PSAP & Hearables Overview: Market Data, Distribution, Barriers

Institute of Medicine
Committee on Accessible and Affordable Hearing Health Care for Adults
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My Perspectives

Clinical research and teaching (6 years)
- hearing & amplification
- consumer satisfaction

Private Practice (29 years)
- Practice management
- Consumer satisfaction

Author/Editor (20 years)
- Economic Principles
  - Market behavior
  - Consumer preferences
PSAP: Substitute Good (?)
Personal Sound Amplification Product

• Not a new good (Crystal Ear, 1990s)
• Unregulated by FDA
• Defined by FDA by absence of intent: “not for mitigating hearing loss”
• Technological advances
  – High quality PSAPs
  – Sophisticated signal processing
• Undifferentiated by appearance, features
• Differentiated by price, distribution channels
### PSAP Market Estimates

<table>
<thead>
<tr>
<th>Study/N/HD/HA/PSAP</th>
<th>Estimated Hearing Difficulty (HD)</th>
<th>Estimated HA Users</th>
<th>% Directs &amp;/or PSAPs</th>
<th>Estimated Direct &amp; PSAP Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Population sampled</td>
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<tr>
<td>MarkeTrak IX (MT9)⁴</td>
<td>33.3M</td>
<td>10.06M²</td>
<td>3.36% of adopters³</td>
<td>PSAPs: 1.43M (4.3%)</td>
</tr>
<tr>
<td>Population: 313.9M US, 2014</td>
<td>10.6%</td>
<td>(30.2%)</td>
<td></td>
<td>Adopters: 338K⁴</td>
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<td></td>
<td>Non-adopters: 1.09M⁵</td>
</tr>
<tr>
<td>Kochkin5 MarkeTrak VIII</td>
<td>34.25M⁷</td>
<td>8.81M⁷</td>
<td>3.28% adopters; 4.79% non-adopters</td>
<td>PSAPs: 1.5M⁸ (4.4%)</td>
</tr>
<tr>
<td>Population: 303.1M US, 2008</td>
<td>11.3%</td>
<td>(24.6%)</td>
<td></td>
<td>Adopters: 280K⁷</td>
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<td>Non-adopters: 1.24M⁷</td>
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</table>

**Take home:** Low penetration (<5%), static market?
Hearables: Not substitutes

Ear level consumer electronics device

- New “smart” product in 2014
- Not regulated or currently related to the FDA
- Consumer Electronics industry defines as platform for bionics innovations:

  “Any device, or combination of innovative devices and software that helps someone hear better.”

- Differentiated by looks, functionality, price, distribution channels, target market, development & fulfillment
### Hearables Market Estimates

<table>
<thead>
<tr>
<th>Study/N/#HD/# HA/# devices</th>
<th>Estimated Hearing Difficulty (HD) Self-report</th>
<th>Estimated Hearing Aid Users</th>
<th>Estimated &quot;Other&quot; Market Penetration</th>
<th>Estimated &quot;Other&quot; Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEA 2014 PSAP Survey&lt;sup&gt;9&lt;/sup&gt; (&quot;other hearing device&quot;)</td>
<td>98M (46%)</td>
<td>4.21M&lt;sup&gt;10&lt;/sup&gt; (7.2%)</td>
<td>2.6%</td>
<td>2.59M&lt;sup&gt;11&lt;/sup&gt;</td>
</tr>
<tr>
<td>N=3424/1551/111/41</td>
<td>Population: 214M US adults online (87% of total US adult population)</td>
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<tr>
<td>The Market for Smart Wearables&lt;sup&gt;12&lt;/sup&gt; (&quot;hearables&quot;)</td>
<td>NA</td>
<td>NA</td>
<td>N/A</td>
<td>(~2.68M) units, 2014 (~6.69M) units, 2018&lt;sup&gt;13&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Fig 2.** Consumer electronics estimates of US market for Hearables/PSAPs.

**Take home:** low penetration, small sample.
Hearing Device Accessibility and Affordability in the US

Report Card

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<thead>
<tr>
<th></th>
<th>Hearing Aids (Van Tasell, 2015)</th>
<th>PSAPs Hearables</th>
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<tbody>
<tr>
<td>Effectiveness</td>
<td>B</td>
<td>?</td>
</tr>
<tr>
<td>Accessibility</td>
<td>D</td>
<td>B</td>
</tr>
<tr>
<td>Affordability</td>
<td>F</td>
<td>A</td>
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Price and Accessibility aren’t Barriers

Demand function: Willingness to Sell, Willingness to Buy
Convergent Forces Drive Market Toward Equilibrium

• Market is really one of homogeneous goods

• Consumers engaged in costly and constant price search activity

• Trade offs
  – More information -> lower price and variance-> increased consumer welfare
  – Lower price -> lower profit margins -> lower innovation intensity
Influence Expected Benefit

Technological Innovation and Integration

- **User Control:** Self efficacy (testing and self-fitting)

- **Unique Uses:** experiential, enhancing
  - Wireless, multi-use connectivity
  - Communication centers: “personal aides/sensing devices”
  - Streaming content
  - Alerts (calendar, medical)

- **Wearability:** healthy, comfortable hands-free, image-enhancing

- **Convenience/Compatibility:**
  - Improved power supply, charging
  - Standardized pairings, interfaces, downloads, adjustment, data storage
Influence Expected Benefit
Explain, Enlighten, Encourage

• Consumer Education
  – “non-adopters should continue to be educated on hearing loss, prevention, and treatment.” Kochkin MTVIII
  – Interactive nature of hearing loss

• Newly Acquired Preferences for competitive edge
  – Tech up hearing, communication, intelligence, coolness
  – Eliminate stigma, reduce anxiety

• Transitioning Devices
  – PSAPs/Hearables as “incubators”
Influence Expected Benefit

Data-Directed-Development

• Exhaustive, controlled data gathering
  – Epidemiological studies
  – Clearinghouse for real-time pseudonymized data
    • Settings
    • Patterns of use
      – Listening environments
      – Preferred settings
      – Applications
      – Wearing schedules
    • In situ satisfaction measures
  – Proof of effectiveness
    “Understand, influence and set standards for hearing and ear-level communications” (Brent Edwards, video)
It depends ....

• Transition regulations
  – Changing market
  – Converging technologies
  – Redefine by inclusive features rather than exclusive intentions

• “Advisable not to intervene in the economic process”
Sources


• Consumer Electronics Association. 2014 CEA Personal Sound Amplification Products (PSAPs) Study.

• Hosford-Dunn, H. If hearing aids were hula hoops. HearingHealthMatters.org, June 17, 2017.

Sources

- Hunn N. The market for smart wearable technology: A consumer centric approach. 8/07/2014
- Van Tasell D. Hearing aids, enabling technologies, barriers. IOM Committee on Accessible and Affordable Hearing Health Care for Adults. April 27, 2015.