

25

1044

45.48

48.99

1,252.35 1,079.49

29.66

33.43

CH00566 Pathology & Immunology

CH00583 Emergency Medicine

Total

WUSM & WUCA Provider Tracking - FY23 Position Worker Type Job Profile (Primary) Employee Default CCH L4 Employee All All Academic - WUSM ΑII **WUSM** Department Headcounts (HC) Clinical FTE FY23 Payments First Time WUSM Pts Downstream Point of Entry (POE) Payments thru FY24 Clinical FN16 FN16 FN16 Net Pmts First Time POE DS Net Employee Default CCH L4 **Net Pmts** Net Pmts **DS Net Pmts** Total Clinical Unique Provider FTE wo Drugs Pmts wo Mission > 0 >= .6 Mission wo Drugs Generated WUSM Pt FTE / FN16 HC Drugs CH00222 Neurology 151 110 58.64 58.17 108 111 50 4.493 CH00411 Department of Medicine 723 534 517 257 322.82 270.31 18,432 483 88 67 48.59 67 CH00123 Orthopedic Surgery 68 47 53.34 15,103 CH00408 Radiology 181 119 116 90 94.66 89.22 357 23 CH00553 Pediatrics 343 314 314 194 214 52 193 27 28 125 297 CH00085 Ophthalmology and Visual 51 35 23.42 35 34 26 26.58 6.267 Sciences CH00184 Anesthesiology 155 154 127.01 120.52 54 188 120 2.245 CH00253 Radiation Oncology 63 54 25 15 41.49 15.90 561 24 113.82 106.49 137 CH00325 Surgery 183 146 144 104 17.551 CH00428 Neurosurgery 13.89 13.76 1,756 20 29 20 20 13 CH00491 Psychiatry 125 68 62 34.85 26.41 739 50 23 CH00520 Obstetrics and Gynecology 50 49 29 31.33 28.60 4.773 49 59 49 33 21.75 31 CH00532 Otolaryngology 34 21 24.94 7,031

16,923

124,357

64

1443

Case Study – Sustainable Ambulatory Expansion

Outpatient Facility in South Region – 2026



Clinical Specialties

- Medical Subspecialties (Cardiology, GI, etc.)
- OB/GYN
- Ophthalmology
- Orthopedics
- Otolaryngology
- Primary Care
- Occupational Therapy



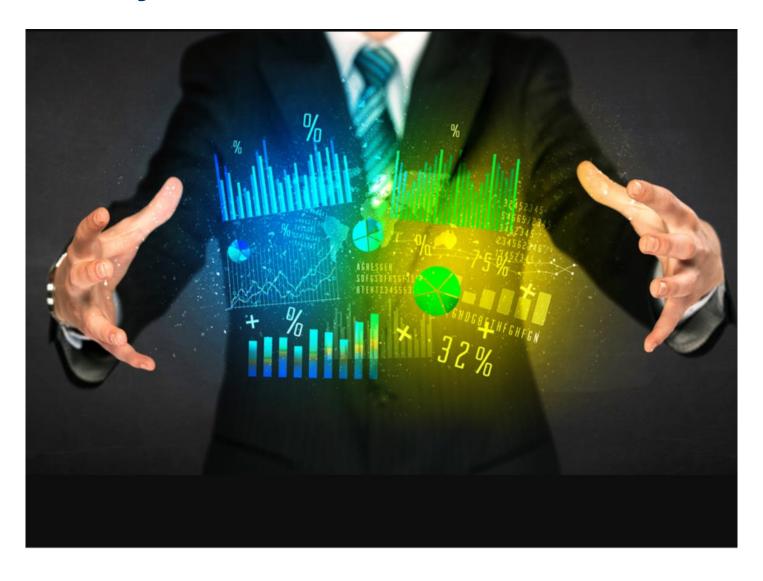
BJC HealthCare

Hospital Services

- Ambulatory Surgery Center
- GI Procedure Suite
- Non-Onc Infusion
- Lab
- Imaging (Xray, Ultrasound, CT, MRI)



Summary - How You Can Harness Your Data



- Decide Content & Prioritize
- Identify Sources of Truth
- Create a Template
- Choose a Platform
- Prep & Stage Data
- Build & Test
- Access & Governance





Key Take-Aways

- Strategic data integration can efficiently solve your data challenges
- It's a journey having a vision & roadmap will get you to your goal
- "The greatest value of a picture is when it forces us to notice what we never expected to see." – John Tukey





Questions?

Please be sure to complete the session evaluation on the mobile app!





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Molly Bailey is a seasoned healthcare strategic planner and Senior Planning Manager in the Joint Office of Strategic Planning at Washington University School of Medicine in St. Louis supporting the Academic Medical Center comprised of the medical school, Barnes Jewish Hospital, Barnes Jewish West County, St. Louis Children's Hospital, and the expansive community network. She holds an MBA from Saint Louis University and a BSBA from Southern Illinois University Edwardsville. Molly has extensive experience in leading strategic planning initiatives, focusing on data knowledge synthesis, goal setting, and leadership collaboration. She is the Chair of her neighborhood organization and recently completed a strategic plan with Alton Main Street.







Verna Ehlen Domain Analyst & Revenue Cycle Expert Ehlen_v@wustl.edu

Verna is a seasoned revenue cycle and data analytics professional with 15+ years of experience and a Bachelor's degree in Healthcare Management from WashU. Currently a Domain Analyst at WashU Medicine's Joint Office of Strategic Planning, she excels in data analytics, financial performance analysis, and strategic decision-making. Previous roles include Director of Revenue Cycle & Financial Analysis, Business Operations Manager, and Coding & Billing Compliance. Proficient in Professional billing and coding, EPIC reporting, Power BI and dashboard building, her expertise ensures optimized data visualization for both clinical and financial metrics.





Bibliography/References with Corresponding Slides

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