CATALYZE
Accelerating Translation

The Art of Market Sizing:
Defining your Technology's Opportunity

Catalyze April Webinar
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NIH National Heart, Lung, and Blood Institute

Welcome!

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We’re glad you’re here!

Today, we'll cover guiding principles and recommendations on how to understand the potential market size using two different methodologies.

Top-Down Approach

↓

Methodology

↓

Best Practices & Watch Outs

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Case Study

Case Study

↑

Best Practices & Watch Outs

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Methodology

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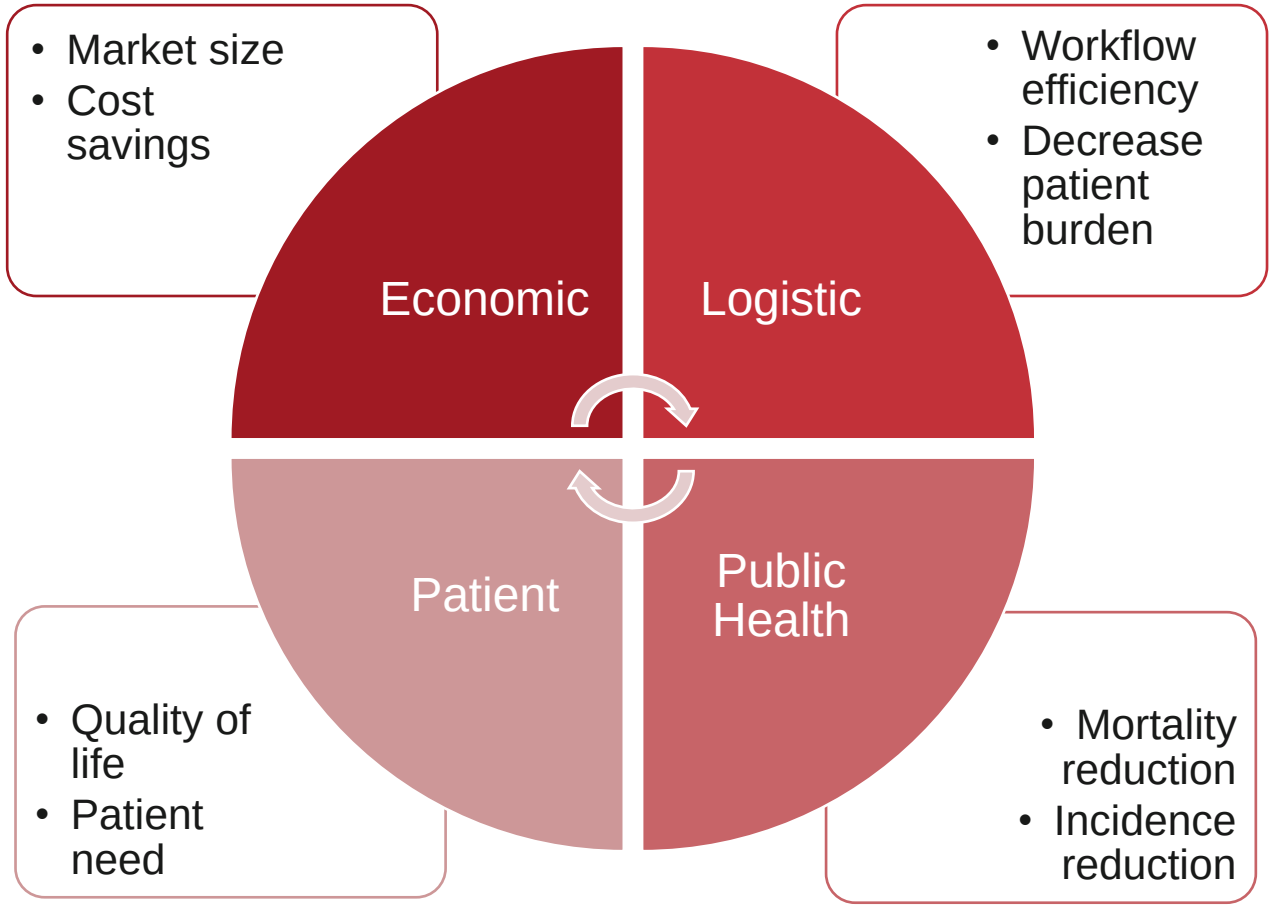
Bottom-Up Approach

Market sizing helps innovators explain the potential economic value of their technology and is a critical component of receiving funding.

Types of Value Generated by Medical Innovations



Market sizing helps demonstrate the economic value of a medical innovation.

The two methods for market sizing have different utility and limitations; therefore, it is best to use both.

Top-Down Approach

Start with a broad market size and its potential customers and narrow it down to a specific segment or niche that can be realistically captured.

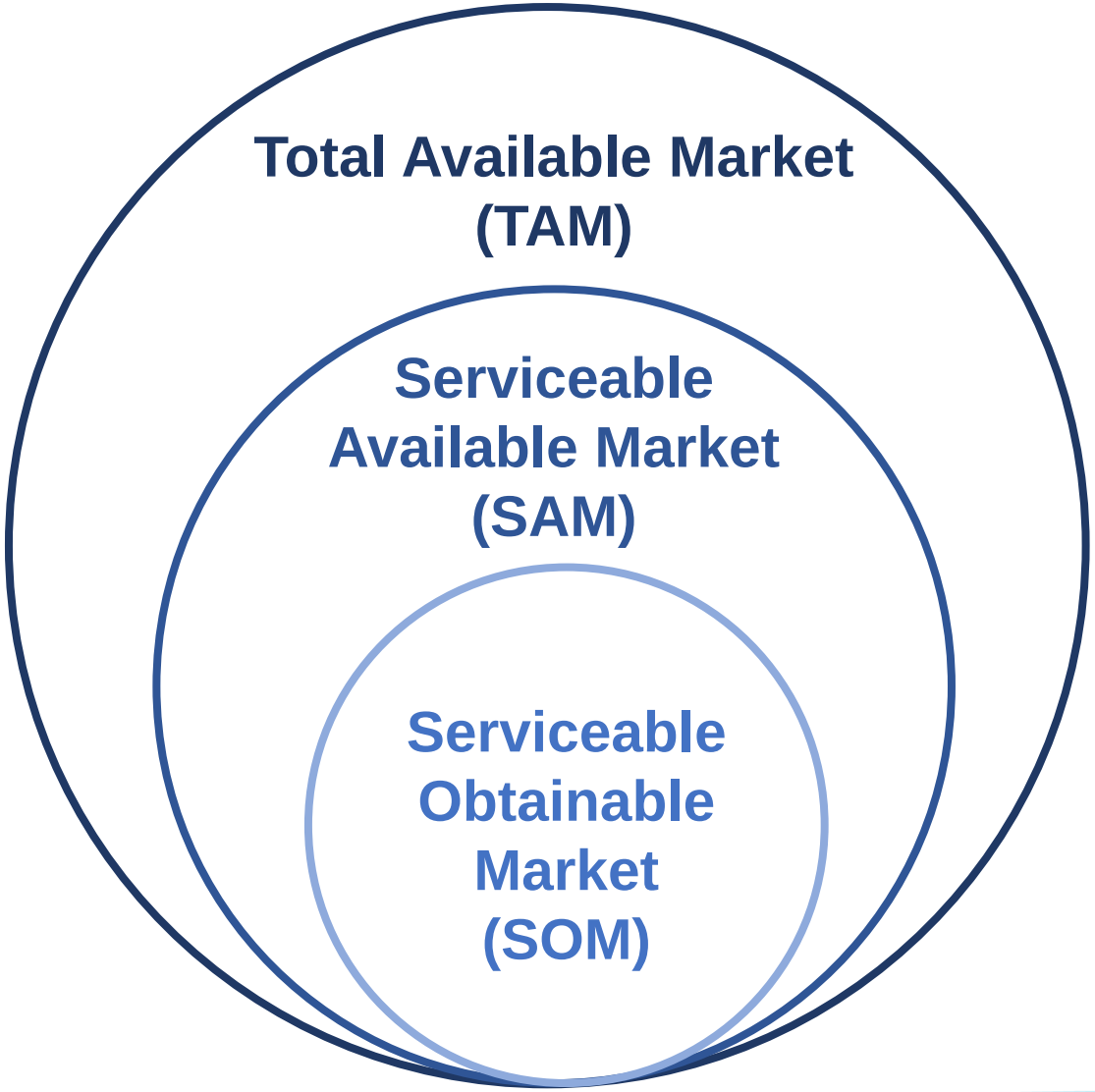
- ✓ Uses easily available data (e.g., market research reports)
- ✓ Works well for both new and established markets
- ✓ Relatively quick to calculate
- ⚠ May be too broad

Bottom-Up Approach

Starts with a small, specific market for the product and estimating how far/much the product can be scaled up.

