



Market Innovations Inc.

Strategic Integrated Market Simulation

Behavioral economics applied to the next generation of hospital pricing

Prepared for:

April 8, 2016

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Agenda

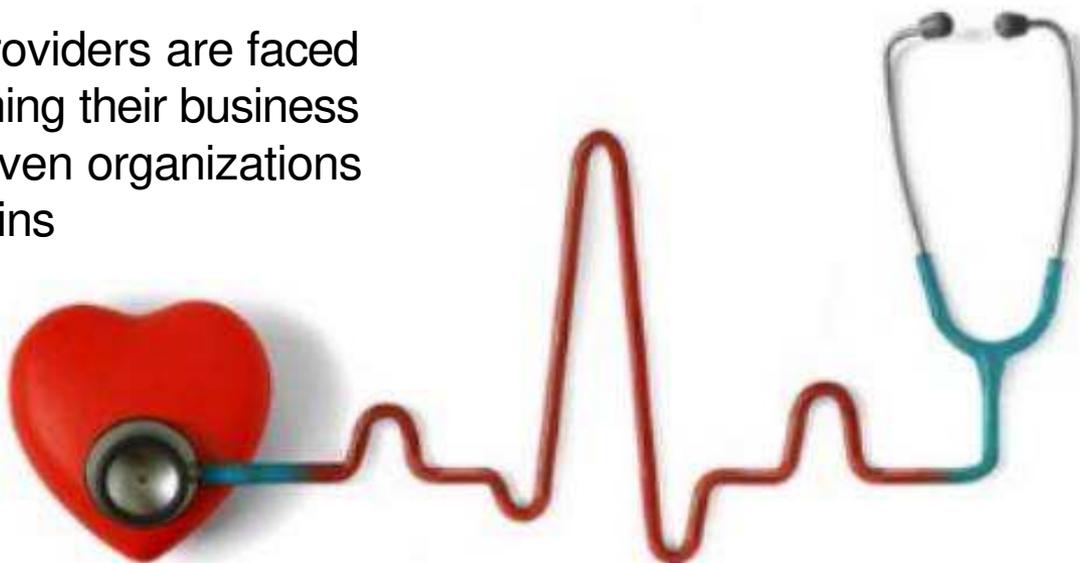
- Imperative for Pediatric Academic Medical Center Pricing Strategy
- Overview of Strategic Integrated Market Simulations (SIM²)
- Co-Design of Behavioral Models
- Case Studies
 - Growth Levers
 - Pricing (Today and Tomorrow)
 - Brand Effect
 - Non-price Features
 - Growth Scenarios
- Hedonic Pricing
- Q & A

**The Imperative for Pediatric
Academic Medical Center (AMC)
Pricing Strategy**

Competing on Value Requires New Capabilities

In interviews with pediatric hospital finance executives there is almost unanimous agreement that the healthcare market is moving to fee-for-value.

- Healthcare is undergoing a once in a generation type shift as continued fee-for-service reimbursement compression has been accelerated by healthcare reform and the push for accountable care
- More than ever, healthcare providers are faced with the challenge of transforming their business models into low cost, value-driven organizations given the risk to eroding margins



Market Uncertainty is at an All-time High

Preserving profitability and driving efficiency requires a new approach to pricing, product and portfolio management, capital and retail location decision making.



Market is shifting to an increasingly ambulatory and retail based competitive paradigm



Reimbursement compression is the future norm



Exchanges, regulatory pressure and for-profit market entrants will accelerate the likelihood of having to compete at the consumer level



This market evolution requires revenue cycle, operating administrators, and health care strategy planners to apply behavioral economics and advanced analytics for managing uncertainty associated with this value transformation

Overview of SIM²

Overview: Strategic Integrated Market Simulations (SIM²)

SIM² is derived from proven, leading-edge social science theories and integrated to create business intelligence and solutions for helping leaders manage uncertainty and develop profitable growth strategies.

Core Concept

- A set of integrated techniques designed to simulate the evolution of product and service markets
- Links strategy to innovation to experimentation and simulation
- Provides organizational foresight and actionable knowledge to help manage uncertainty and develop profitable growth strategies

Creating Business Intelligence and Solutions



Overview: The “Big Ideas”

What if you could ...?



Model the entire market
not just a piece of it

Integrate quantitative
and qualitative inputs



Uncover results
by segment

Include all types of
behavioral drivers

Brand
Price
Access
Technology
Convenience
Care Coordination



Enable managers to see
unexpected events before
those events occur

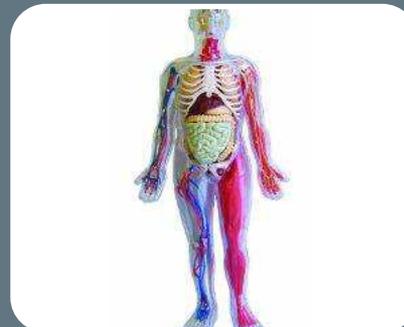
Overview: SIM² Care Product Examples

Low-complexity

Outpatient/Diagnostic

High-complexity

Inpatient



- Arthroscopic ACL surgery
- Ear tube placement
- MRI of the brain
- MRI of the lower extremity
- Sports med therapy (lower extremity)
- Tonsillectomy
- Ultrasound
- Upper GI
- Urgent Care

- Labor and delivery

- Acute leukemia
- Motility disorder
- Percutaneous cardiovascular procedures
- Ulcerative colitis

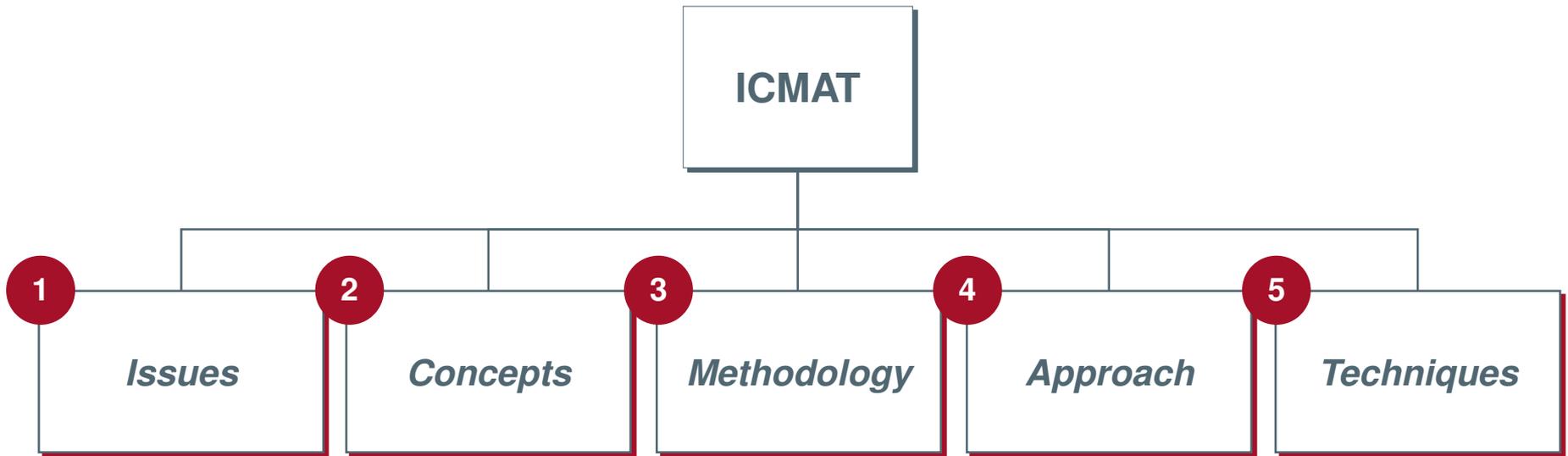
- Cardiovascular surgery
- Dorsal lumbar fusion
- Spine surgery

MII Examples

Co-Design of Behavioral Models

How we begin this *Strategic Pricing* project

We begin every SIM² engagement by developing a plan based on identifying the issues, concepts, methodology, approach and techniques (ICMAT) that are relevant for creating a robust solution.



