

# Value of Vascular Surgery

An Essential Component of a High-Performing Hospital's Surgical Program

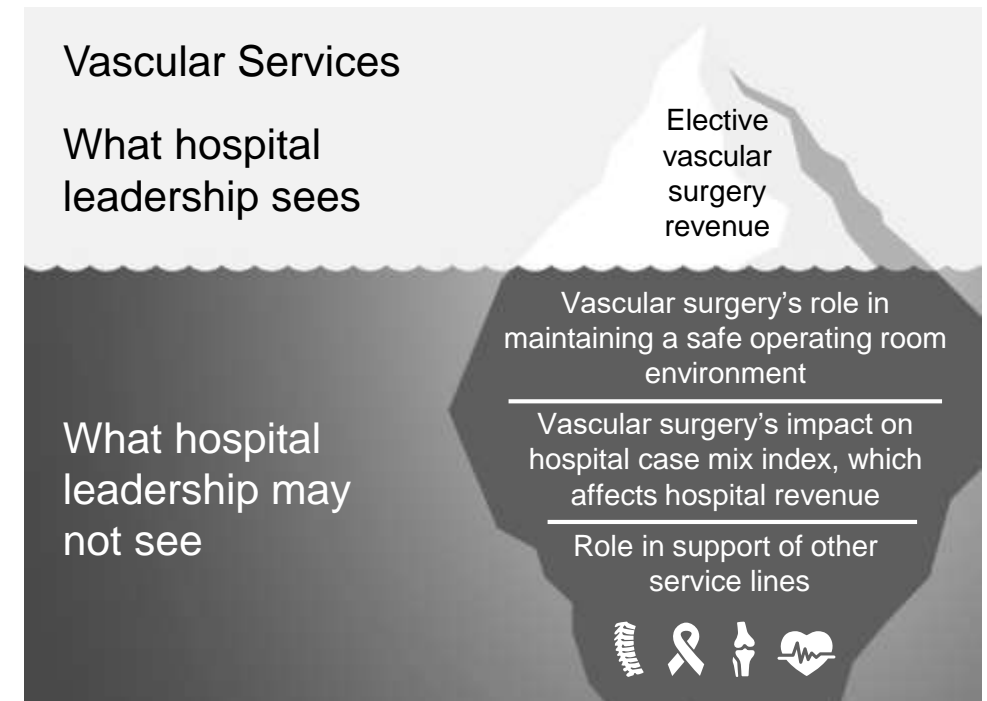


# Vascular Surgery Is an Essential Component of a Hospital's Overall Surgical Program and Performance

Yet, this discipline remains one of the least recognized and most misunderstood specialties by the majority of health care systems across the country.

## 3 essential contributions to a hospital's success

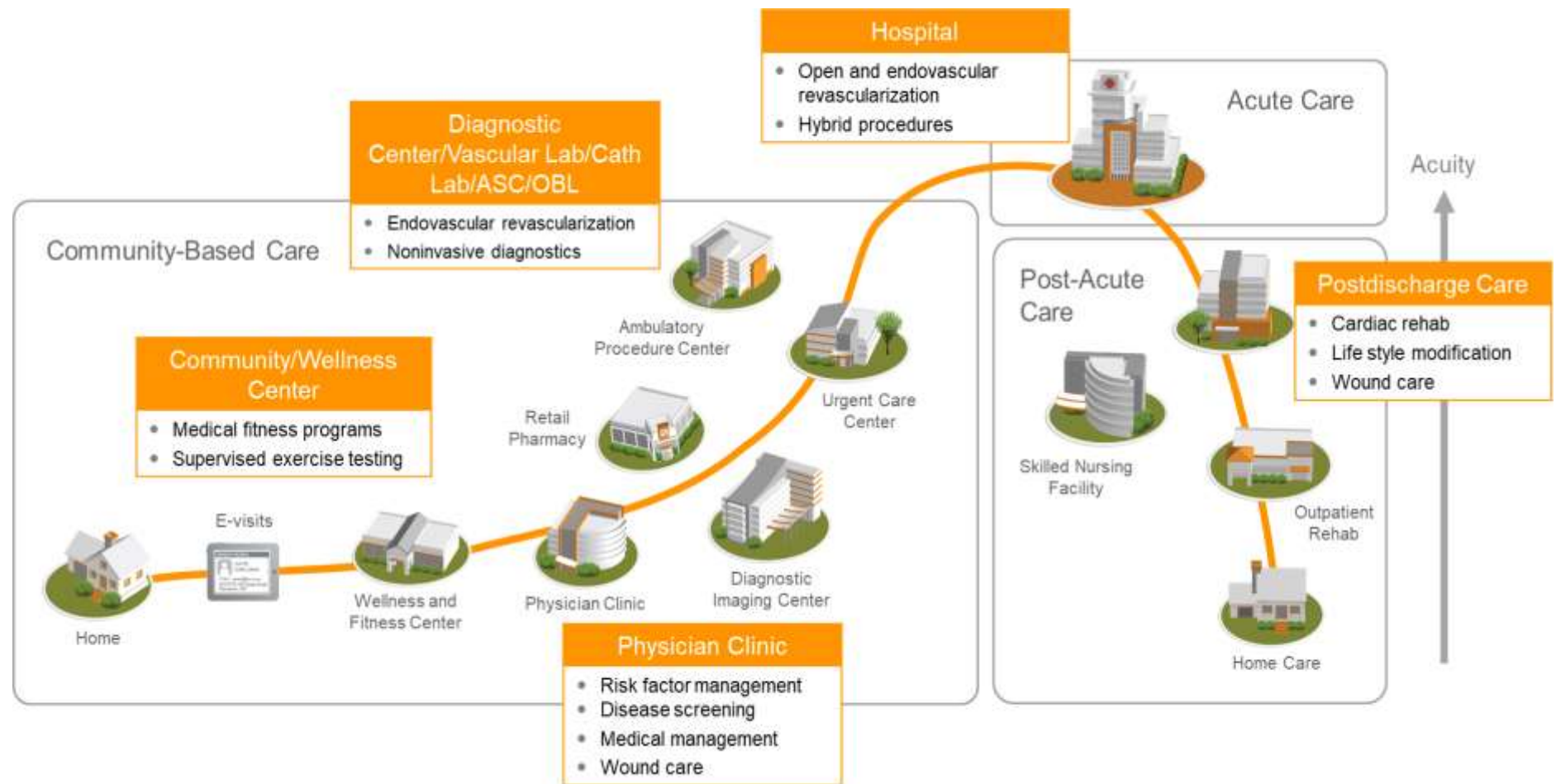
1. Improve quality, outcomes and safety associated with the operating room environment—*lower OR morbidity and mortality rates.*
2. Support and enable many other procedures across a wide range of specialties outside of vascular services (eg, spine, trauma, cardiovascular, orthopedics, dialysis and oncology).
3. Provide a significant growth engine for a hospital due to the increasing prevalence and incidence of vascular disease and the collaborative services they provide.