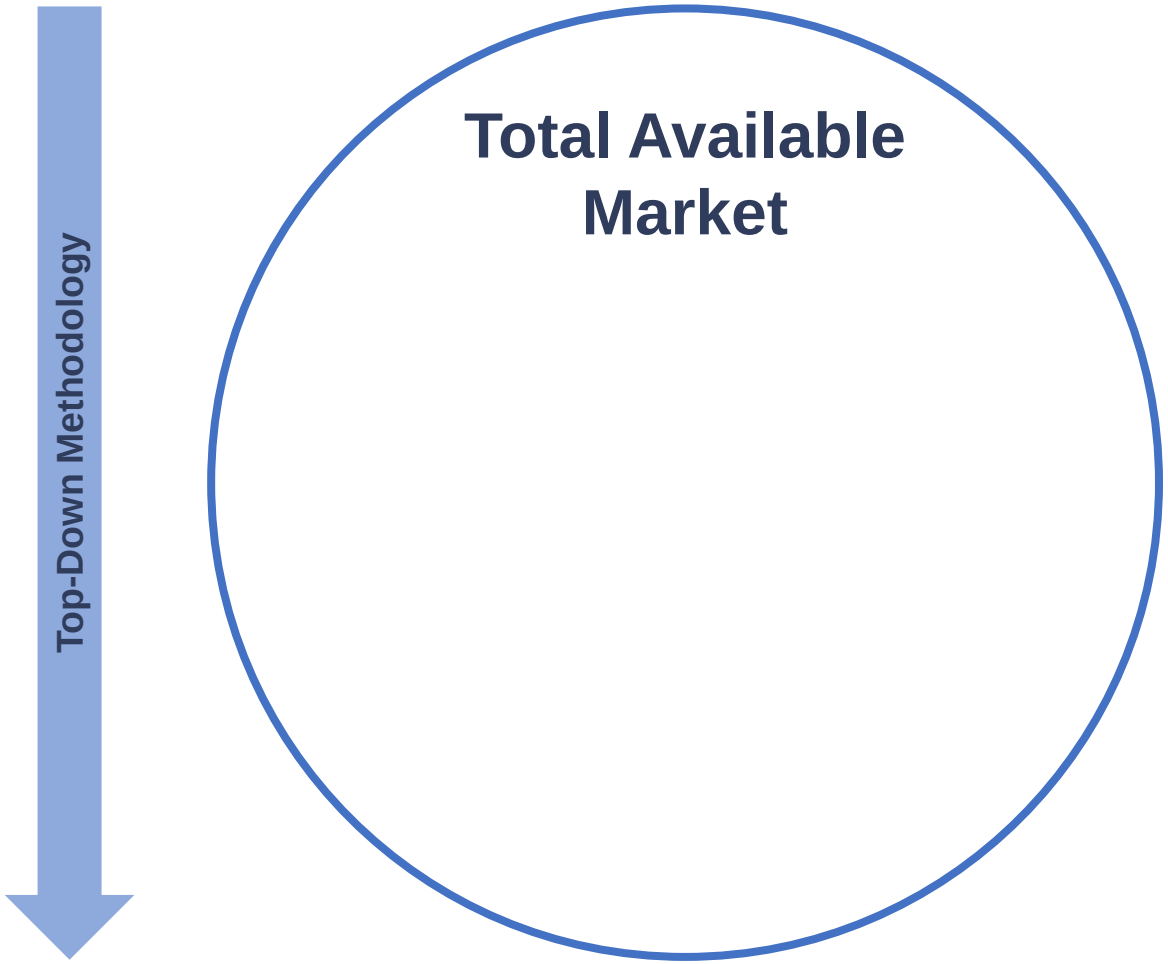
- ✓ Detailed and realistic
- ✓ Works well for established markets
- ✓ Uses primary data
- ⚠ Time consuming and complex
- ⚠ Limited to available data

TAM, SAM, and SOM are commonly used acronyms for market sizing.



Let’s dive in to Top-Down Methodology.

The TAM represents the total revenue opportunity.

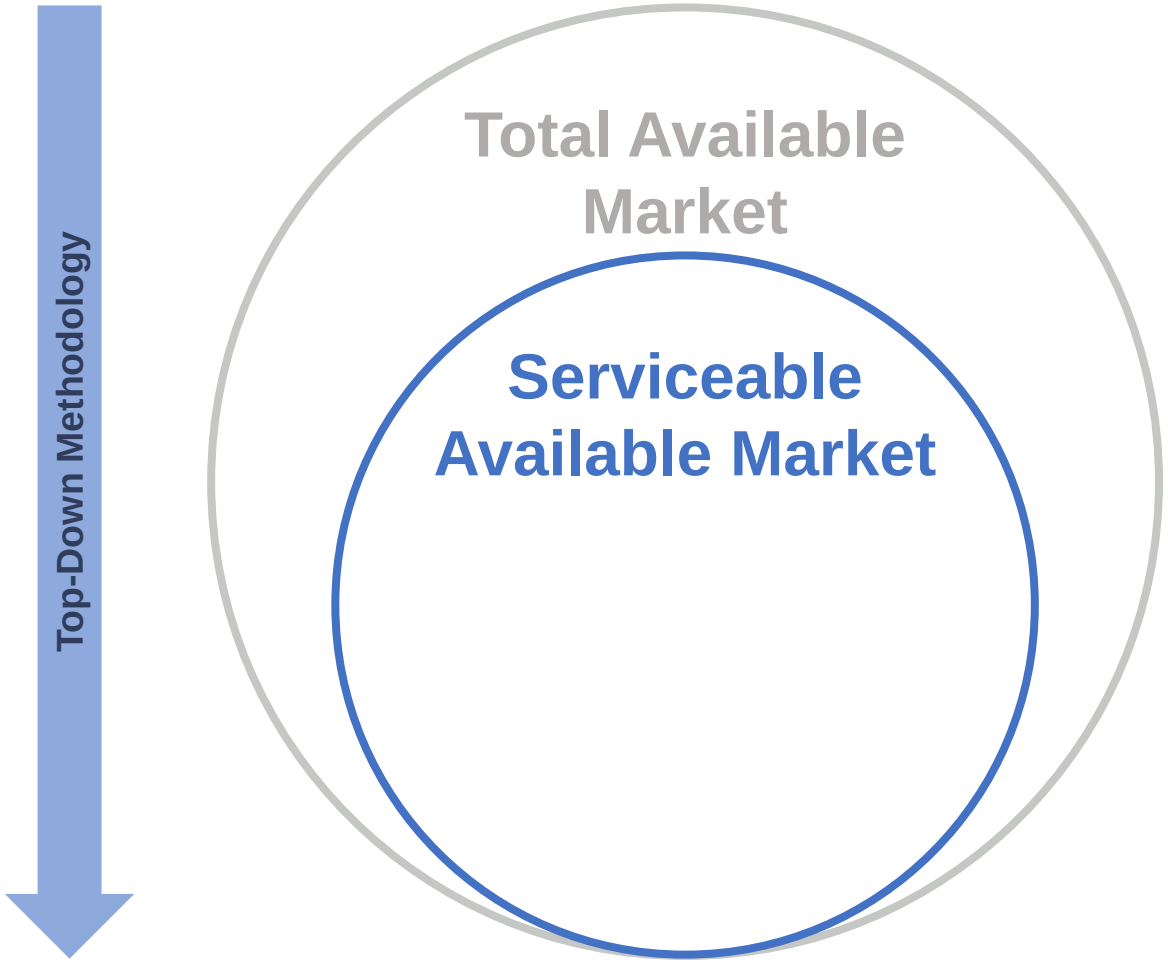


The **Total Available Market** is the entire market, or the total revenue opportunity.

For example, this could be the total number of patients for your technology's specific indication, multiplied by the average revenue per customer per year.

In other words, **how big is the largest market?**

The SAM represents a subsegment of the market that can be reached.



The **Serviceable Available Market** is the people you will actually serve and reach with your business based on external factors.

For example, this could be the number of patients that do not respond to standards of care or other technologies available today.

In other words, you want to know, **what portion of the market fits my technology?**

When developing the SAM, it is critical to build out your assumptions.

Assess the Competitive Landscape

Consider both the current and future competitors. How much of the market can you expect to capture from competitors?

Consider Clinical Workflows and Standards of Care

Consider how your technology falls into current workflows and standards of care. Will it be used in tandem with other technologies? Will it be a first, second, or third-line treatment?