1 Issues



Protecting the margins in our local (regional, national) market



Making our pricing consistent with our strategy



Re-pricing our care products



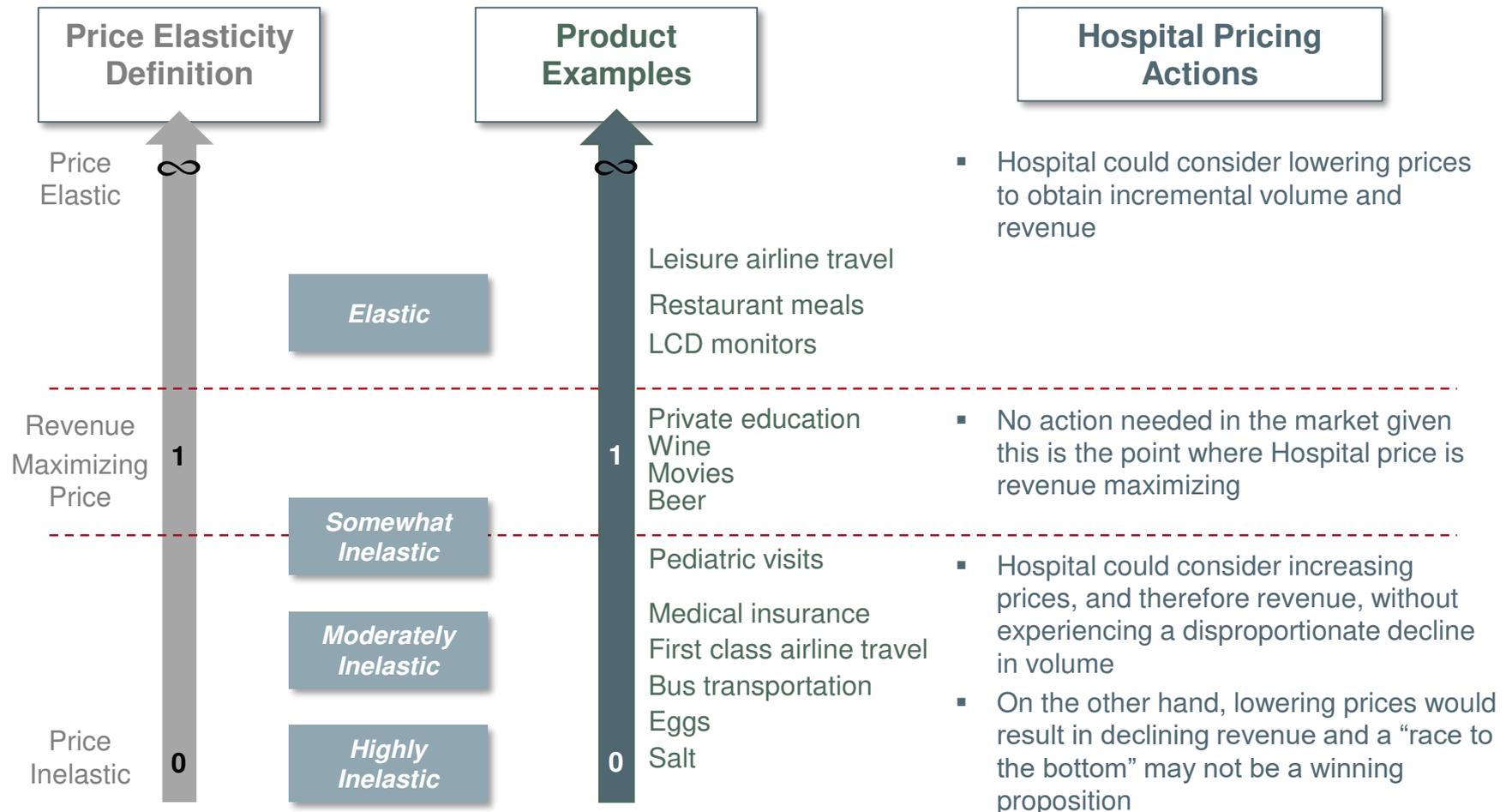
Pricing our care products for the main campus versus satellite facility locations



Distinguishing ourselves, vis-à-vis our competition in the referring physicians' (patients') mind

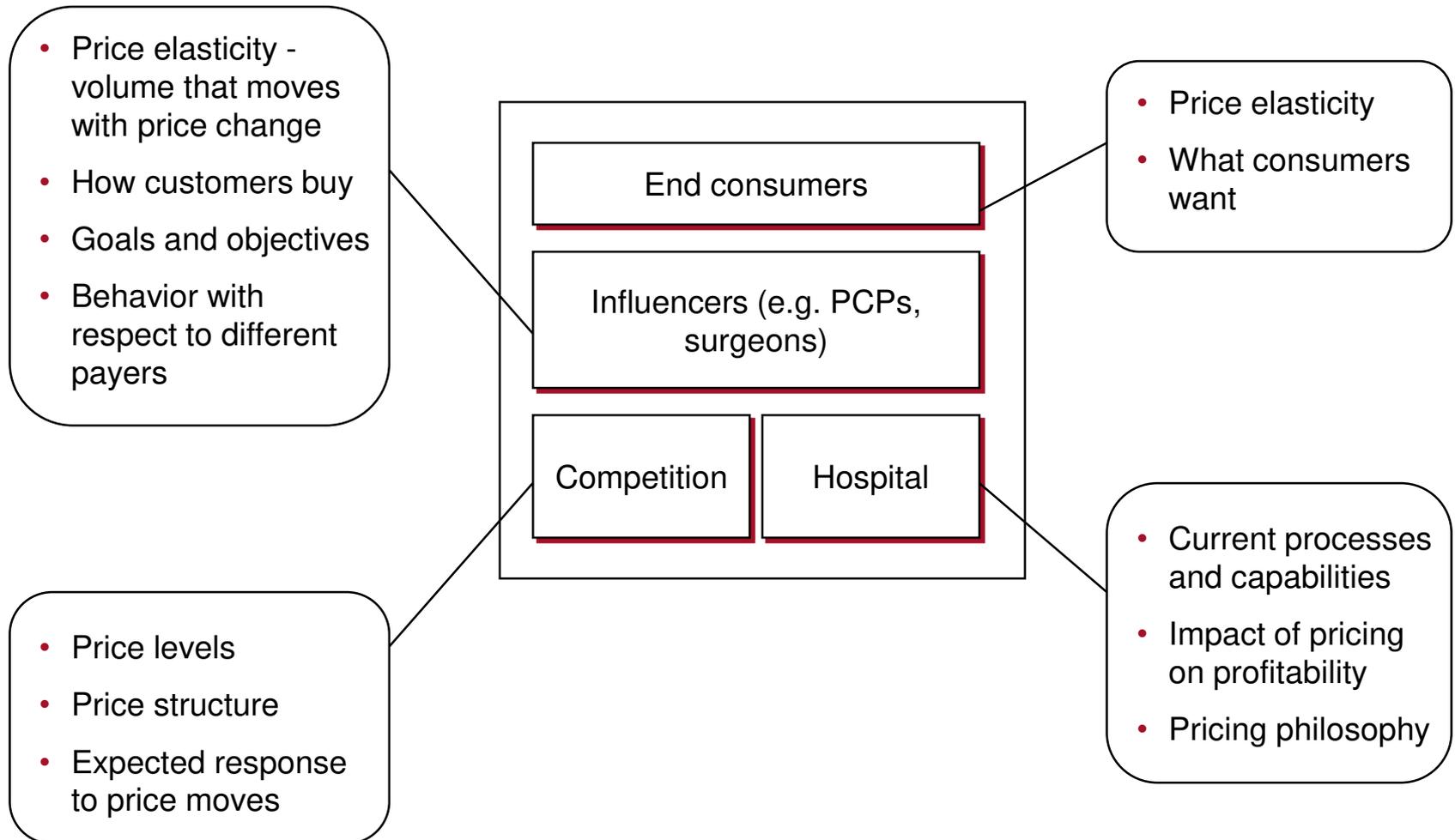
2 Core Concept: Price Elasticity

- It's important to interpret the price elasticity (percentage change in volume/percentage change in price) within the current market context and implications of price changes
 - Elasticity by price range segment
 - Within a realistic zone of pricing change for hospital



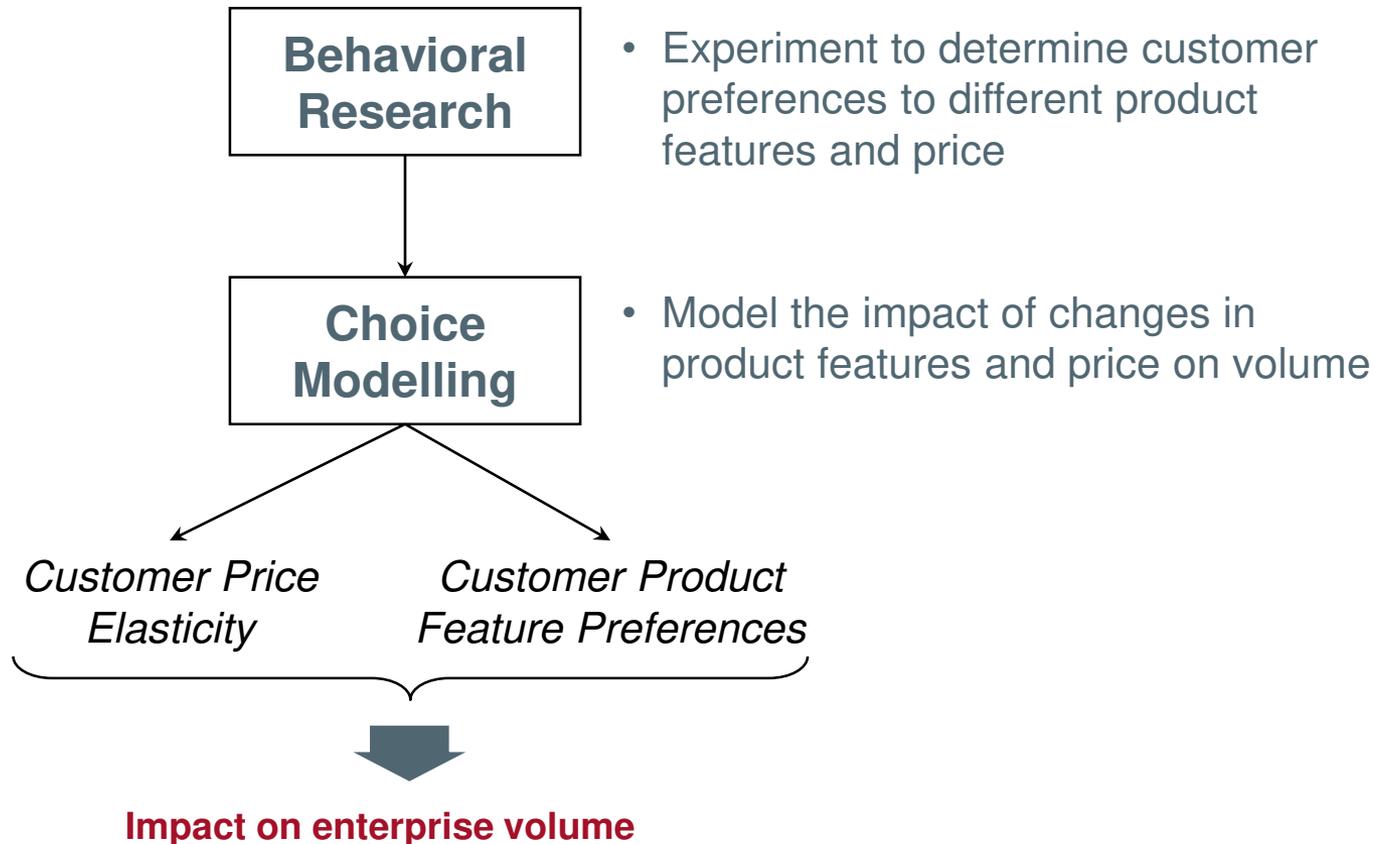
3 Methodology (1)

Build knowledge through mapping the following elements, starting with customers.