# Vascular Surgeons Treat a Wide Spectrum of Diseases Across the Continuum of Care Increasing in Both Prevalence and Incidence

Creating opportunity for **organic growth** across the continuum

Providing better **management** of an increasingly comorbid and complex patient population

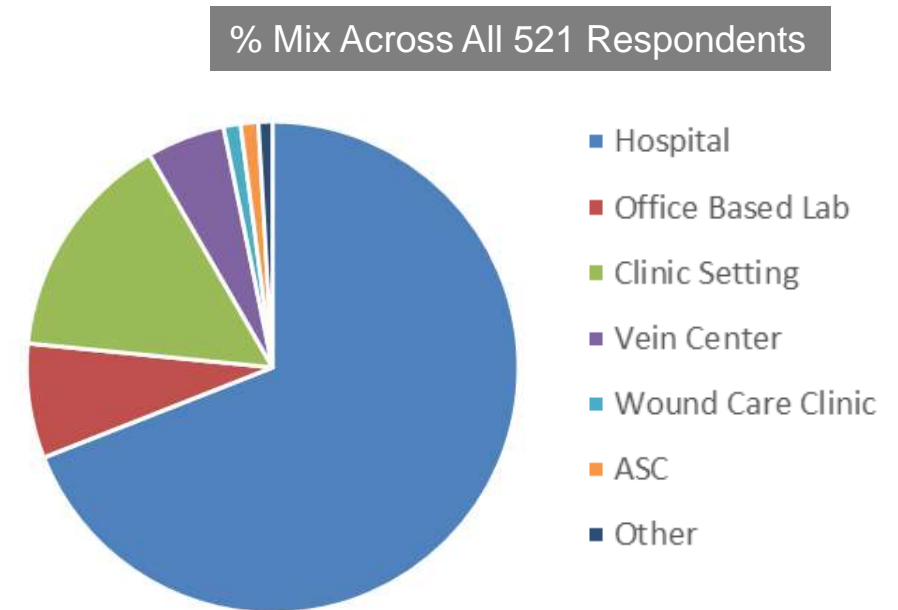


ASC = ambulatory surgery center; OBL = office-based laboratory.

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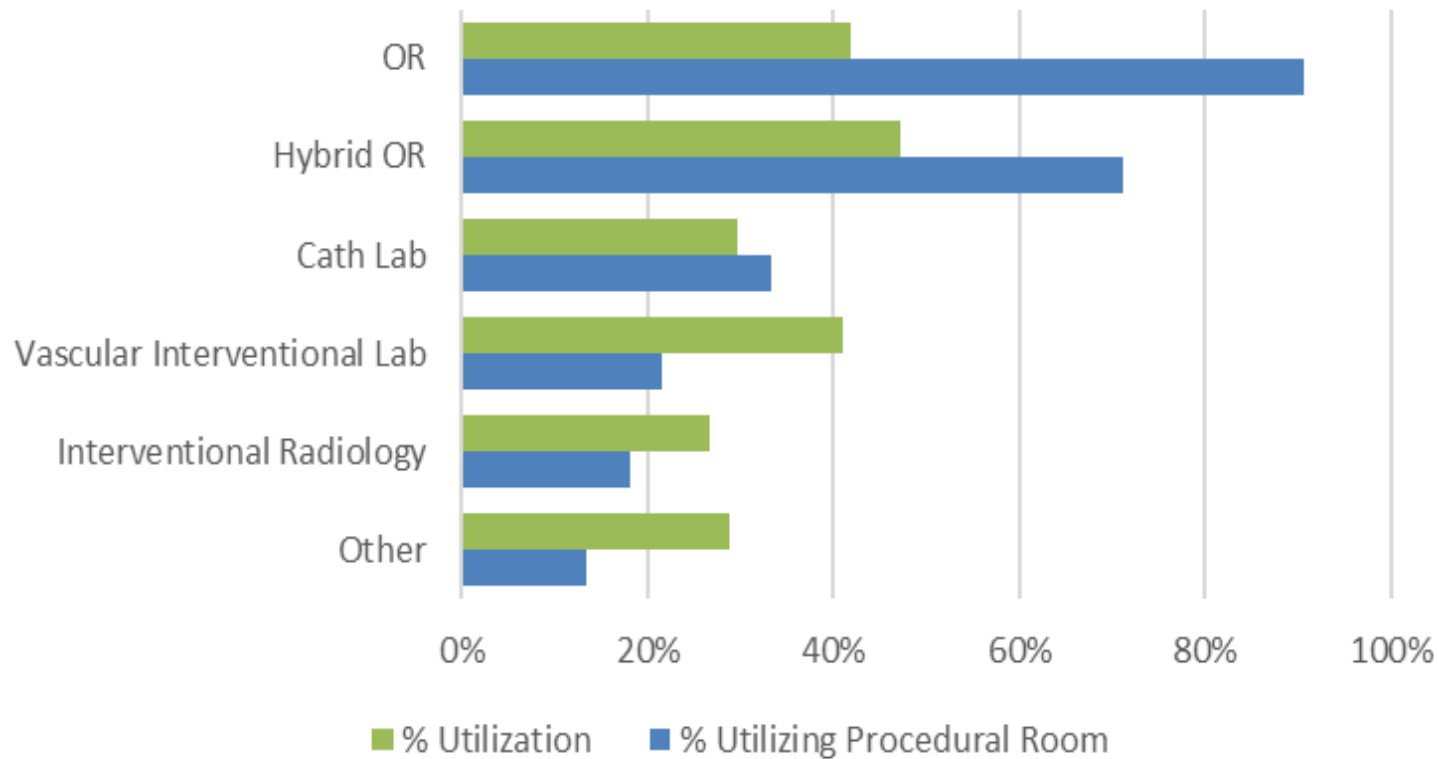
# As Indicated by Survey Results, the Majority of Time Is Spent Within a Hospital Setting