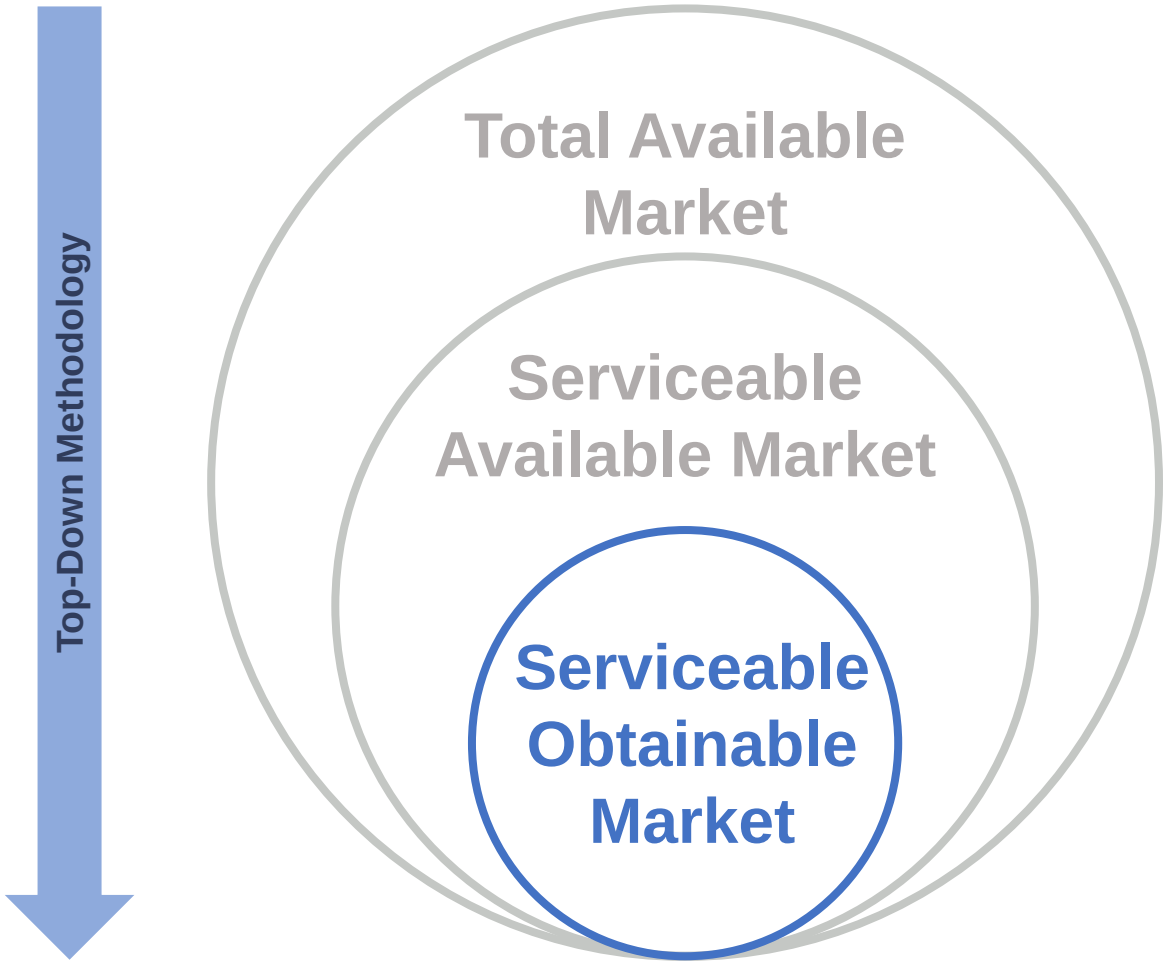
Consider the Purchasing Preferences

Consider not only a patient's willingness to pay for the technology, but where different patient populations seek care (e.g., Veteran's Affairs, private vs. public hospitals, community vs. academic hospitals) and how the patient is paying (i.e., out of pocket, private insurance, Medicare/Medicaid).

Target Market Definitions

Engaging with potential customers and/or end-users can help to validate the patient population that is most likely to benefit from the technology.

The SOM represents the target market that a company can realistically capture in the short-term.



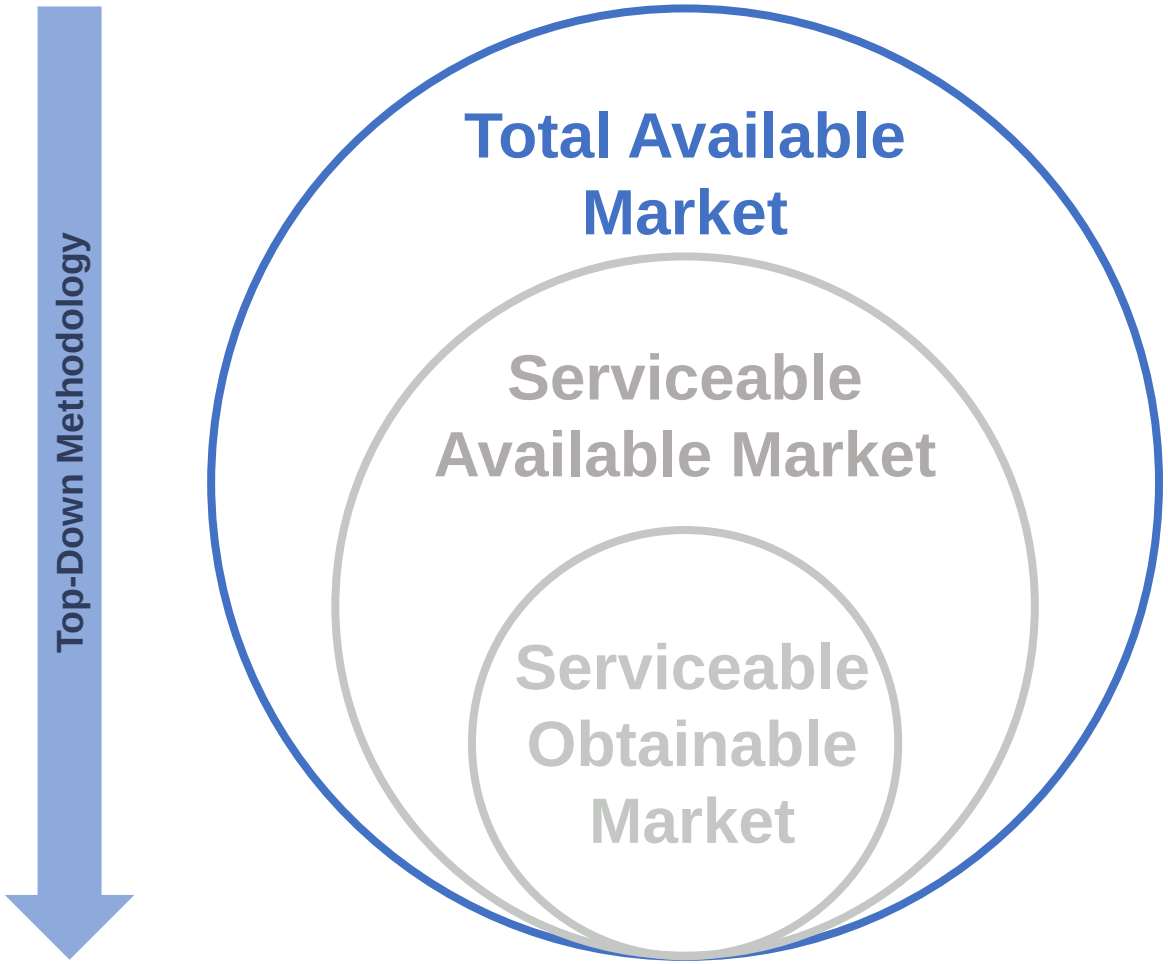
The **Serviceable Obtainable Market** is a percentage of the SAM that you can realistically capture- this is your **target market**.

To calculate the SOM, you should consider the penetration rate based on your business constraints.

In other words, you want to know, **how much of the market can I reach?**

Be conservative - a 100% penetration rate is not expected in the short term.

Case Study: A start-up, DryAway, calculating the market for a new xerostomia (dry mouth) treatment.



To understand the TAM, DryAway does some secondary market research and finds a market report that indicates there are approximately 33 million individuals in the United States that suffer from dry mouth. In an academic journal, the team finds out that patients are spending about $500 annually to treat this condition.

TAM: [33,449,390] x [$500] = $16.7 billion opportunity

Sources: Case Study adapted by RTI from A Student Guide to BIODESIGN, “Top-Down and Bottom-Up Market Sizing Example V1.” (2022). Stanford University.