3 Methodology (2)

To understand customer (referring physician & consumer) needs and behavior requires applying experimental design principles, preference elicitation methods and econometric analysis techniques.



4 Approach

We have developed a 12-16 week, codified process for conducting SIM² studies.



- Integrating ideation, historical data, qualitative research, and client insights to drive ***model specification and research design***

- ***Test demand drivers*** with representative sample
- Using the proprietary data collected, ***build and integrate sophisticated behavioral and financial models*** into the simulator

- Conduct ***market simulations*** to understand current and future scenarios and their financial implications

5 Techniques

We apply multi-disciplinary techniques and tools to estimate price elasticity.

- Integrated framework that employs principles and practices across multiple disciplines
- Application of proven scientific methods
- Power of predicting another market situation

Behavioral Economics

Statistics

Financial Accounting

Research Design

Controlled Experiments

Simulation Technology



Creation of actionable insights from data, then uses those insights to shape pricing strategy and tactics and, ultimately, to improve enterprise financial outcomes.

Urgent Care Case Study

Urgent Care: Key Business Questions



Urgent Care

Client has less than 30% of the market of urgent care visits. Are there opportunities to increase volume, for example, through sports physicals?



Key Question(s)

- What are the key drivers of urgent care decisions?
 - Location (geographic segment)
 - Convenience (i.e. Client vs. “retail clinics”)
 - Price (out-of-pocket expenses)

Urgent Care: Attributes Tested

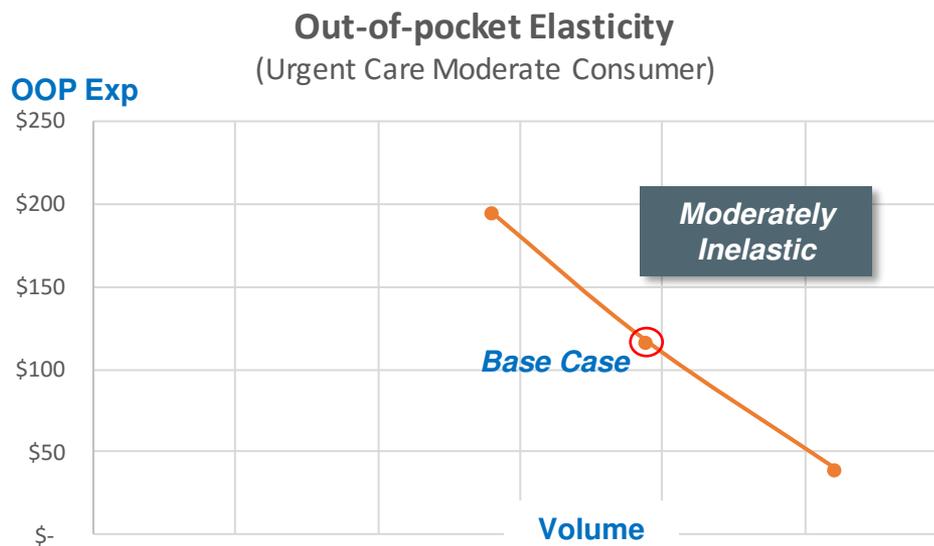
A total of 15 attributes and 50 defining levels were tested.

Subset of Urgent Care Attributes

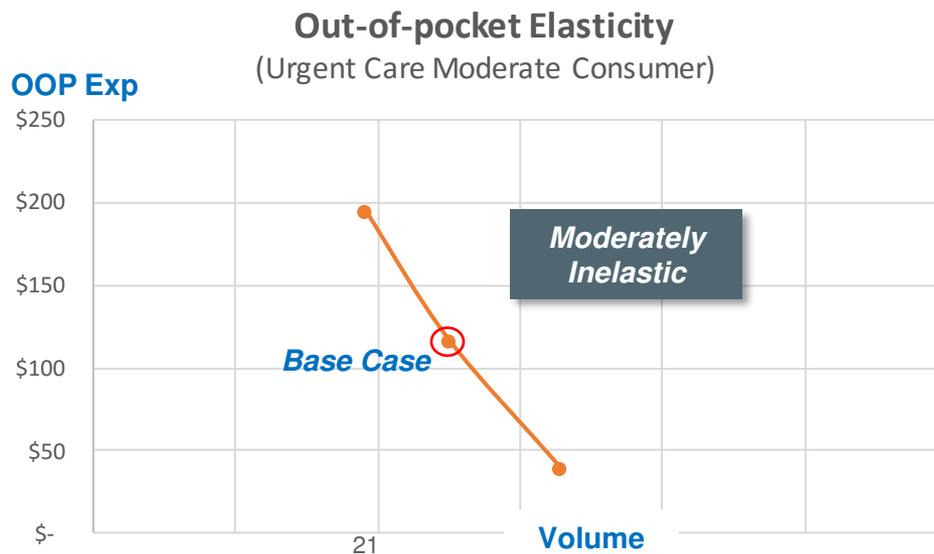
- 1) Brand (facility)
- 2) Out-of-pocket expenses
- 3) Scheduling appointment in advance
- 4) Days of operation
- 5) Elapsed minutes before consult with medical professional (if scheduled in advance)
- 6) Attending medical professional
- 7) Continuum of care
- 8) Convenience
- 9) Supplemental products/services onsite

Urgent Care: Price Elasticity (Deductible)