	% of Respondents	Avg Utilization
Hospital	98%	70%
Office-Based Lab	32%	23%
Clinic Setting	56%	27%
Vein Center	29%	18%
Wound Care Clinic	12%	10%
ASC	9%	12%
Other	4%	24%



Data are based on the responses of 521 surgeons to a survey conducted by the Society for Vascular Surgeons, 2020.

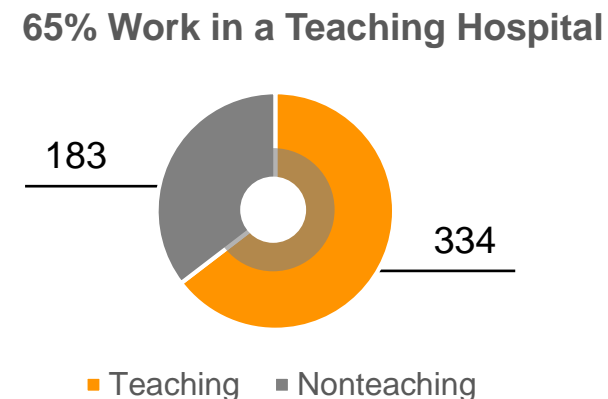
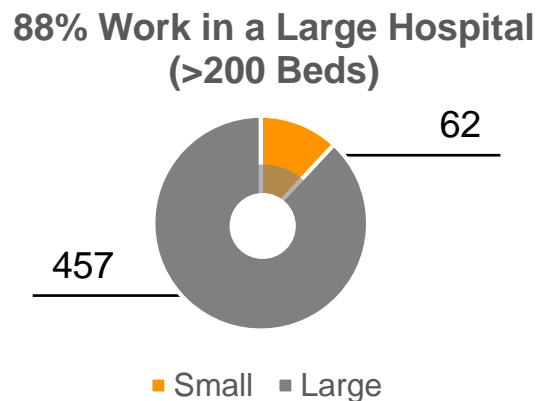
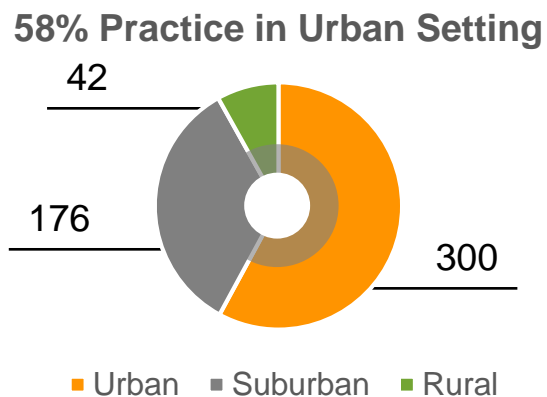
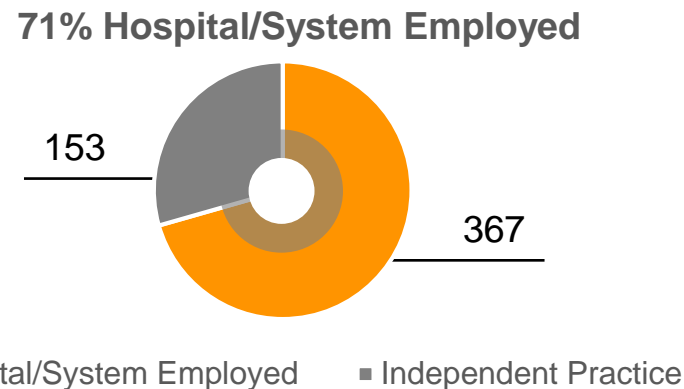
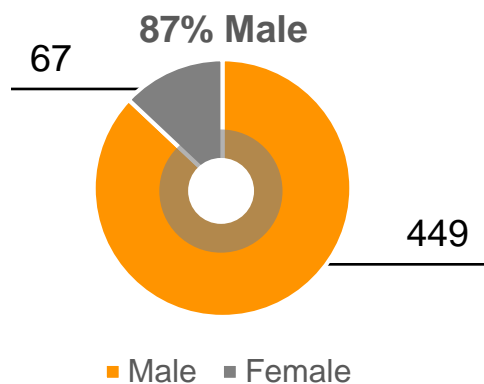
# The Majority of Surgeons Perform Procedures in Both an OR and a Hybrid OR



On average, 43% of procedures are open surgical and 57% are endovascular.