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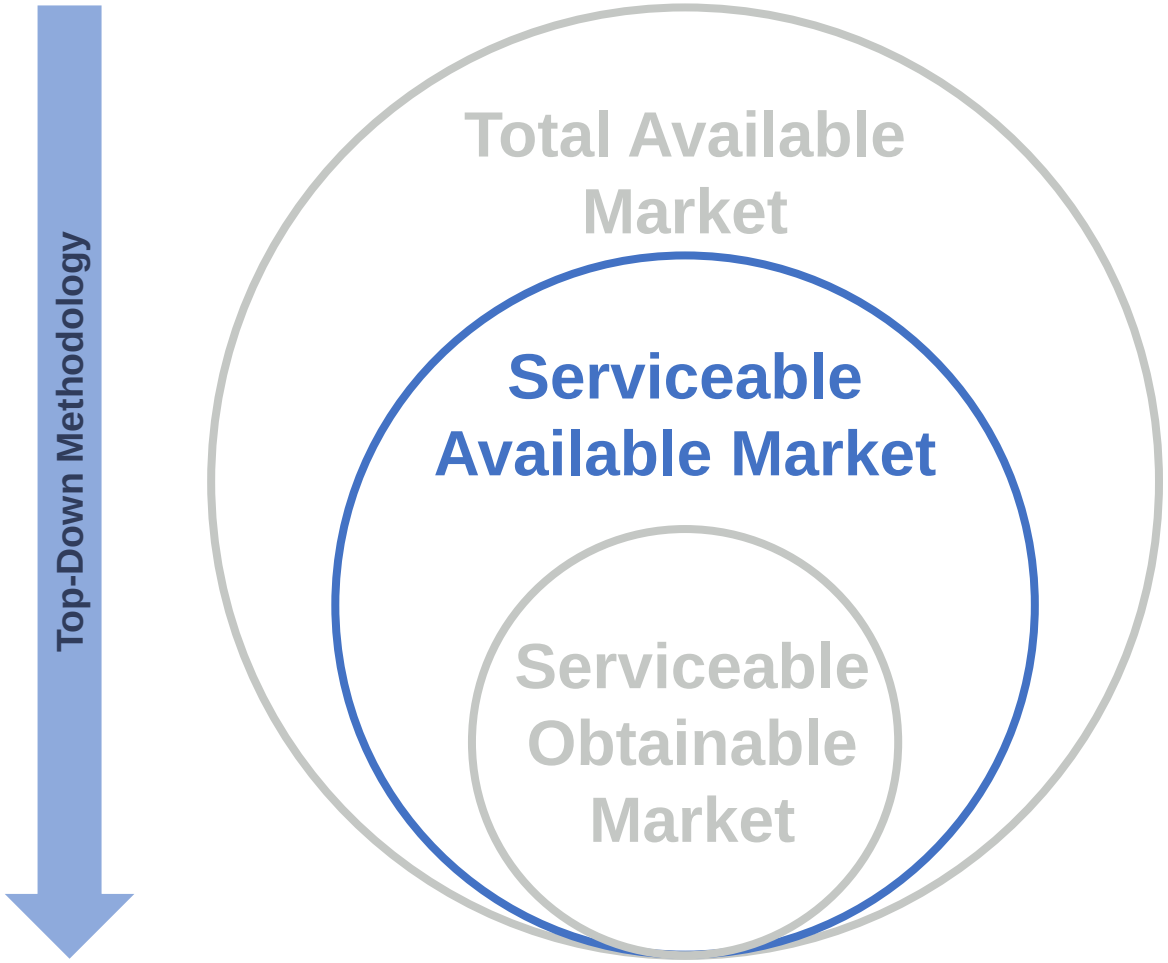

DryAway then thinks about what market segment would most benefit from this treatment. After conducting additional market research, the team learns about 33% of this patient population suffers from moderate to severe dry mouth and may be a good fit for their first target market.
[$16.7 billion] x [0.33] = $5.5 billion

DryAway also knows that of the patient population suffering from moderate to severe dry mouth, only about 39% seek treatment - and therefore is the portion of the market that they could capture.

SAM: [$5.5 billion] x [0.39] = ~$2.15 billion opportunity

Sources: Case Study adapted by RTI from A Student Guide to BIODESIGN, “Top-Down and Bottom-Up Market Sizing Example V1.” (2022). Stanford University.

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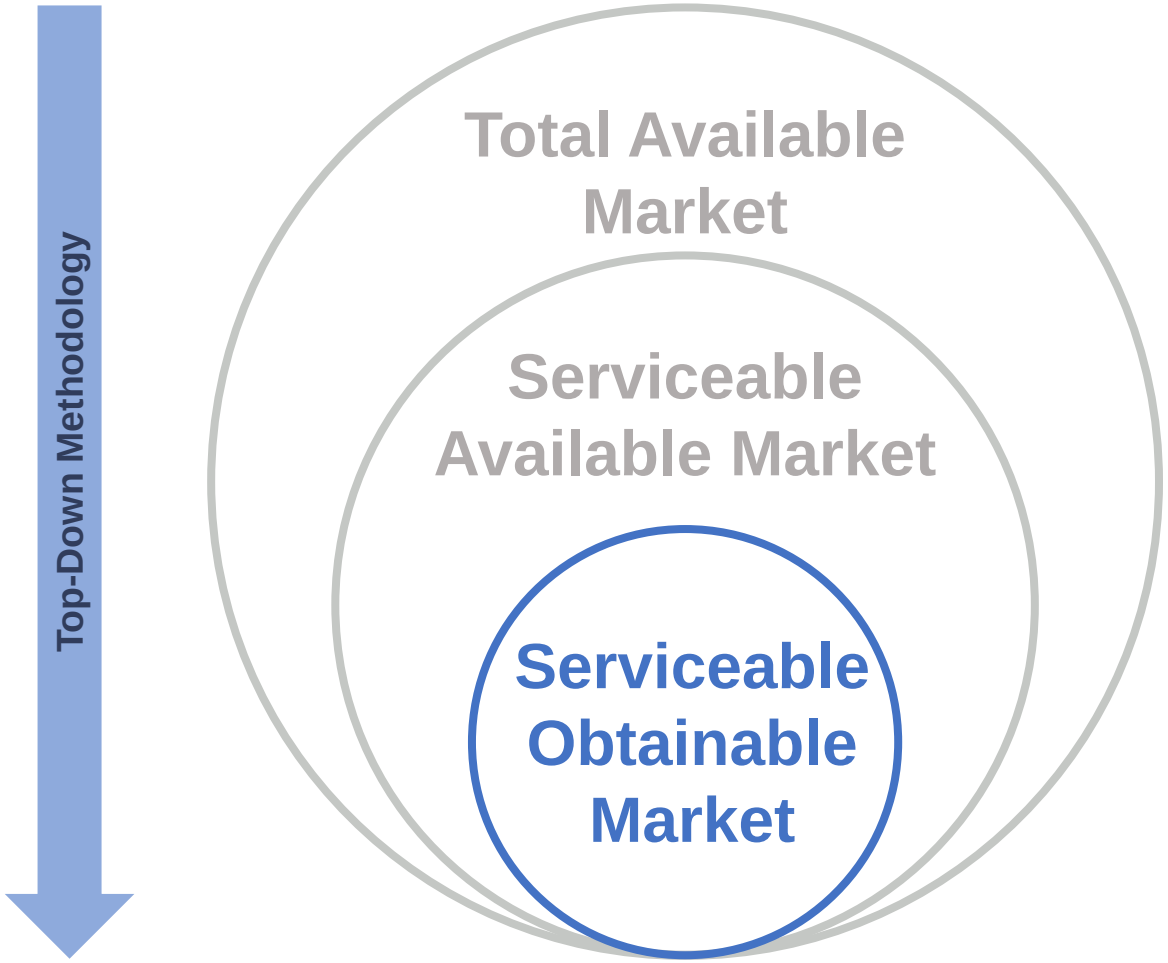


Finally, DryAway thinks about what portion of the market they could capture based on their internal capabilities. The team decides that, in 15 years, they could expect to capture about 30% of this total market.

SOM: [$2.15 billion] x [0.30] = ~$645 million opportunity

Sources: Case Study adapted by RTI from A Student Guide to BIODESIGN, “Top-Down and Bottom-Up Market Sizing Example V1.” (2022). Stanford University.

There are a variety of resources that can be utilized for developing a top-down market sizing assessment.

Industry Reports	Gartner, Forrester, Mordor Intelligence, & IBIS World.
Government Sources	SelectUSA, export.gov, & the International Trade Administration.
Market Research Reports	Research & Markets & MarketResearch.com.
Academic Publications	Relevant journals to your indication.
Healthcare Organization Publications	CDC, Professional Societies and Organizations, & Hospitals or Clinic Systems.
Online Databases	Statista & IBM Watson.

Keep in mind the following best practices and watchouts when developing and iterating a top-down market assessment.