Low Deductible Insurance

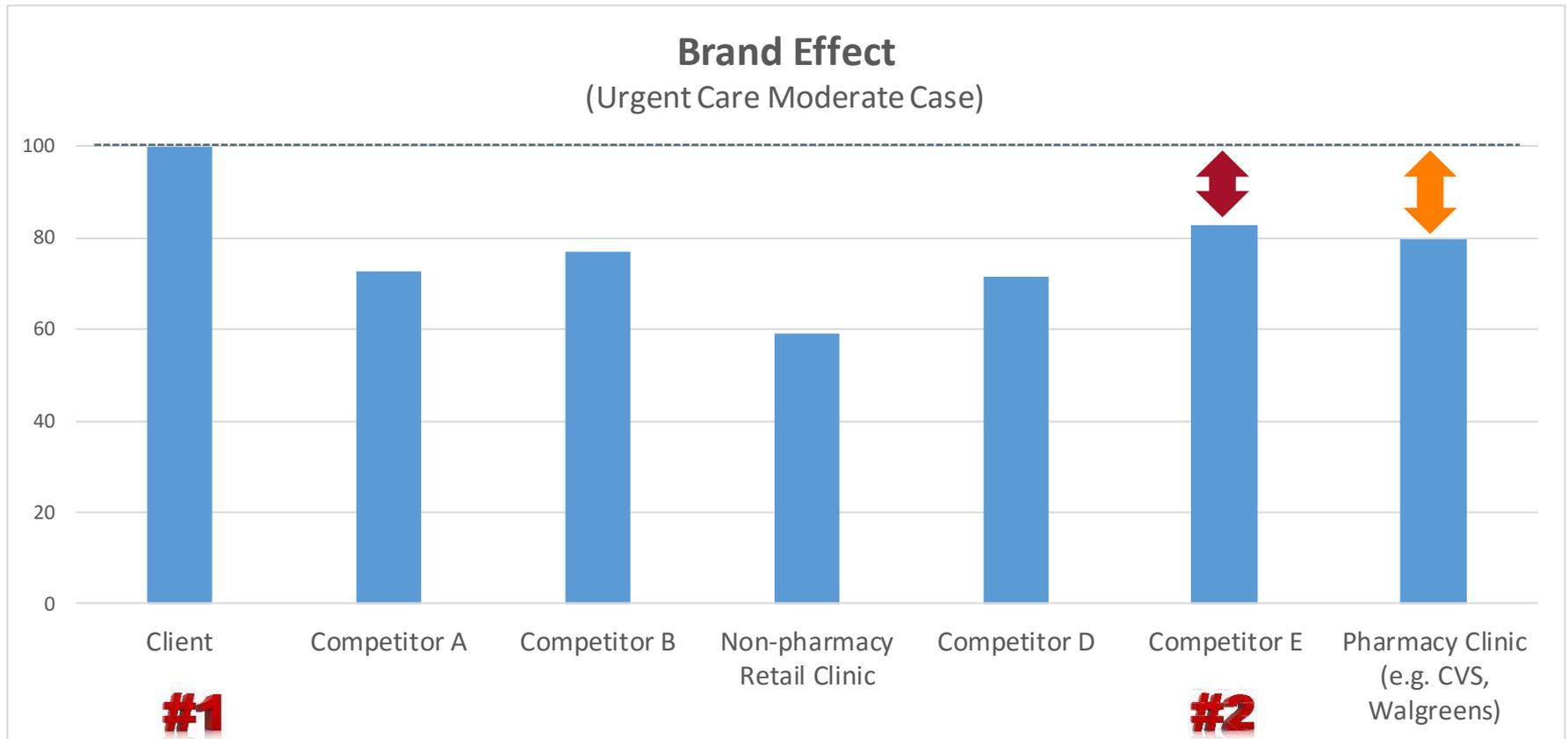


High Deductible Insurance



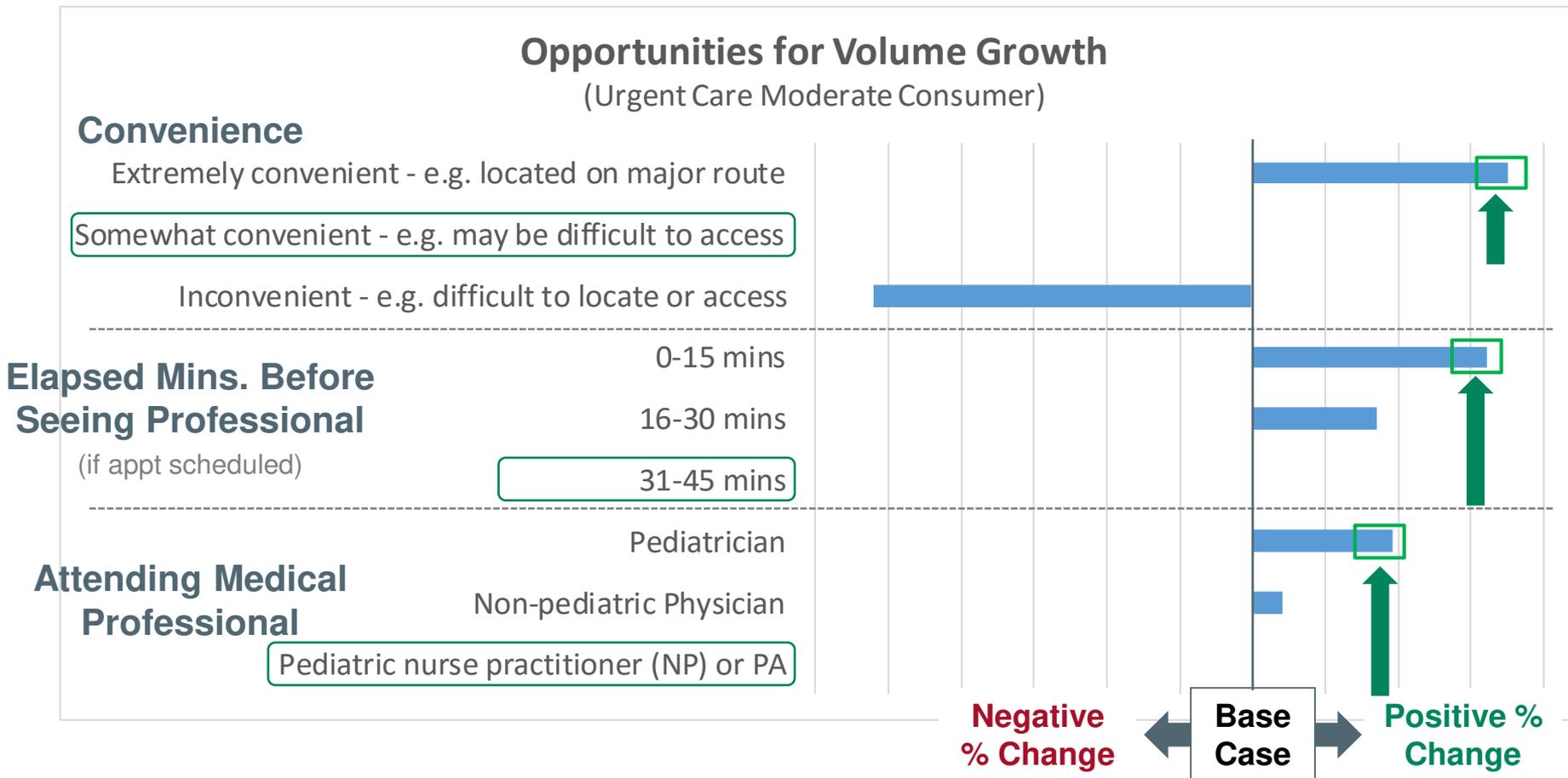
Urgent Care: Brand Effect

The Client has a strong brand reputation in Urgent Care relative to other options in the market.



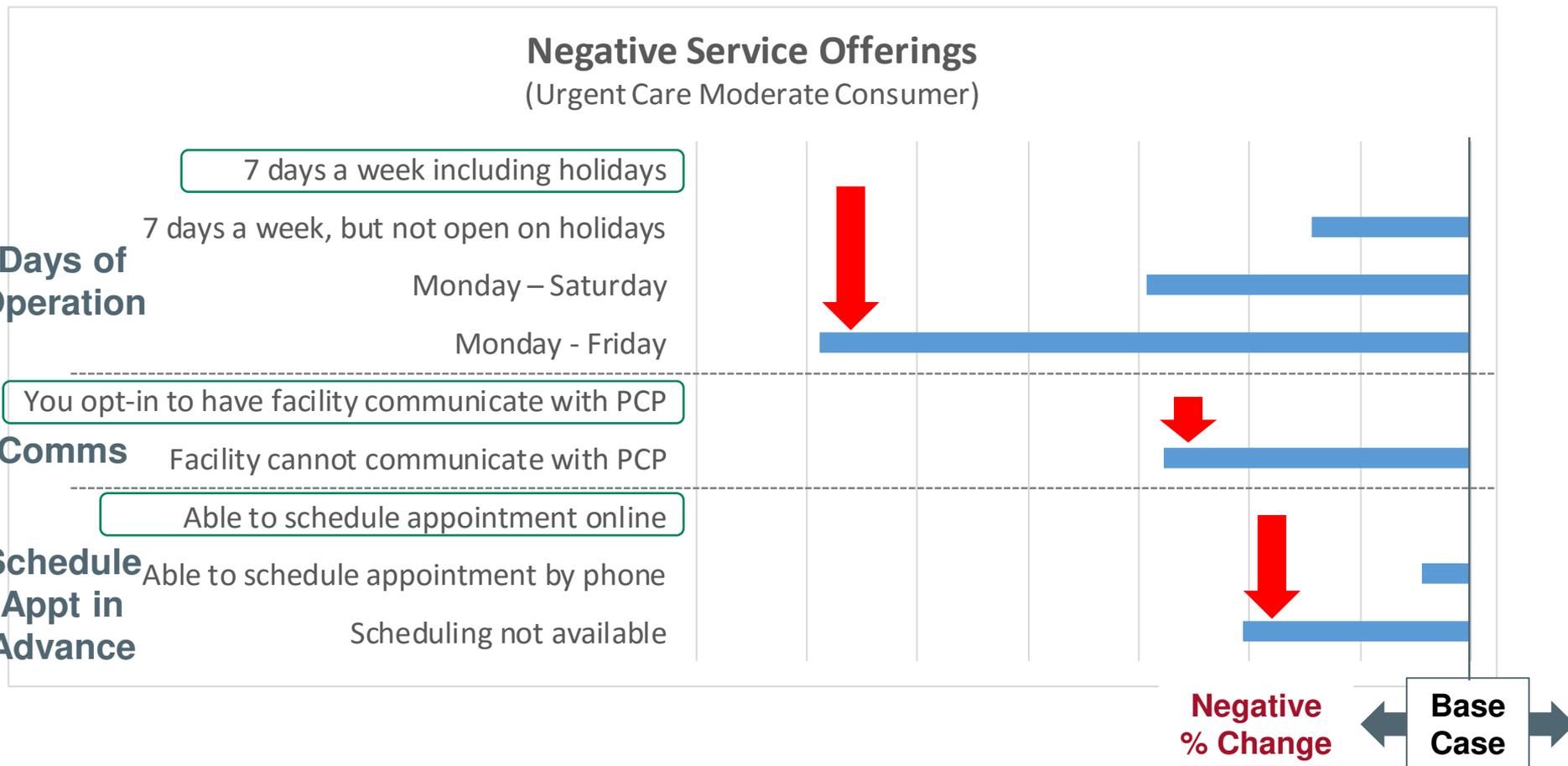
UC Moderate Consumers: Opportunities for Growth

Convenience is a major driver of Urgent Care volume among those with moderate medical situations; however, volume can also be increased by minimizing wait time and having a physician attending.



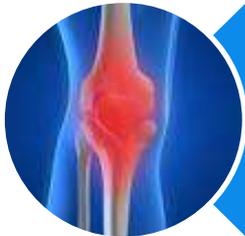
UC Moderate Consumers: Negative Service Drivers

The largest negative impact on volume is primarily driven by changes in days of operation; though degrading the current communications with the patient's PCP or eliminating advance scheduling can also create an impact.



Sports Medicine Case Study

Care Product Selection and Questions



Sports Med Therapy, Non-operative Knee

Sports Med is a growing area and therapy volume is much greater than evaluation

Key Question(s)



- Can Client leverage their brand to capture more sports med volume?
 - What are the drivers of referring physicians?
 - What are the drivers by geographic segment?
- How can Client effectively influence the referral patterns?