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# Vascular Surgeon Demographics: Primarily Hospital Employed, Work in Urban/Suburban Market and in Large Teaching Hospital Setting



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# Vascular Volumes, Particularly in the Outpatient Space, Are Projected to Grow Significantly Over the Next 10 Years

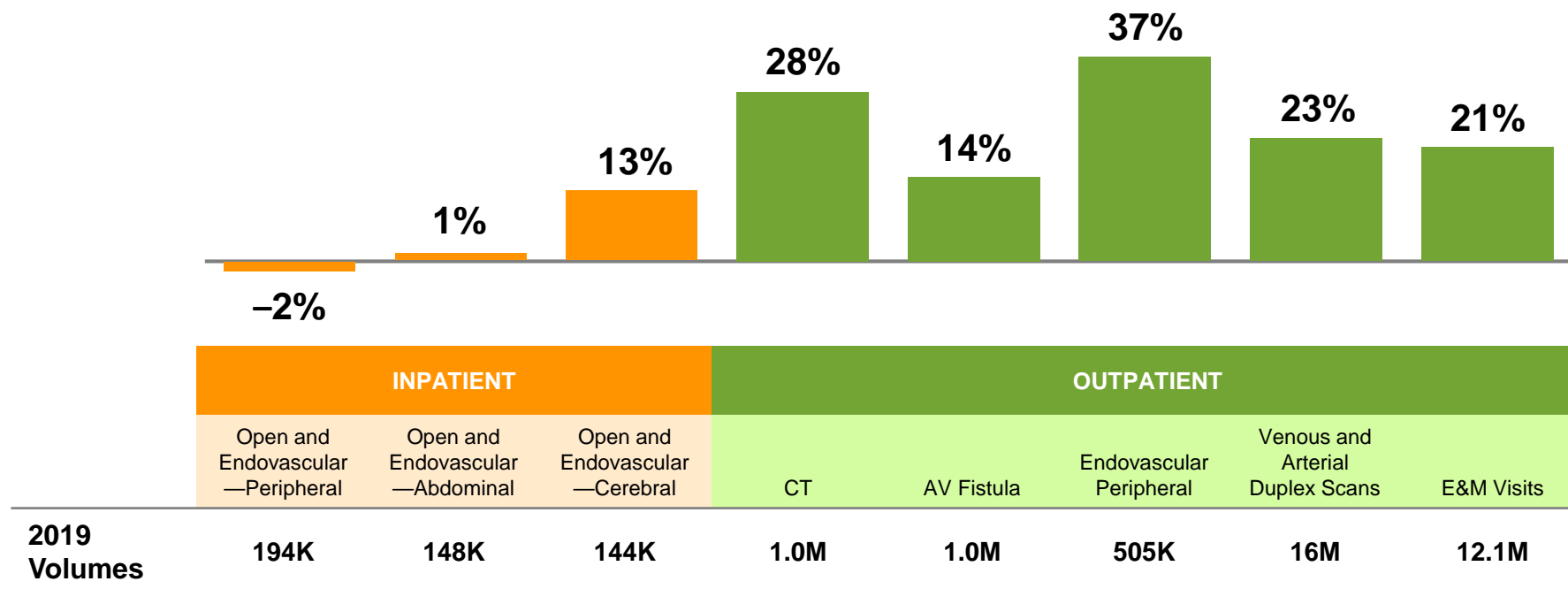
## IP and OP Vascular Service Line Forecast US Market, 2019–2029

■ Sg2 Inpatient Forecast  
■ Sg2 Outpatient Forecast

Peripheral artery disease (PAD) affects close to 8.5 million American adults aged 40 years or older.

The age-standardized prevalence rate of PAD is approximately 185 per 100,000 people and similar across genders, with minimal change between 1990 and 2010.

The risk factors for PAD are similar to those for coronary heart disease (CHD); diabetes and smoking are stronger risk factors for PAD than for CHD.



AV = arteriovenous; E&M = evaluation and management.

# As Value-Based Care Continues to Emerge, It Will Be Critical for Hospitals to Focus on Outpatient Settings in Order to Thrive Financially

Innovations continue to improve minimally invasive treatment options for patients, which will continue to shift procedures to an outpatient setting.

Vascular surgeons are increasingly comfortable supporting this shift given an adequate procedure room in which to work.