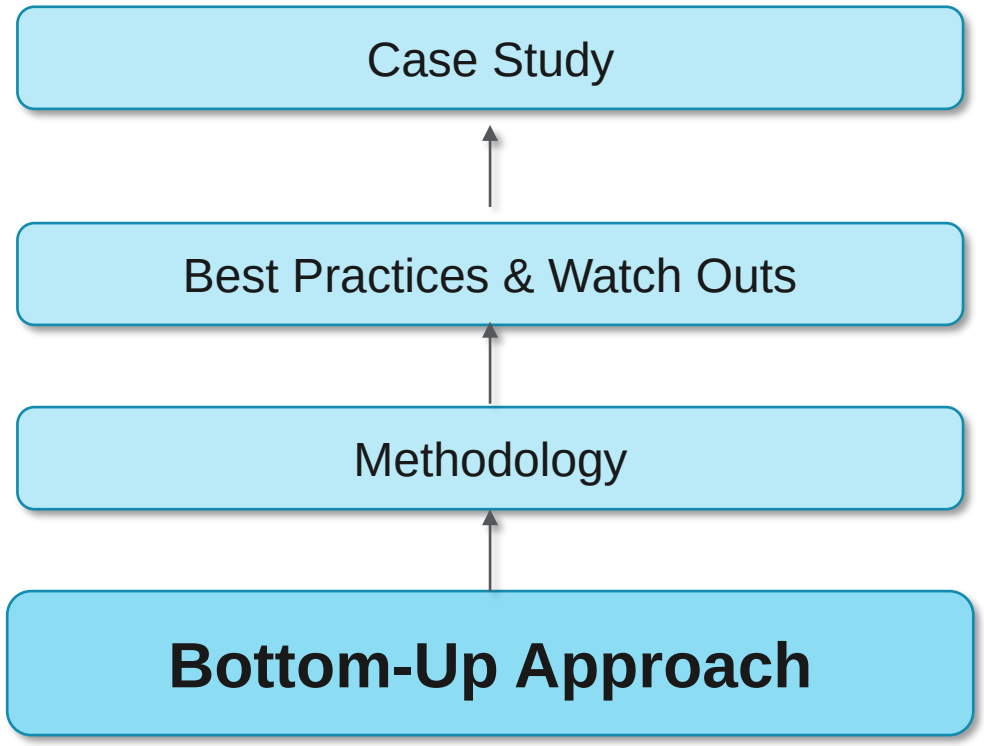
Best Practices

- Consider multiple data sources.
- Clearly define the geographic region and indication.
- Consider how your patient population is further segmented.
- Consider lifespan of the technology or how often patients refill the technology/drug.
- Utilize university or regional resources for access to reports and market data.
- Clearly define and validate all assumptions included.
- Consider the market dynamics (e.g., competitors).
- Show growth of the market over time and how more customers will be captured.

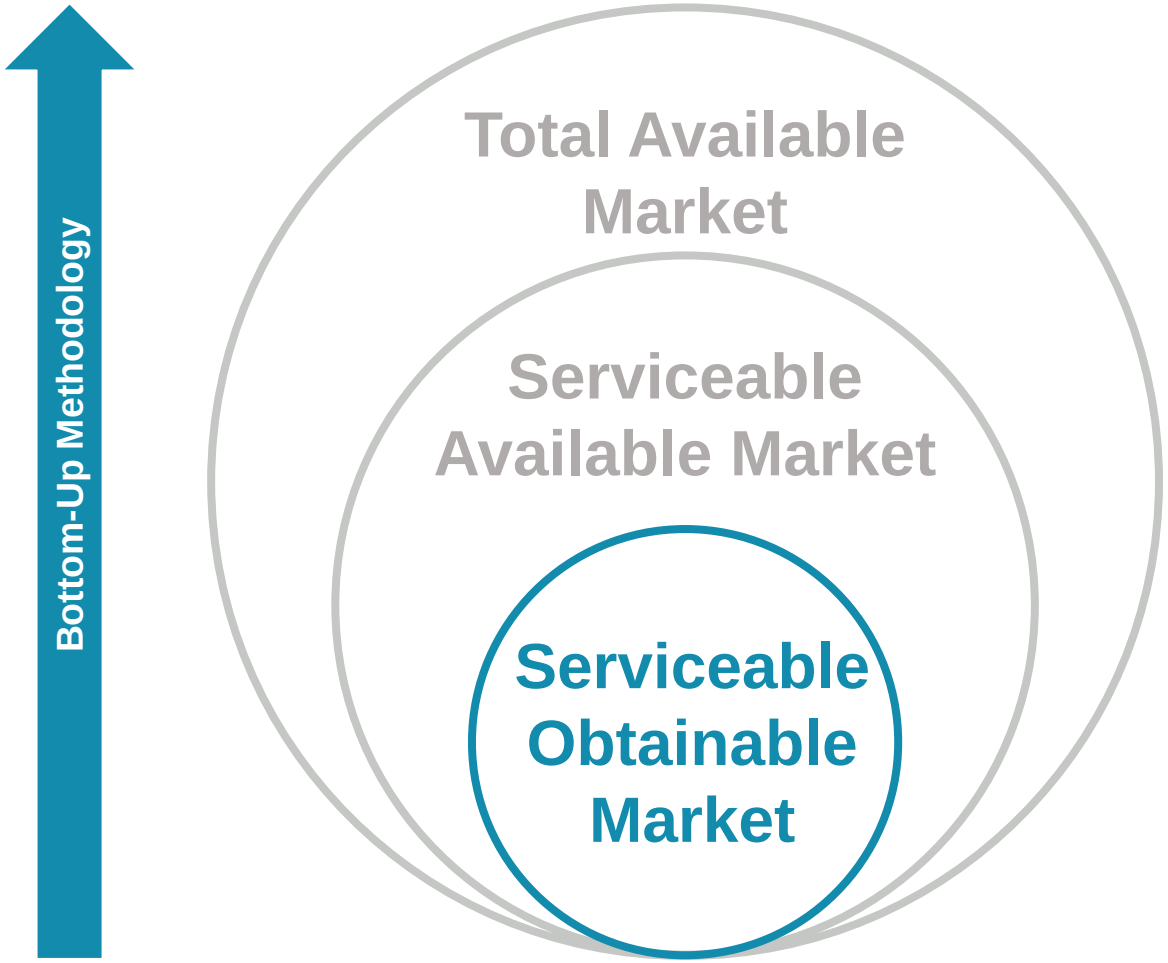
Watchouts

- Verify the quality and reliability of data to ensure it is accurate and current.
- Be conservative when estimating the SOM – overestimating is a common mistake.
- End-users may not be the same as the purchasers.
- Avoid oversimplifying the market segmentation.

With Bottom-up market sizing, you use real data to understand your SOM and extrapolate up to understand your total market opportunity or TAM.



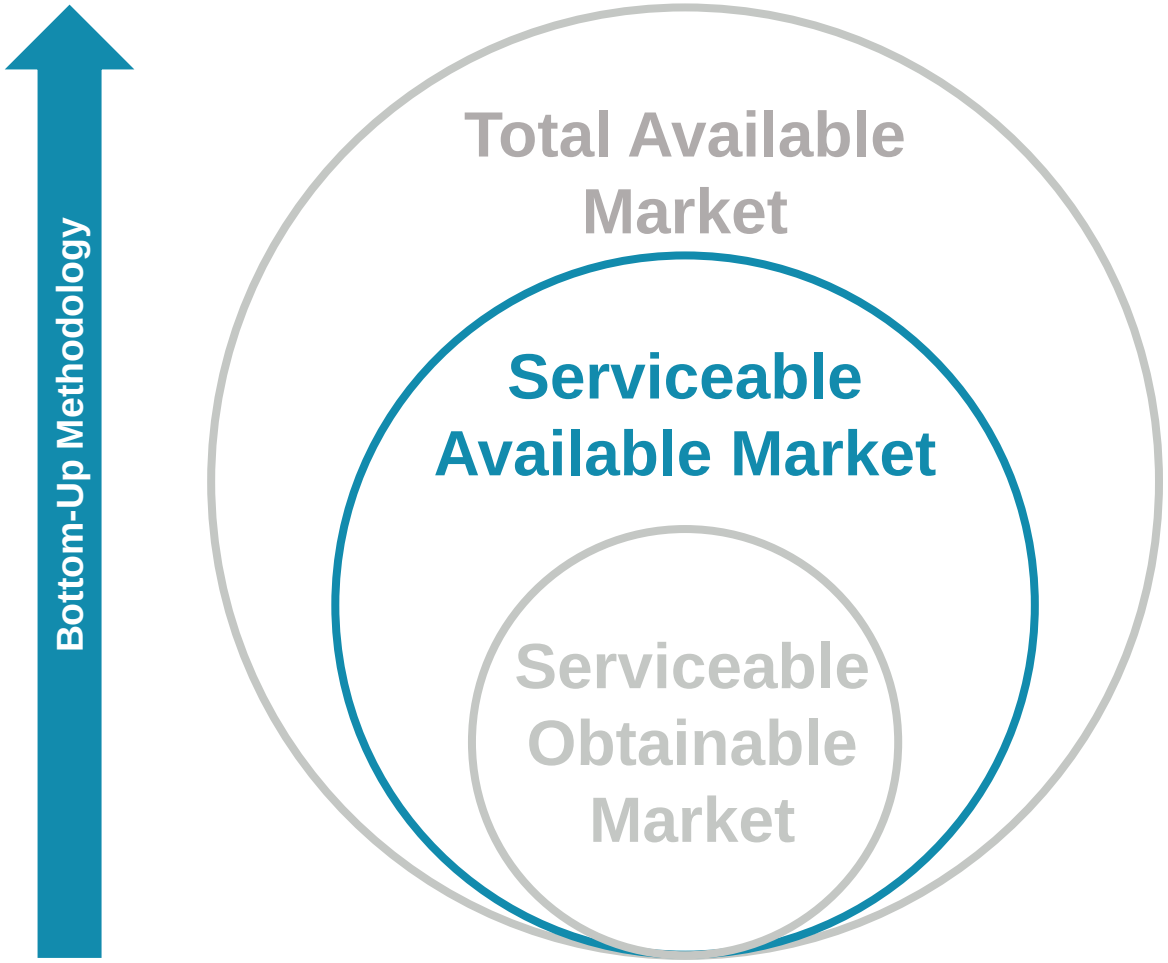
Start with collecting real data to understand your SOM.