Attributes Tested

In total, almost 30 attributes were tested in the Outpatient Sports Med physician and consumer models, for example:

Subset of Physicians

- 1) Facility (brand)
- 2) Patient's out-of-pocket expenses
- 3) Number of therapy sessions
- 4) Facilitate back-to-sports communications
- 5) Timing of follow-up communications
- 6) Ratio of therapists to patients
- 7) Degree of therapist specialization
- 8) Convenience
- 9) Ease of getting in for first visit
- 10) Time it takes to be seen by therapist

Subset of Consumers

- 1) Facility (brand)
- 2) Cost per therapy for each 15-minute increment
- 3) No. of units per therapy session
- 4) Number of therapy sessions
- 5) Patient's out-of-pocket expenses
- 6) Facilitate back-to-sports communications
- 7) PT certification
- 8) Ratio of therapists to patients
- 9) Convenience
- 10) Leading-edge and alternative therapy techniques

RED Attributes are those which are common across the designs

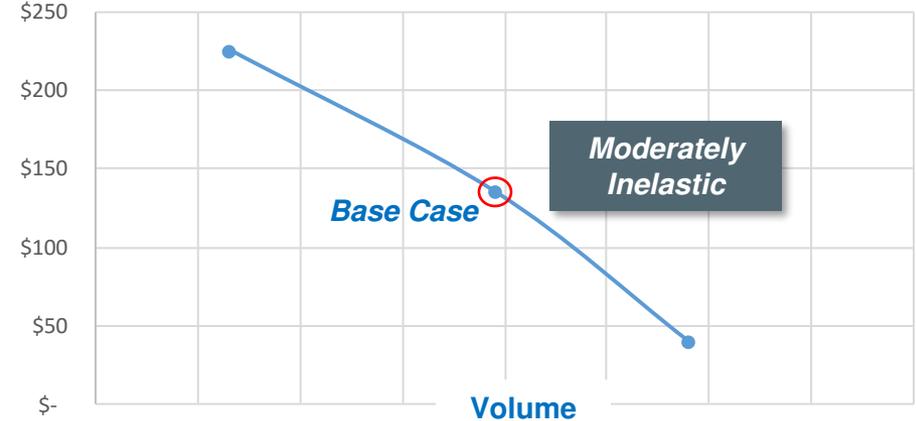
OP Sports Med Physician and Consumer: Price Elasticity

Price Elasticity Insights

- Price elasticity varies across the segments of the demand curve
- Physicians are not price sensitive
- Consumers are more sensitive to changes in Charges and Out-of-pocket Expenses than other care products tested
- Consumers are most sensitive when
 - Cost Per Therapy Unit decreases from \$83 to \$75 (a 10% decline)
 - Out-of-pocket Expenses decrease from 20% to 10%

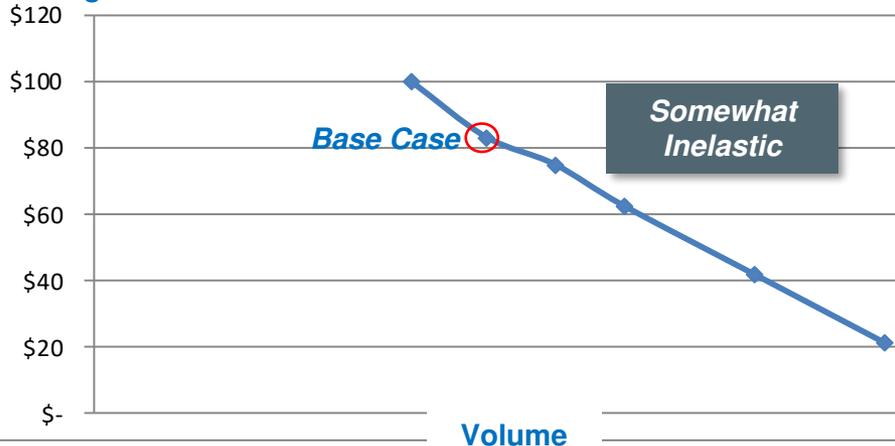
Out-of-pocket Elasticity (OP Sports Med Physician)

OOP Exp



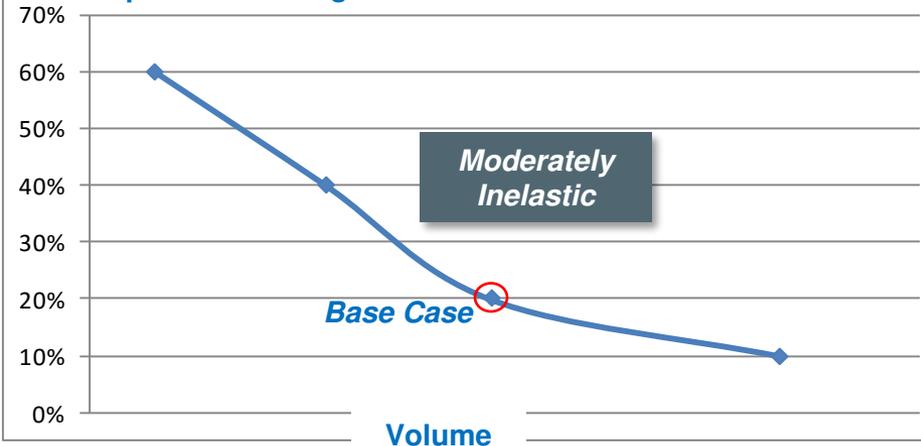
Charges Elasticity (Sports Med Consumer)

Charges



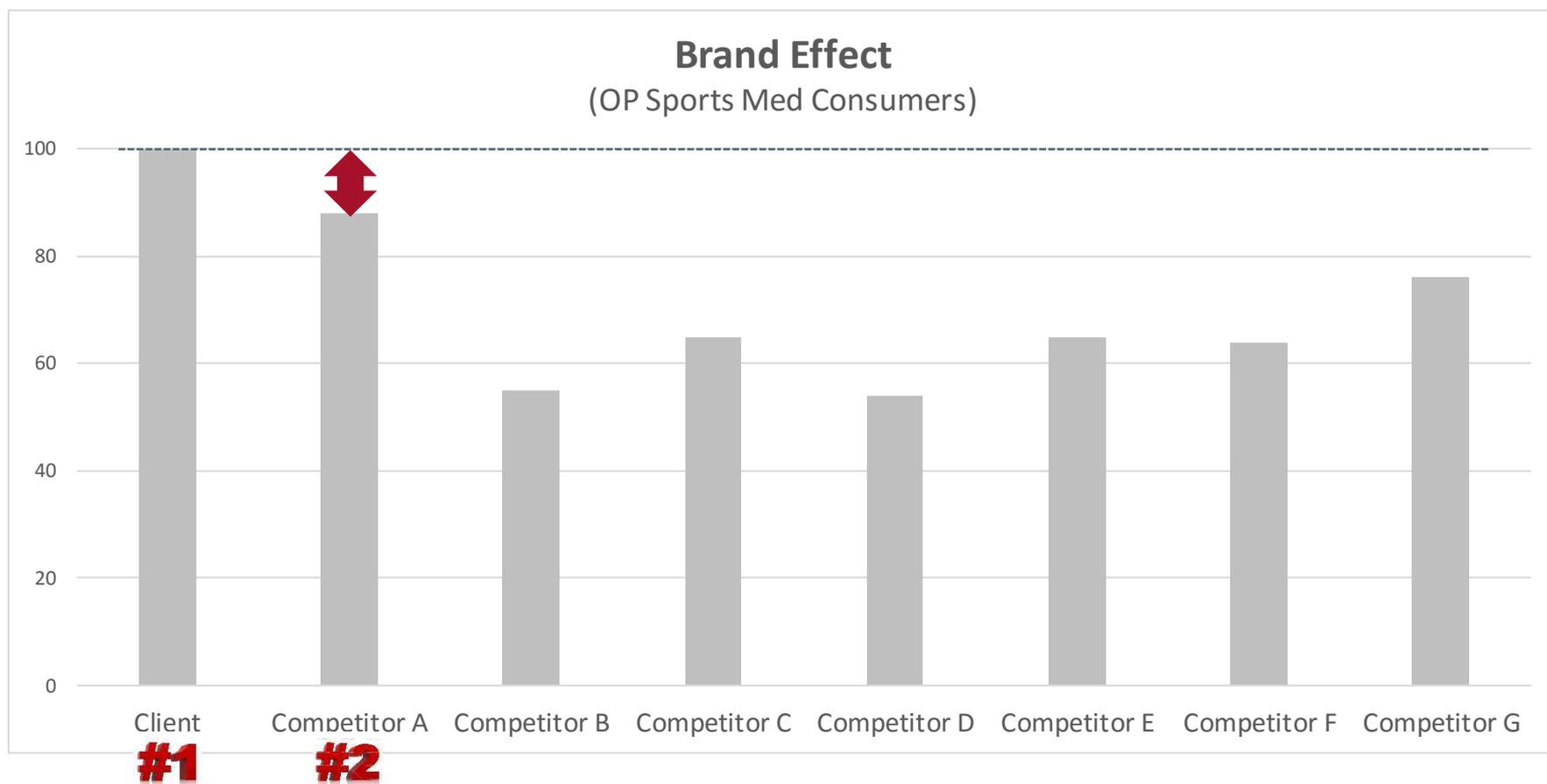
Out-of-pocket Elasticity (Sports Med Consumer)