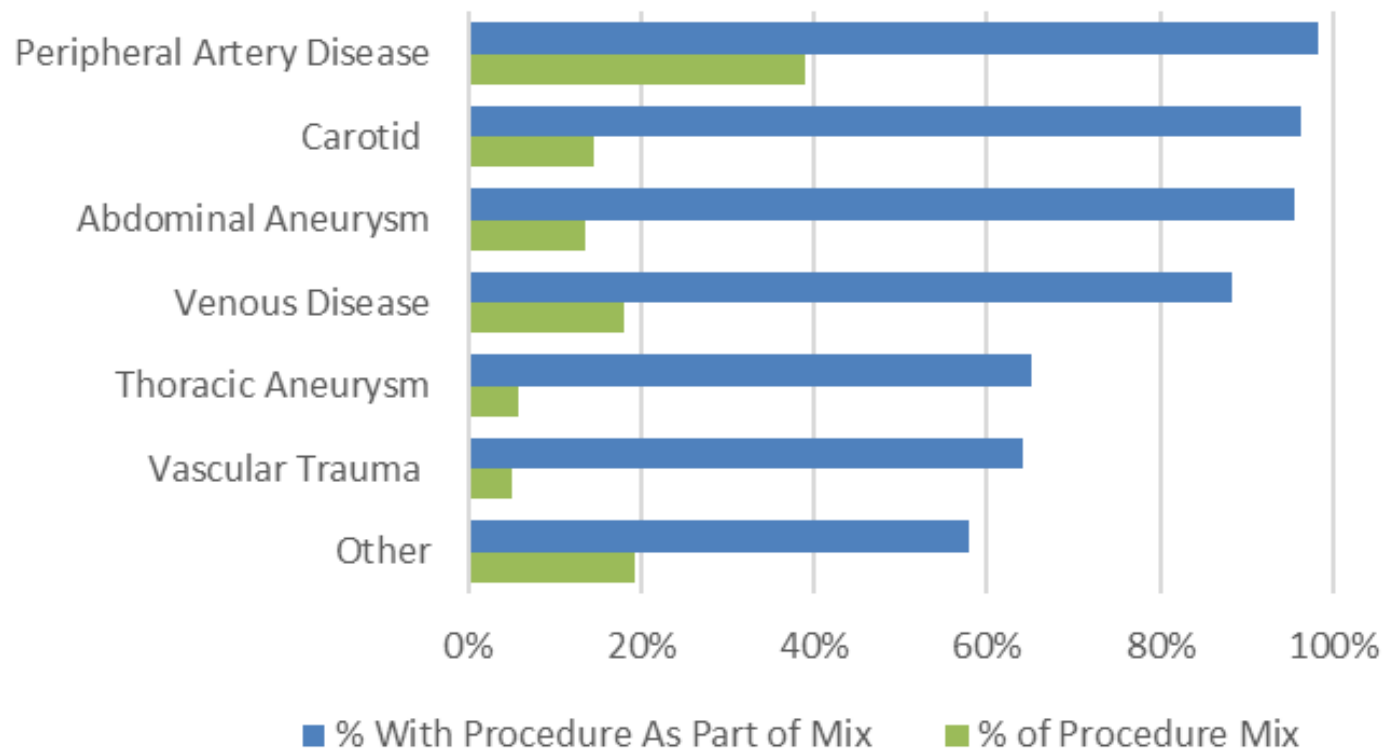
Nearly 50% of OP endovascular peripheral procedures are performed in the office/ASC setting.

Vascular surgery will play a key role in site of care transitions, optimal total cost of care per beneficiaries and improvement in key quality metrics.





# On Average, Peripheral Artery and Venous Disease Account for More Than Half of a Vascular Surgeon's Procedural Work



Other Services Provided	# of Respondents
Imaging & Diagnostics	93%
Screening	68%
Smoking Cessation	41%
Anticoagulation	23%
Supervised Exercise Training	15%
Behavior Modification	14%

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# Vascular Surgery Provides Significant Value, Revenue and Margin Opportunity to a Hospital

Previous research and current assessments suggest **gross contribution margin per vascular surgeon FTE is the highest** among the top 5 hospital-based surgical service lines.

	Cardiology	General Surgery	Orthopedics	Vascular	Neurosurgery
GM/FTE	\$1,069,645	\$1,314,346	\$463,276	\$1,612,276	\$249,294

Sg2 research utilizing service line analytics and typical annual Vascular surgery and service line volumes suggest Vascular programs can add more than \$9M in hospital contribution margin.

FTE = full-time equivalent; GM = gross margin. **Source:** Data from IDX Systems Corporation, Burlington, VT.

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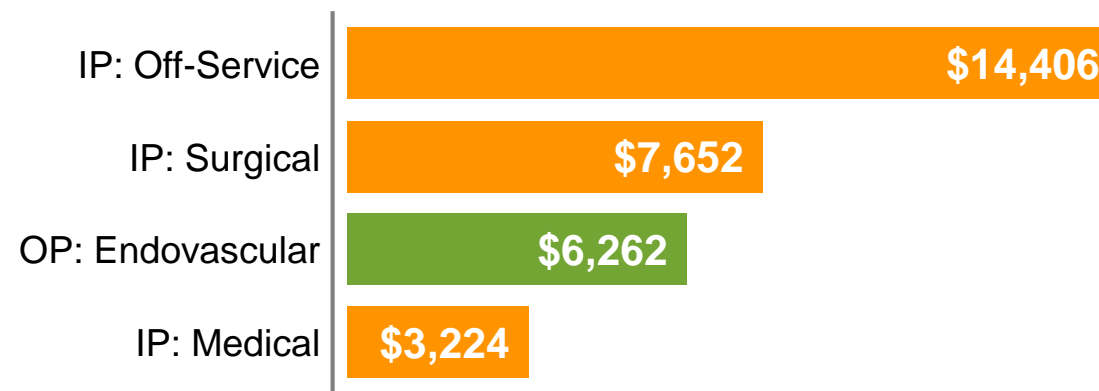
**Contribution margins are positive** across all procedure types.

On average, **vascular contribution margins remain high** at approximately 40% of overall revenue.