To understand the **SOM**, you should seek to speak with customers of your product to capture direct data concerning the potential adoption rate and use frequency.

For example, you could reach out to a hospital and determine how many patients are served annually that fit your specific indication and niche and how much they're spending on treatment.

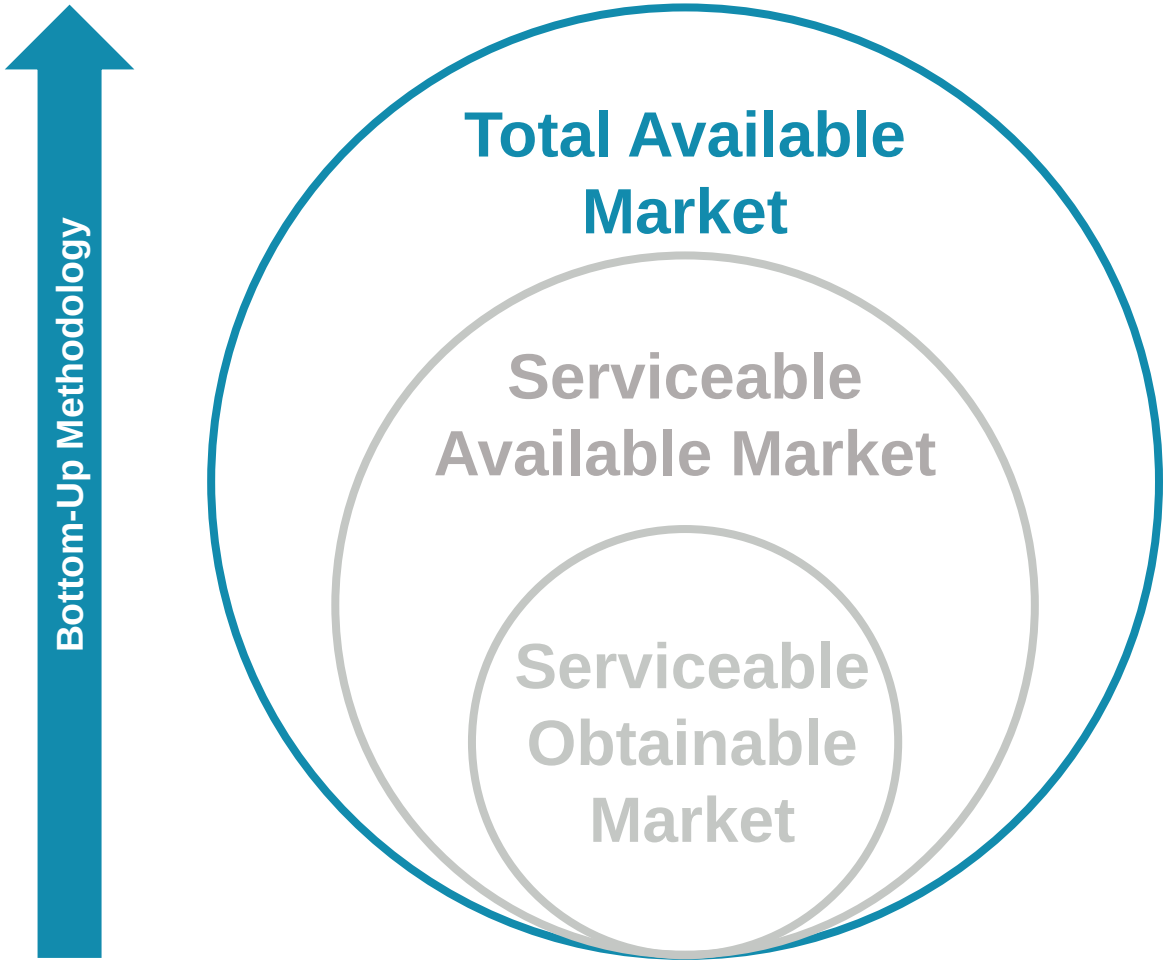
Then, extrapolate upwards to a more optimistic market capture or your SAM.



To calculate the **SAM**, you will extrapolate up your learnings from the SOM to understand the broader market opportunity you have for your target segments of the market.

For example, this could be the number of patients you could capture across hospitals in a specific region (e.g., the Midwest).

Finally, understand your total market opportunity.



To calculate the **TAM**, you consider all of the patients that could benefit from your technology.

For example, this could be the number of patients you could capture across all hospitals in the United States.

Well-structured data gathering and understanding biases will help avoid many watchouts with bottom-up market sizing.