OOP Exp as % of Charges



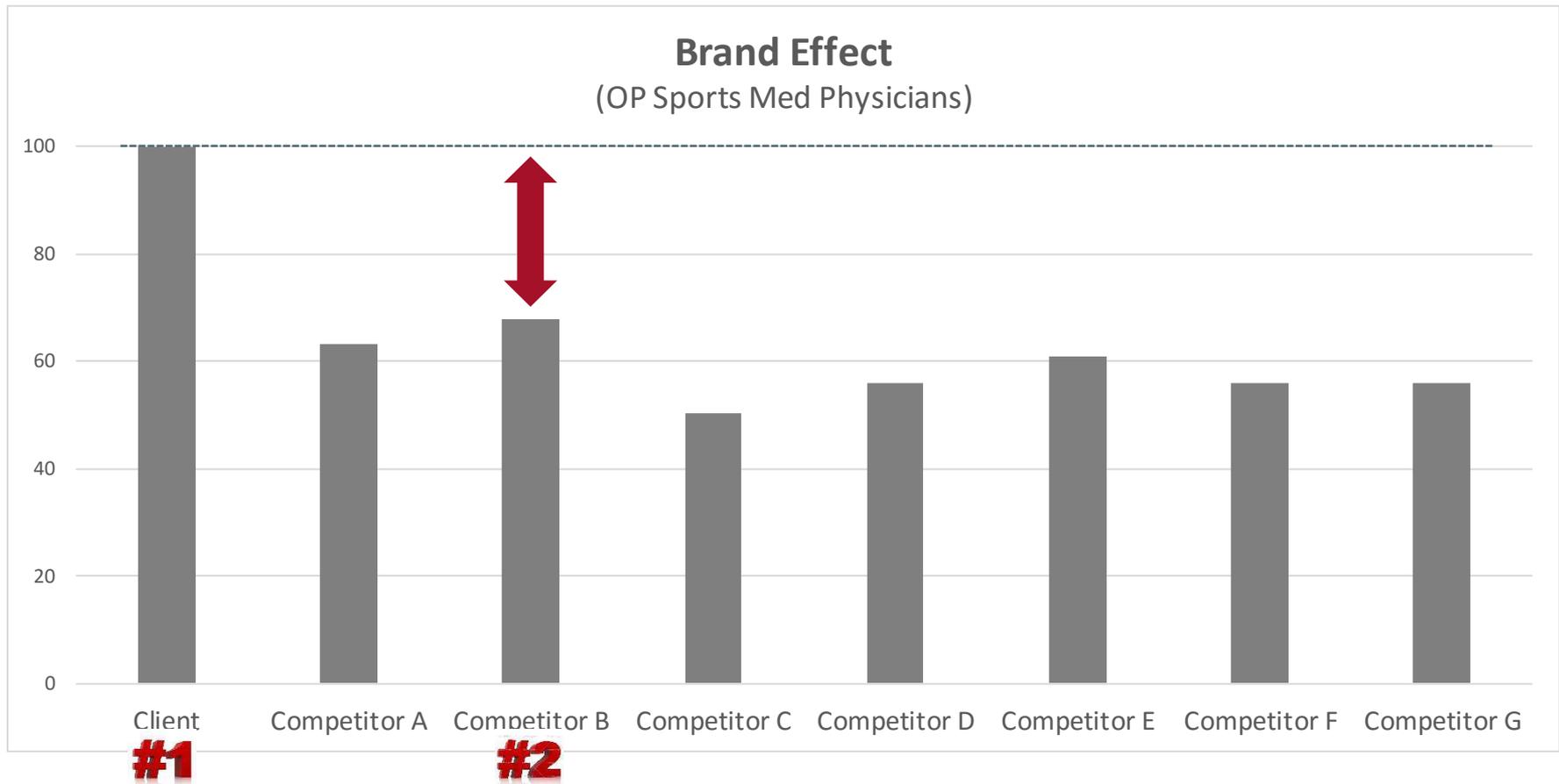
OP Sports Med Consumers: Brand Effect

While consumers prefer the Client over any other facility to bring their child to for Outpatient Sports Med, Competitor A is also perceived as having a strong brand.



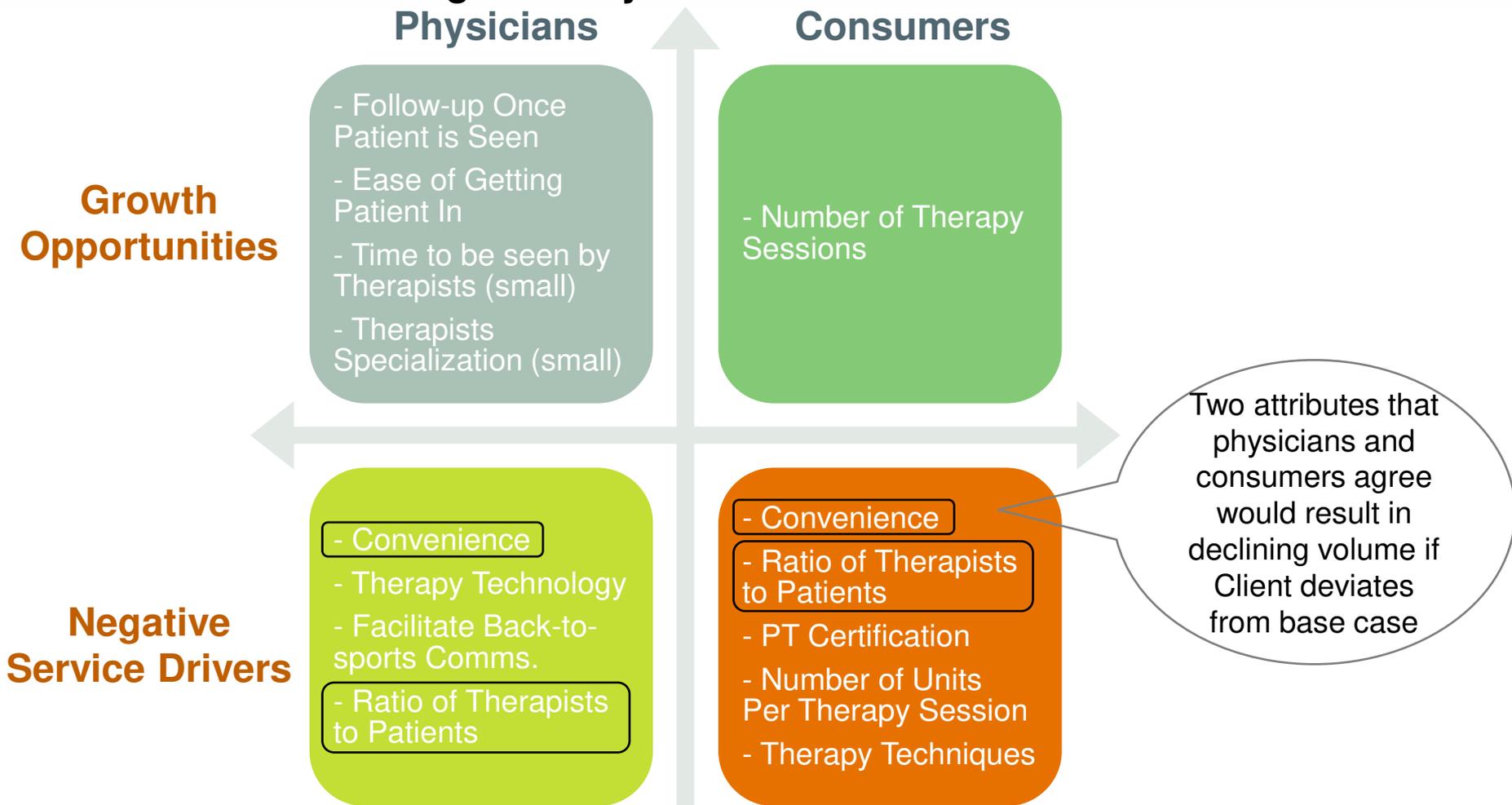
OP Sports Med Physicians: Brand Effect

While both physicians and consumers agree that the Client has the strongest brand in Sports Med, they disagree on which competitor is the 2nd most preferred.



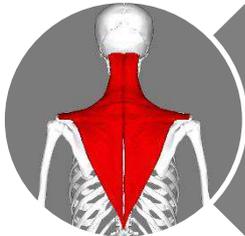
OP Sports Med Physician and Consumer: Driver Overview

Across physicians and consumers, there are only three service attributes that would result in significantly more volume.



Dorsal Lumbar Fusion Case Study

Care Product Selection and Questions



Dorsal Lumbar Fusion Surgery

Client has a majority of the local market for high-complexity care

Key Question(s)



- How much opportunity is there to grow profitably beyond the local market with highly-complex procedures?
 - How do we price these procedures?
 - Is there different price sensitivity in the local, regional, and national markets?
 - Geographically, how far will the Client's brand stretch?