In addition, vascular surgeons provide essential operative **assistance to other surgical specialties** resulting in a desirable per case contribution margin of 30% for supportive procedures and consults.

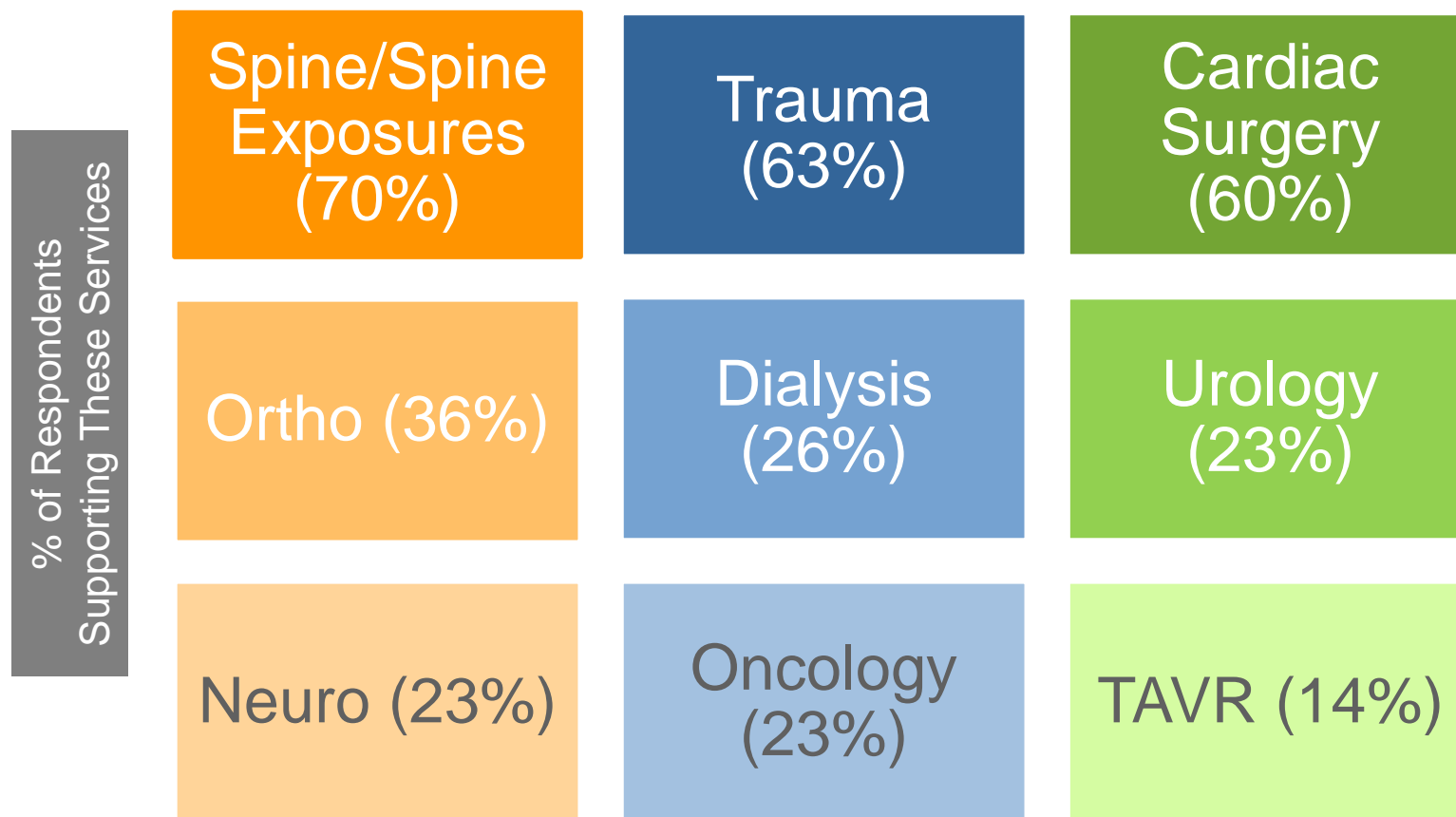
Vascular surgery cases have a **high case mix index (2.8 to 3.2)**, which contributes to higher reimbursements for a hospital and is financially beneficial.

