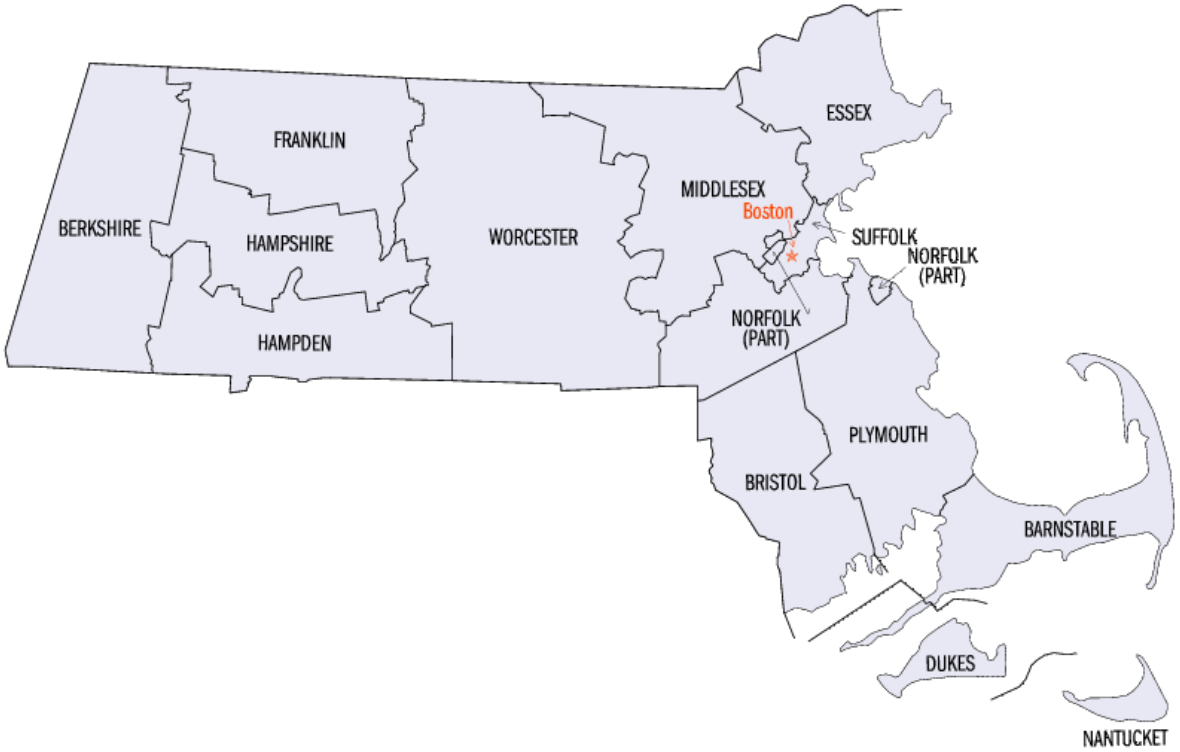
Deloitte.

The Medical Device Industry in Massachusetts:

A Presentation to MassMEDIC's 15th Annual Meeting

May 3, 2011



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Massachusetts Medical Device Industry employment and investment

Medical Device exports from Massachusetts

The future

Massachusetts has the culture, people, technology, and support in place that position it as a key player in the dynamic medical device industry

Massachusetts is positioned with

- Research
  - Between 2003 and 2007, MA R&D / GDP far outpaces the rest of the country
- Technology transfer
  - MA leads the country in spin-outs from universities and other non-profits
- Political support
  - Strong support from Congressional delegation
  - Patrick administration created Massachusetts Life Science Center to help administer $1B to the industry
- Capital
  - Had the highest Venture Capital investment per capita in the country in 2009
- Talent
  - As of 2007, almost half (47%) of residents have college degrees (1st in the US)