Attributes Tested

In total, almost 20 attributes were tested in the high-complexity dorsal lumbar fusion physician and consumer models, for example:

Subset of Physicians

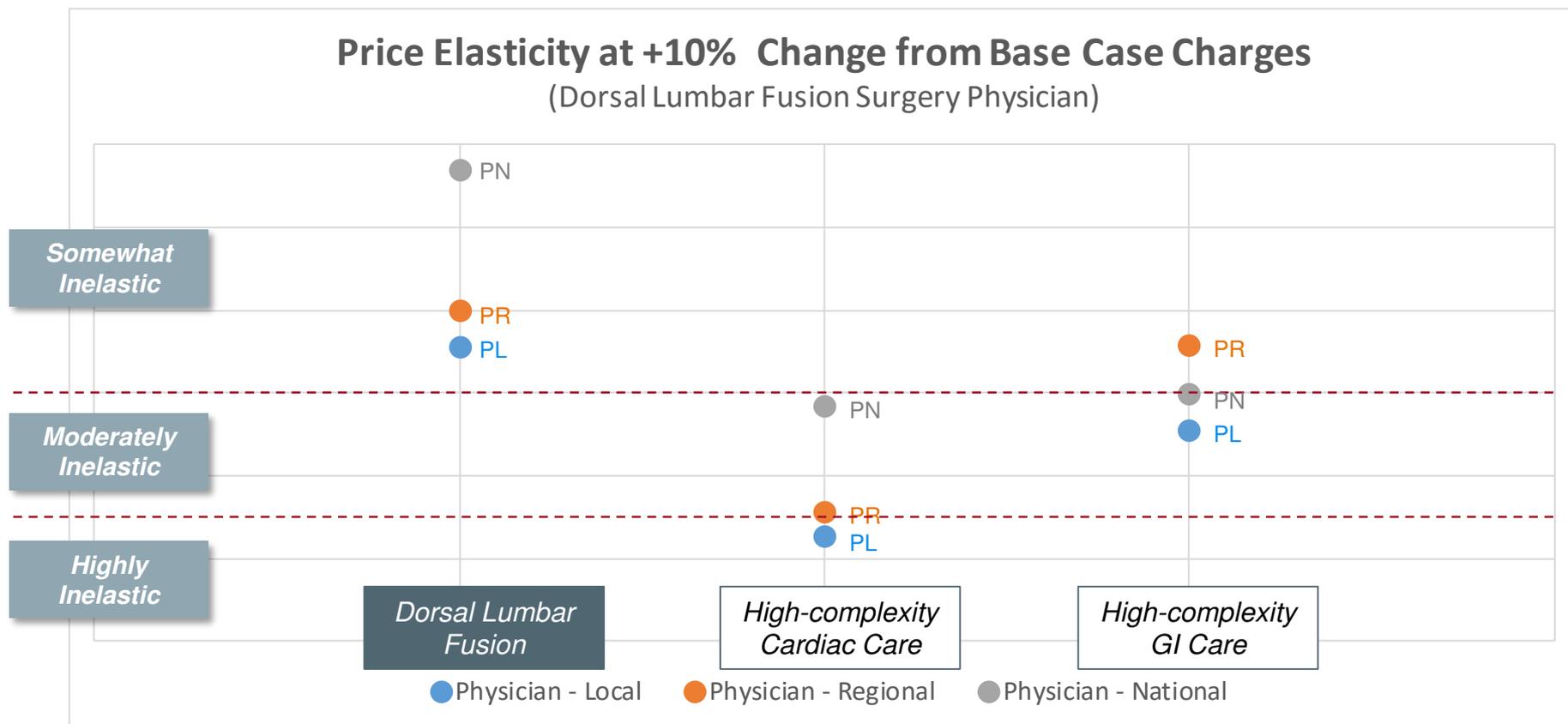
- 1) Facility (brand)
- 2) Cost of procedure
- 3) Medical options (advanced)
- 4) Percent of time child is seen in a timely manner
- 5) Communications protocol (with referring physician)
- 6) Coordination of care
- 7) Single consultation

Subset of Consumers

- 1) Facility (brand)
- 2) Cost of procedure
- 3) Patient's out-of-pocket expenses
- 4) Medical options (advanced)
- 5) Percent of time child is seen in a timely manner
- 6) Patient support services
- 7) Coordination of care
- 8) Single consultation

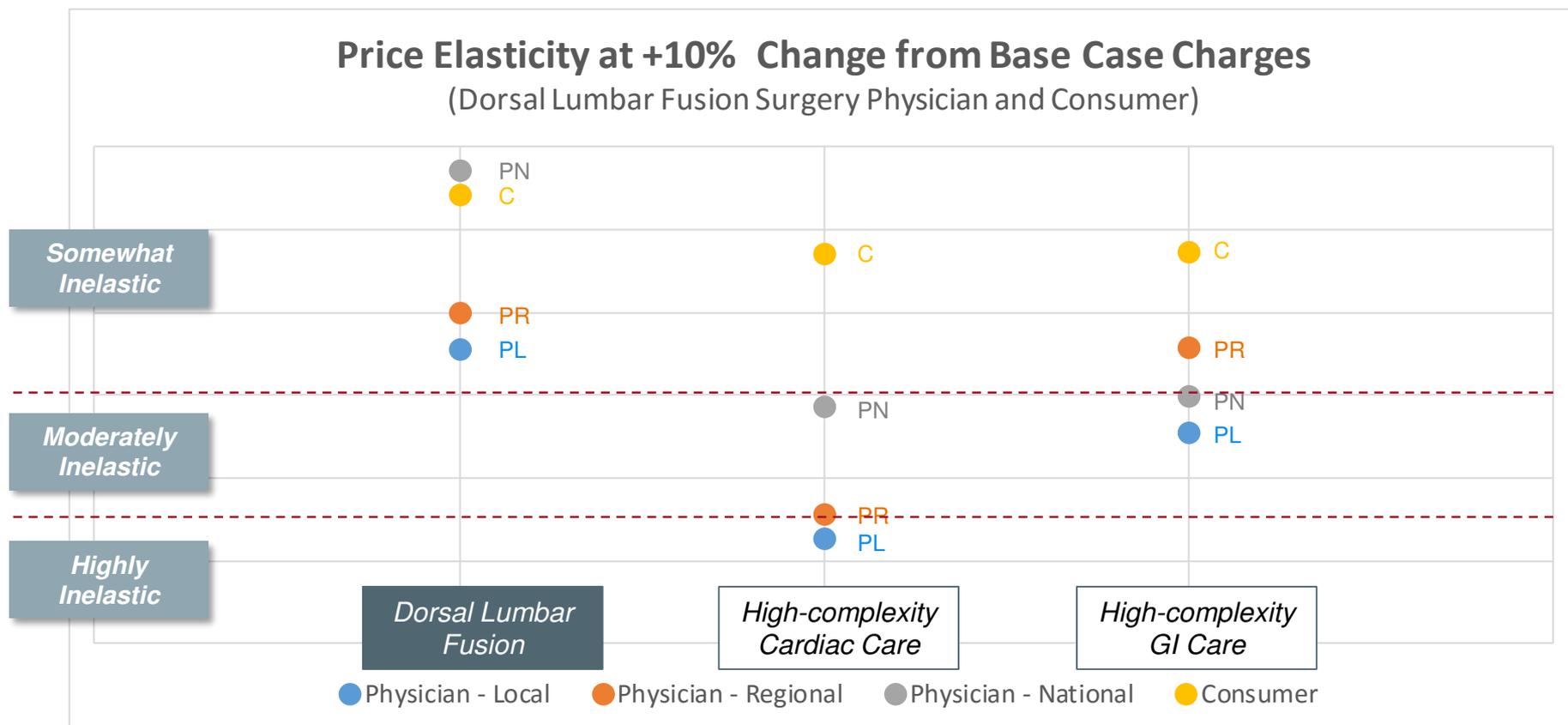
High-complexity - Physician Pricing Sensitivity

- Overall, physicians are the more price sensitive at the national level relative to regional or local geographies
- Physicians are more price sensitive to Dorsal Lumbar Fusion Surgery than for other high-complexity care (e.g. cardiac, GI)



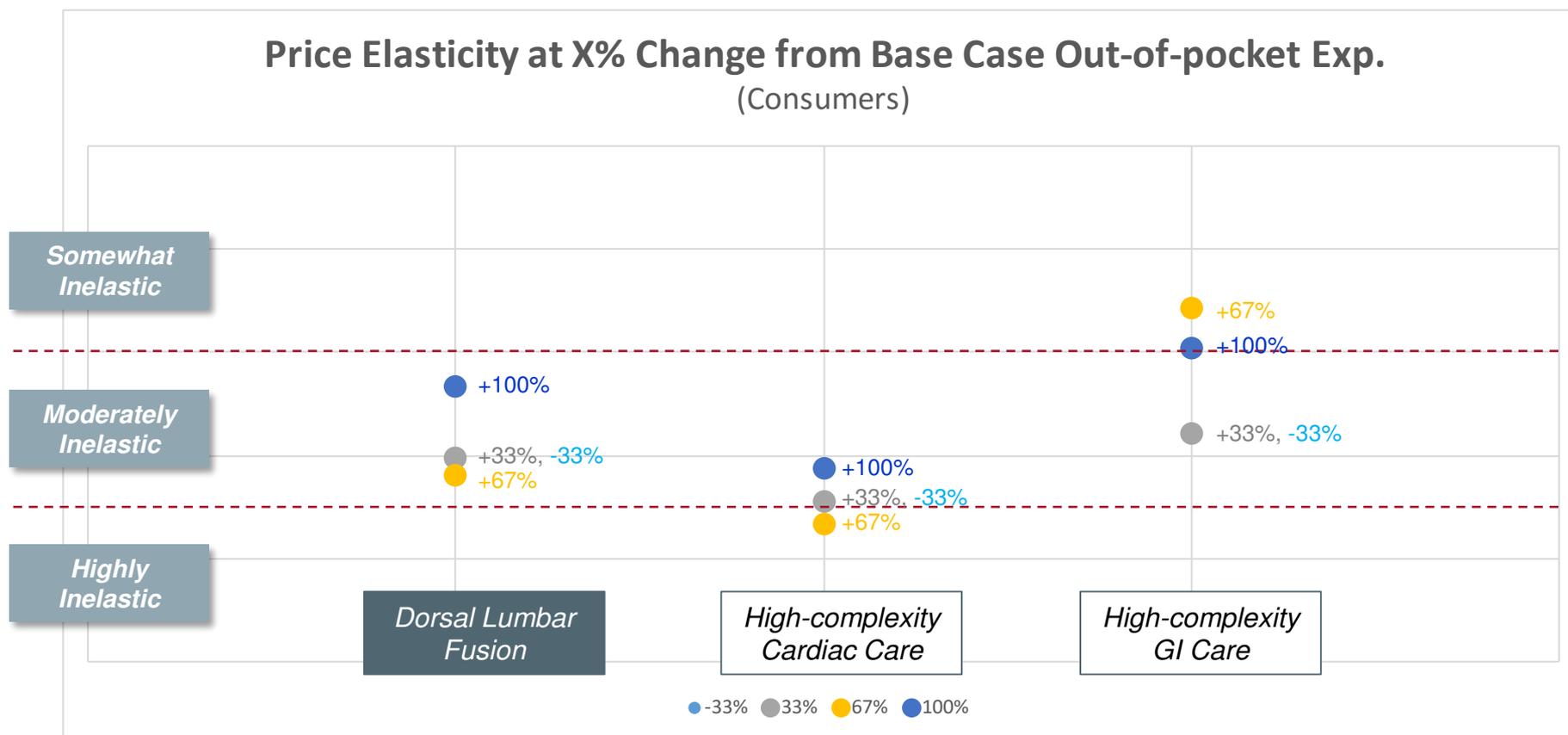
High-complexity – Physician and Consumer Pricing Sensitivity (1)