Figure 2. Vascular: Average Per Case Contribution Margin



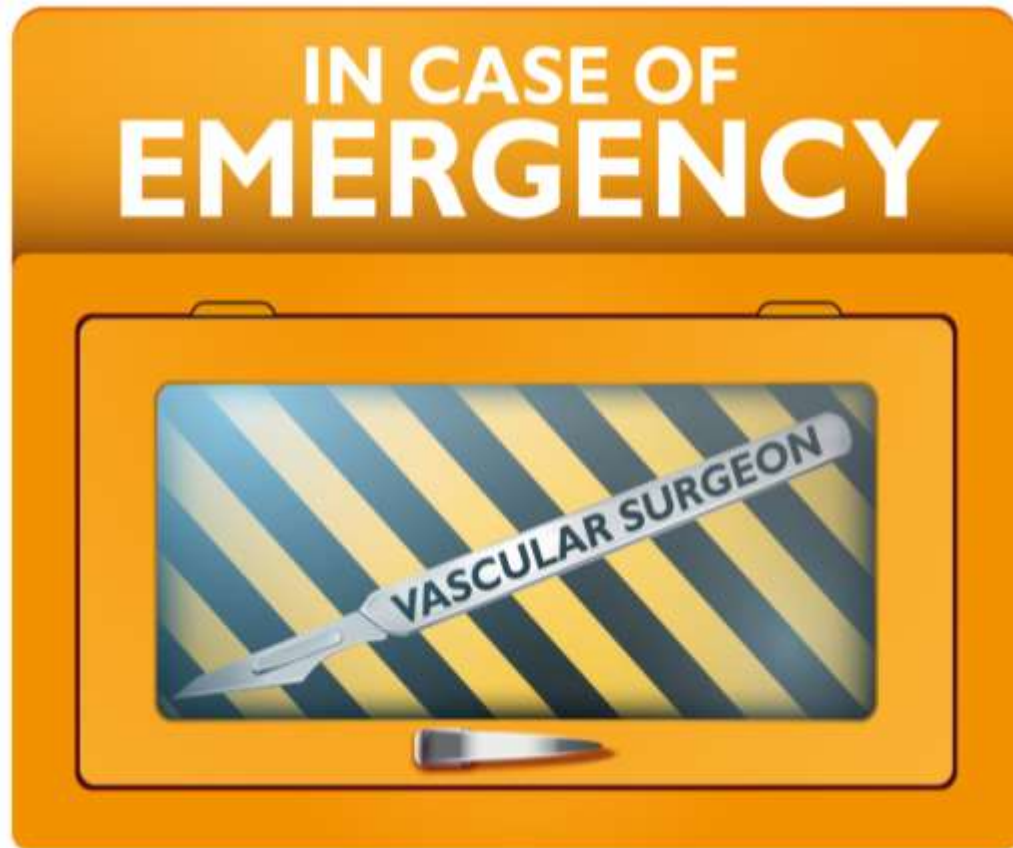
**Sources:** Sg2 IP & OP Vascular Service Line US Market Forecast (IP: Open Surgical Peripheral & Abdominal, Endovascular Peripheral & Abdominal, Medical; OP: Endovascular Peripheral) averaged across an estimated 675 hospitals performing vascular surgery (ahd.com). Average revenue, variable cost, and contribution margin per case per Sg2 proprietary all-payer database and Society of Vascular Surgery study; Johnson CE et al. *J Vasc Surg.* 2018;67(2):e31; Taylor et al. *J Vasc Surg.* 2012;55(1); 281–285.

# Survey Data Indicate Several Services Are Dependent on a Fully Functioning Vascular Program: Off-Service Specialties



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# Vascular Surgery's Importance Is Often Not Given Its Due When Looking at a Hospital's Financial Performance

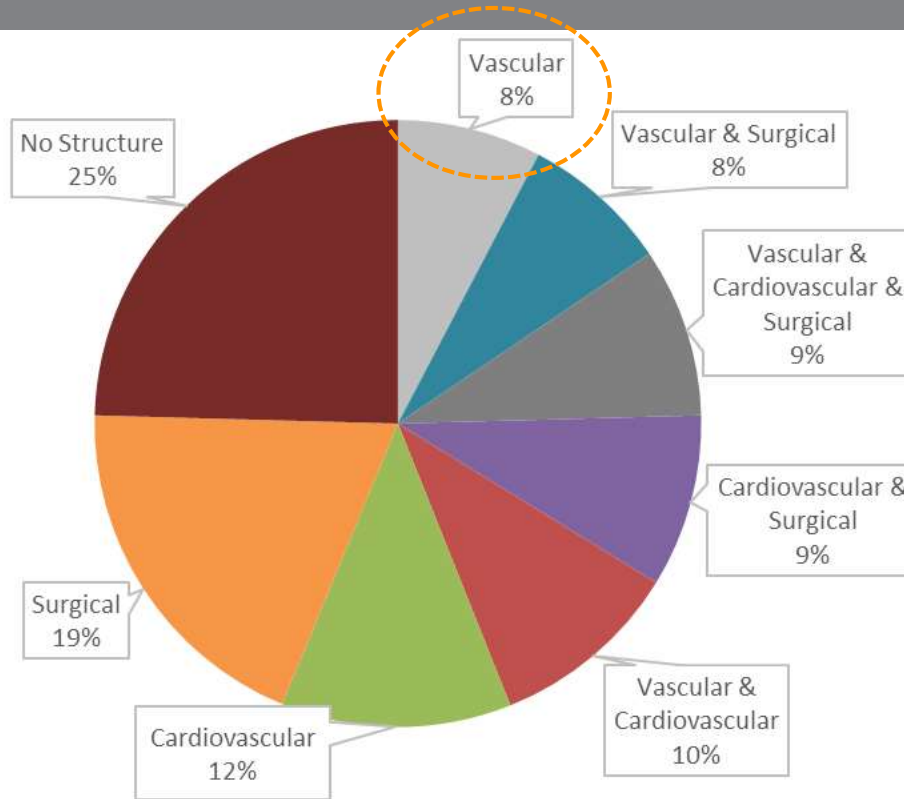


When a vascular surgeon is called on to assist another specialist, it may go unrecognized because the technical component of any off-service work goes to the primary procedural physician, not the vascular surgeon.

In many cases, a vascular surgeon provides emergent care to save a patient's life or limb.

Vascular surgeon on-site support and peri-procedural emergency services coverage mitigate transferring cases to other facilities and contribute to the margin associated with service lines such as cardiac, spine, trauma and orthopedics.

# Only 8% of Vascular Surgeons Operate in a Dedicated Vascular Service Line



Due to the nature of vascular surgery, **program development is often multidisciplinary but more successful when led by a vascular surgeon.**

In addition, a true vascular program provides the much-needed recognition of the importance of vascular surgery while also ensuring that resources are available to support cost, quality and market initiatives.