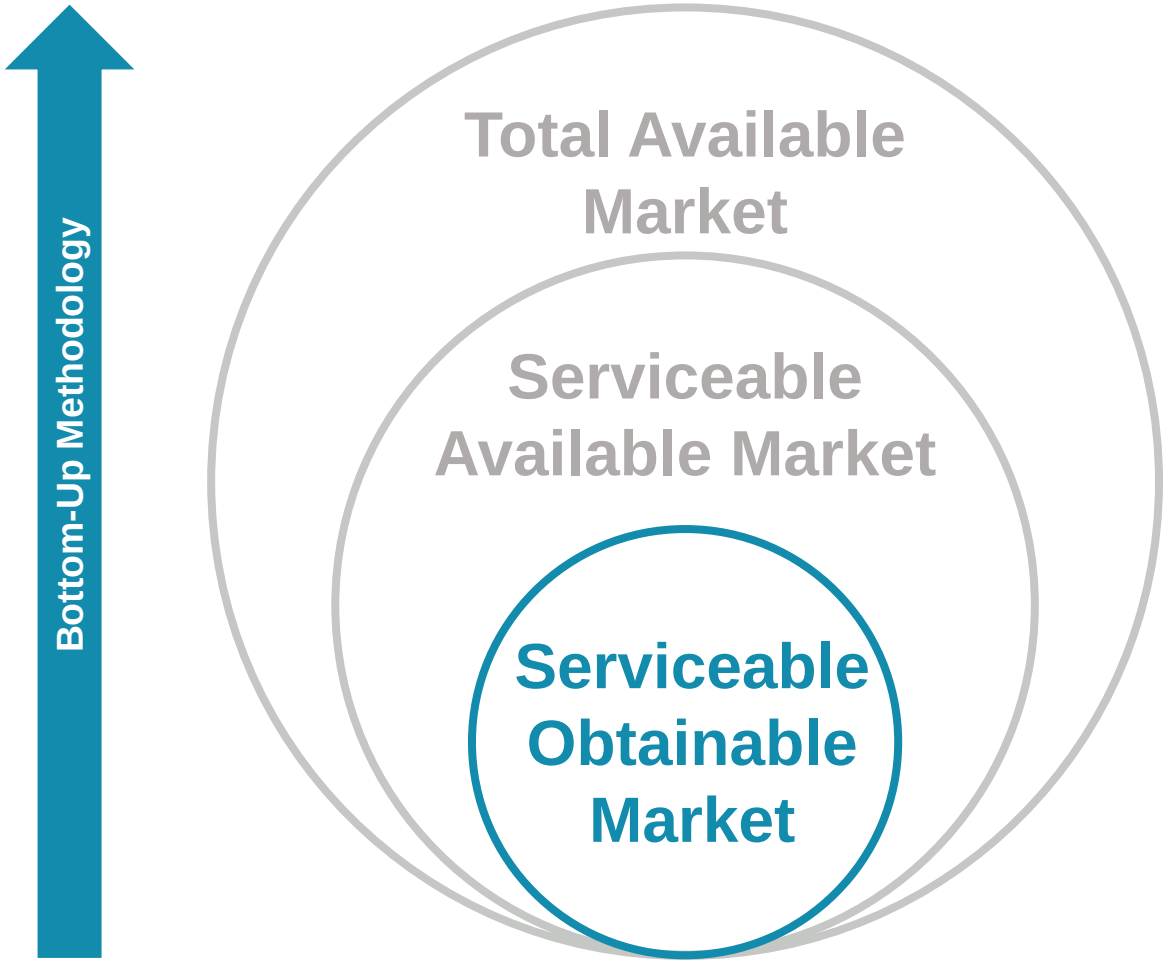
Best Practices

- Conduct multiple interviews to understand if differences exist in adoption.
- Consider potential bias interviewees may have and how that impacts adoption.
- Consider having a third-party conduct the interviews.
- Capture additional insights to inform technology development.

Watchouts

- Don’t only interview market extremes (e.g., urban and rural hospitals).
- Don’t only rely on your personal connections to avoid bias for adoption.
- Don’t over extrapolate and ensure extrapolations are based on data.
- Don’t lead interviewees to overestimate adoption.

Example: A start-up, DryAway, calculating the market for a new xerostomia (dry mouth) treatment.



After reaching out to a local dentist office, which has 15 general dentists across 6 locations, DryAway learns that about 2,250 patients across the practices suffer from dry mouth. The dentists DryAway speak with believes that about 20% of their patients would be willing to try a new treatment and typically spend $500 on current treatments.

SOM: [$500] x [20% of 2,250 or 450 patients] = $225,000 opportunity, or a $37,500 annual opportunity per practice. Targeting 50 practices in the first year represents a **$1.9 million SOM.**

Sources: Case Study adapted by RTI from A Student Guide to BIODESIGN, "Top-Down and Bottom-Up Market Sizing Example V1." (2022). Stanford University. Additional information gathered from "How Many Patients Should a Dental Practice Have?", "Table 42 Active dentists, by state: United States, selected years 2001-2019," and "Number of professionally active dentists working in the U.S. in 2022, by area of practice*".

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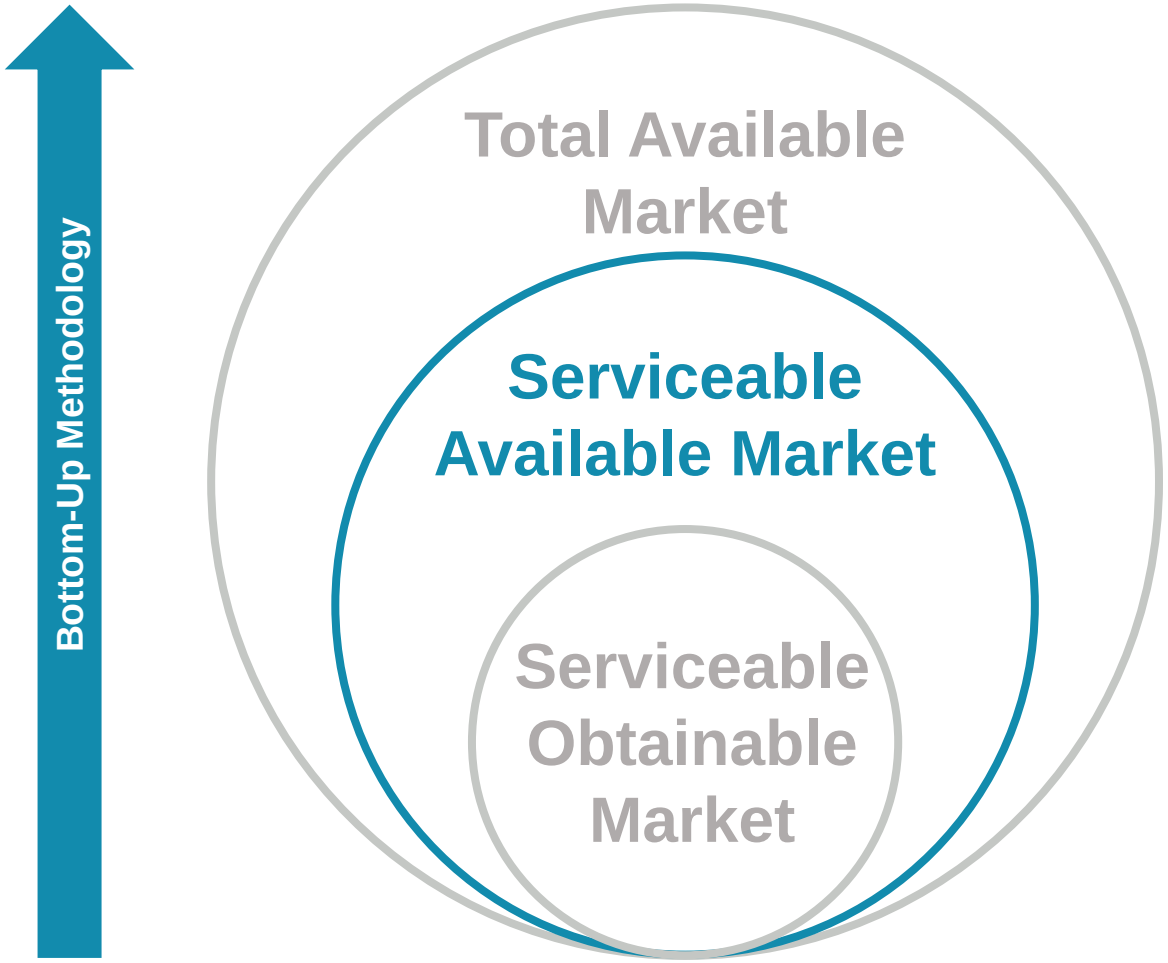

DryAway then does some research and see that there are around 28,000 general dentists operating in the Northeast.

[$37,500] x [28,000] = $1.1 billion SAM

Sources: Case Study adapted by RTI from A Student Guide to BIODESIGN, "Top-Down and Bottom-Up Market Sizing Example V1." (2022). Stanford University. Additional information gathered from "How Many Patients Should a Dental Practice Have?", "Table 42 Active dentists, by state: United States, selected years 2001-2019," and "Number of professionally active dentists working in the U.S. in 2022, by area of practice*".