- Consistent with physicians, consumers are more price sensitive to Dorsal Lumbar Fusion Surgery than to other types of high-complexity care tested
- Charges elasticity for consumers approaches 1 across all care products (i.e. becoming price sensitive when charges are increased by 10% from today's level)



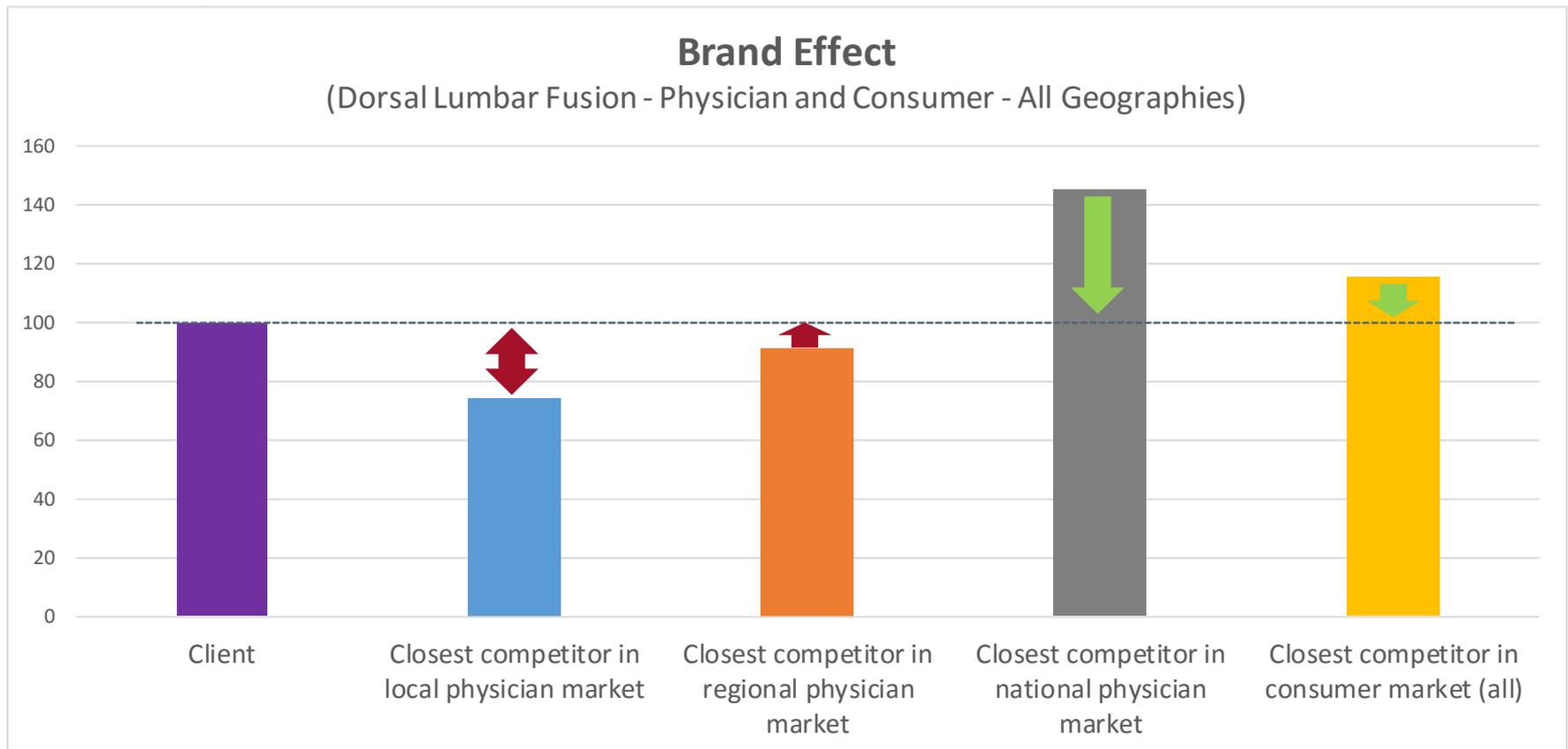
High-complexity - Consumer Out-of-pocket Expenses Sensitivity

- Consumers exhibit moderate to high price insensitivity to out-of-pocket expenses (OOP) across all the care products
- For most care products, consumers are less price sensitive to a negative change in OOP than they are for increases in OOP



Brand in the Market

- In both the local and regional markets, physicians perceive the Client brand as significantly dominating all competitors
- However, consumers (heavily weighted toward a national sample) perceive far less difference between the Client and the strongest competitor in their market than referring physicians



Lessons Learned

Insights from Market Pricing Studies

- All learnings are solely applicable to the care products studied
 - For the specific Client with their current care product offering
 - Within the context of a specific market's competitive set and dynamics
 - Across the decision group studied (e.g. referring physicians, commercial paying consumers)
- Price elasticities vary by market
 - Different segments of the demand curve have different elasticities (where are you on the demand curve)
 - Elasticities differ by care product
 - Elasticities differ by geography (e.g. local, regional, national vis-à-vis the Client)
 - At times, consumers tend to be more price sensitivity to out-of-pocket expenses than charges, but not always
- Brand effects
 - Brand matters, but competitors are not always as far away as you may think
 - Physicians tend to see greater differences between pediatric monoline hospitals and adult hospitals than consumers

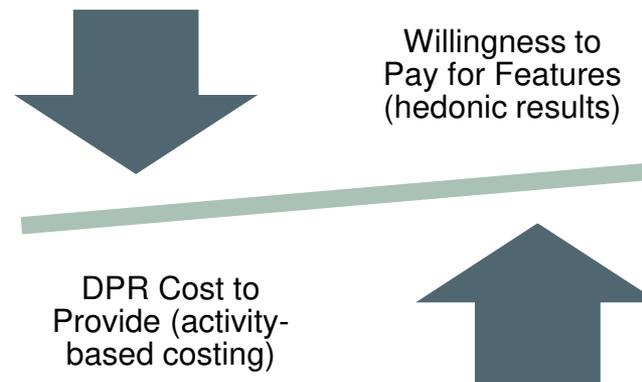
Insights from Market Pricing Studies

- Non-price drivers of volume are critical to understand in the context of price and the market dynamics
 - The largest volume increases can be derived through
 - Greater access (e.g. convenience, time to get patient in)
 - Specialization of the medical care giver
 - Effective and timely communications
 - However, significant risks can also occur by slipping from your current level of delivery (or the market's perception of your level of delivery)
- The market will evolve over time and so will price elasticities
 - In general, consumers and referring physicians are currently not very familiar with prices, especially charges
 - Monitoring is important – MII has already seen a shift in awareness of prices in some markets

Hedonic Pricing

Hedonic Method

- By applying the hedonic method, MII will be able to measure the trade-off between volume and price as a whole “care product” AND also decompose elements of the medical service (“features”) into individual pricing functions
- Industry examples of how feature-pricing has been applied:
 - Technology – solutions add-ons (e.g. storage, security)
 - Telecommunications – TV, internet, cable bundles
 - Airline – inflight entertainment or internet access, early boarding
 - Travel – vacation packages (e.g. fly Delta, stay at Hilton, and have access to Disney parks)
- Once we understand how people value the care product and the individual elements of the care products, MII will align these market results with activity-based costs



Core Market Bundle and Range of Charges

ILLUSTRATIVE

Care Product Core
Market Bundle



Provider-based
Feature "Upgrades"



Provider-specific
Market Bundle



Core market bundle
Core charges = (\$600)

Pediatric radiologist with subspecialty = \$150
Pediatric technologist = \$50
75% of time patient will see specialist same day = \$50
Functional technology = \$00
TOTAL = \$250



\$850
(\$600 + \$250)



Core market bundle
Core charges = (\$1,000)

Most advanced, leading edge technology = \$300
90-100% of time patient sees specialist same day = \$ 75
Yes, a child life specialist is available to you = \$ 25
Yes, patient can watch movie during MRI = \$100
TOTAL = \$500



\$1,500
(\$1,000 + \$500)



Core market bundle
Core charges = (\$3,000)

Images reviewed in real time = \$ 150
Yes, you can upload prior studies = \$ 150
Appointment is scheduled in 4-7 days of PET/CT = \$ 00
Most people treat you warmly and show concern = \$ 50
TOTAL = \$350



\$3,350
(\$3,000 + \$350)

One level selected from each feature to represent the minimum requirement for a provider to enter the market

Willingness for Pay Levels - Approach