Currently

Varying service line structures exist among hospitals and health systems for vascular surgery.

When a service line structure is in place, it is most often purely administrative.

# Successful Vascular Programs May Differ in Terms of Services, Technologies and Staffing

Understanding an organization's market dynamics, patient population, physician skill set and current capabilities will help align goals to make investments necessary to deliver high-quality, low-cost vascular care.

	OUTPATIENT	INPATIENT	COMPLEX INPATIENT
Services	<ul style="list-style-type: none"> <li>● Endovascular Procedures                             <ul style="list-style-type: none"> <li>— Aortoiliac occlusive</li> <li>— Infrainguinal arterial</li> <li>— Upper extremity arterial</li> <li>— Deep venous</li> <li>— Superficial venous</li> <li>— AV access</li> </ul> </li> <li>● Noninvasive Vascular Diagnostics (Accredited by IAC/ACR)                             <ul style="list-style-type: none"> <li>— Duplex ultrasound scans—carotid, renal, abdominal, mesenteric, extremity</li> <li>— Physiologic arterial studies</li> </ul> </li> <li>● Angiography: arterial and venous</li> <li>● Supervised exercise training</li> </ul>	<ul style="list-style-type: none"> <li>● Endovascular and Open Procedures                             <ul style="list-style-type: none"> <li>— Descending thoracic aorta (endo)</li> <li>— Aortoiliac occlusive and aneurysmal</li> <li>— Infrainguinal arterial</li> <li>— Upper extremity arterial</li> <li>— Carotid-vertebral</li> <li>— Deep venous</li> <li>— Superficial venous</li> <li>— AV Access</li> <li>— Thrombolytic infusion</li> </ul> </li> <li>● 24/7/365 Emergency vascular coverage</li> </ul>	<ul style="list-style-type: none"> <li>● Complex Endovascular and Open Aortic Procedures                             <ul style="list-style-type: none"> <li>— Aortic arch and proximal branches</li> <li>— Thoraco-abdominal repairs</li> <li>— Visceral aorta and branches</li> <li>— Descending thoracic aorta (open)</li> <li>— Neurointerventional</li> </ul> </li> <li>● 24/7/365 Emergency vascular and cardiothoracic coverage</li> <li>● Clinical research</li> </ul>

# Successful Vascular Programs May Differ in Terms of Services, Technologies and Staffing

	OUTPATIENT	INPATIENT	COMPLEX INPATIENT
Technologies	<ul style="list-style-type: none"> <li>• Duplex ultrasound</li> <li>• Fluoroscopy</li> <li>• ASC/office-based lab/hospital outpatient department</li> </ul>	<ul style="list-style-type: none"> <li>• CT and MRI</li> <li>• 3D CT</li> <li>• Endovascular suite/cath lab</li> <li>• Fixed and/or portable fluoroscopy</li> <li>• Inpatient and ICU beds</li> <li>• Intravascular ultrasound (IVUS)</li> <li>• Hybrid OR</li> </ul>	<ul style="list-style-type: none"> <li>• Cardiopulmonary bypass</li> <li>• Biplane angiography equipment</li> <li>• Transesophageal echo</li> <li>• Cerebral monitoring</li> </ul>
Staffing	<ul style="list-style-type: none"> <li>• Medical director</li> <li>• Program manager</li> <li>• Vascular technician(s)</li> <li>• Data abstractor</li> </ul>	<ul style="list-style-type: none"> <li>• Vascular surgeon—board certified</li> <li>• Vascular administrator</li> <li>• Vascular nurse coordinator</li> <li>• Anesthesiology</li> </ul>	<ul style="list-style-type: none"> <li>• ICU and critical care</li> <li>• Remote monitoring support</li> <li>• IT support across settings</li> <li>• Clinical research coordinator</li> </ul>



**In the increasingly competitive world of health care,** being the first in the market to intensely focus on vascular surgery development can **lower the total cost of care** and **improve quality** while **growing revenues** and contribution margins, allowing an organization to remain relevant in the market.

# Action Steps: The Time Is NOW— Strategic Considerations

## Program Components and Leadership

Vascular surgeons work across multiple services lines and perform a wide range of procedure types, which requires a well-integrated approach.

- Vascular surgeons are uniquely positioned to help strategize and develop answers to health care delivery challenges due to the depth and breadth of both their training and their experience.

## Workforce

Harness the unique skill sets from vascular surgeons that enables them to support an organization in many ways.

- Maintain appropriate number of skilled staff to enable 24/7 emergency coverage while maintaining job satisfaction.
- Vascular surgeons are well versed in risk factor management, open and endovascular interventions, and long-term follow-up of patients with vascular disease.

## Resources

Hospital and ambulatory settings are used to deliver innovative vascular screenings, diagnostics and treatments to patients across the care continuum.

- While hospital-based facilities are important to the delivery of high-acuity vascular care, over 30% of vascular surgeons have access to an office-based lab or ASC to perform lower-acuity procedures.

# Action Steps: The Time is NOW— Key Questions for a Hospital Leadership Team



## Strategy

What type of vascular surgery services do we offer today? Where do we want to take the program in the future?



## Assessment

How do we compete in the market today? What resources do we need to be successful?



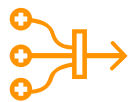
## Governance

Do we have the governance structure and physician leadership to grow vascular surgery services?



## Coordination

Who is delivering vascular surgery services today in our system? Are we coordinating care across the care continuum?



## Physician Alignment

Do we have durable alignment with our vascular surgeons that will ensure long-term, high-quality surgical, medical and endovascular care to our community?

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