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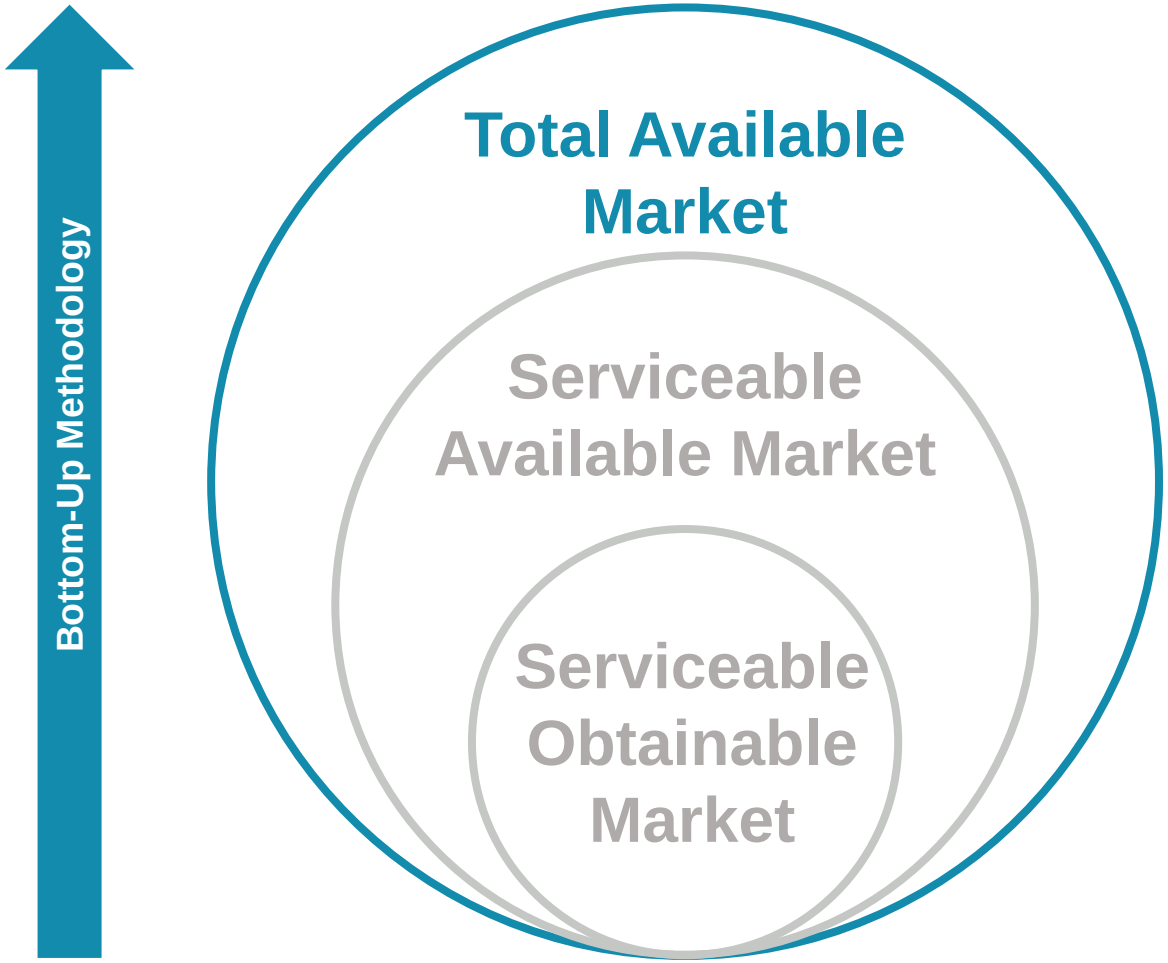
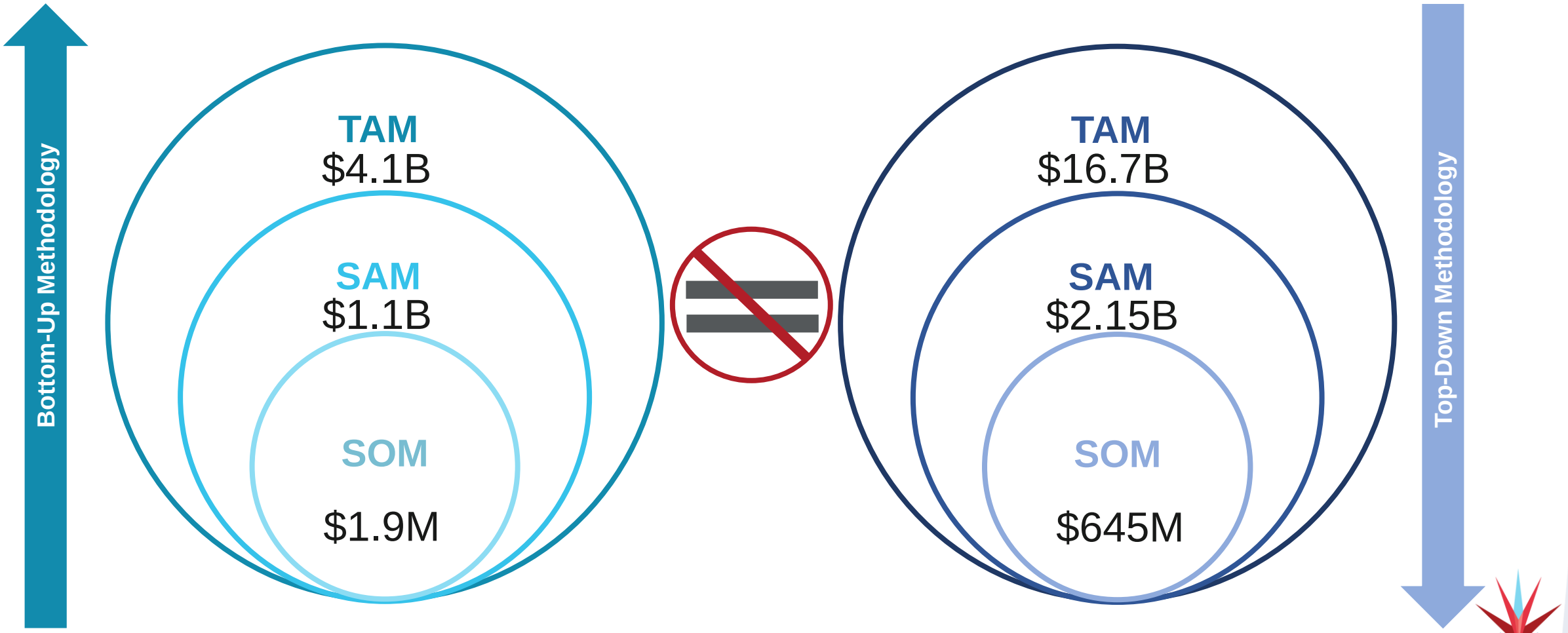


Extrapolating this to the entire US, in which there are about 109,280 general dentist practices, DryAway estimates its TAM as:

[$37,500] x [109,280] =
$4.1 billion opportunity TAM

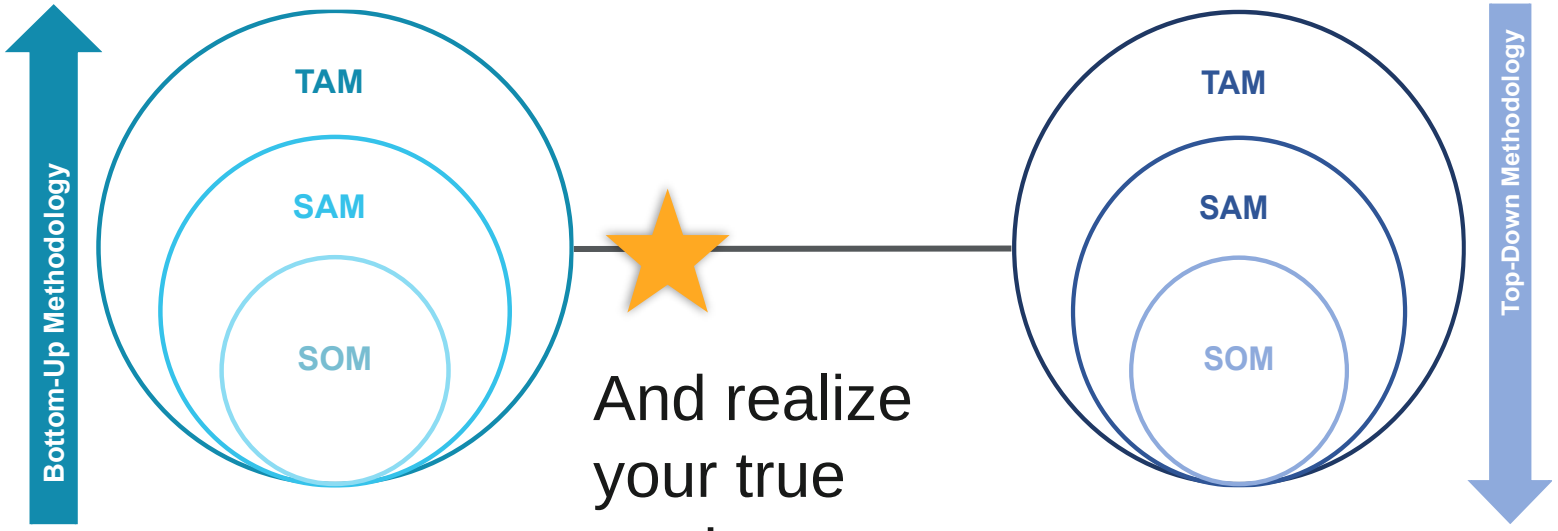
Sources: Case Study adapted by RTI from A Student Guide to BIODESIGN, "Top-Down and Bottom-Up Market Sizing Example V1." (2022). Stanford University. Additional information gathered from "How Many Patients Should a Dental Practice Have?", "Table 42 Active dentists, by state: United States, selected years 2001-2019," and "Number of professionally active dentists working in the U.S. in 2022, by area of practice*".

Often, the top-down and bottom-up estimated will not entirely match.



Don’t panic if this happens! Performing both methodologies will grant you a greater understanding of the market dynamics.

- Check your calculations.
- Check your assumptions and which are baked into which model.
- Understand where the overestimation occurred (typically in the top-down approach).



And realize your true market potential lies somewhere between the two models.

Let’s wrap up

1. Market sizing is an art, not a science.
2. Underestimate before you overestimate.
3. Know your assumptions well.
4. Markets are not static.
5. Multiple models and approaches are your friend.
6. Know the limitations of market sizing.

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Q&A