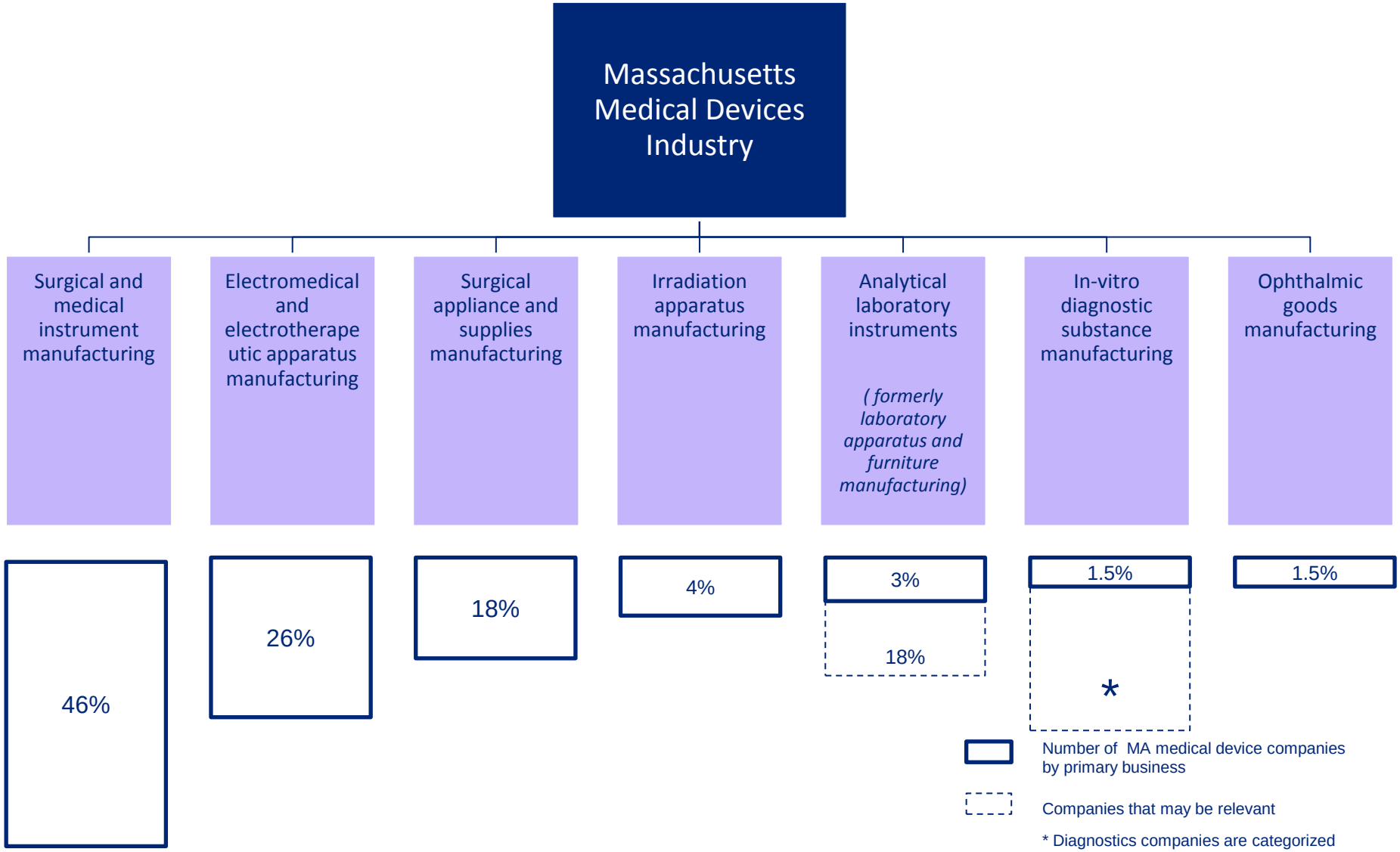
To develop medical devices that result in:

Converging on pharma, biotech, and IT

- Less invasive surgery
- Lifelike prosthetics and joint replacements
- Earlier detection of disease
- Point of care diagnostics
- Mobile disease/ condition monitoring
- Convergent technologies
- Personalized medical treatment

Source: 2009 Index of the Massachusetts Innovation Economy, John Adams Innovation Institute

400 Massachusetts companies focus on medical devices, with surgical and medical instrument manufacturers leading the pack

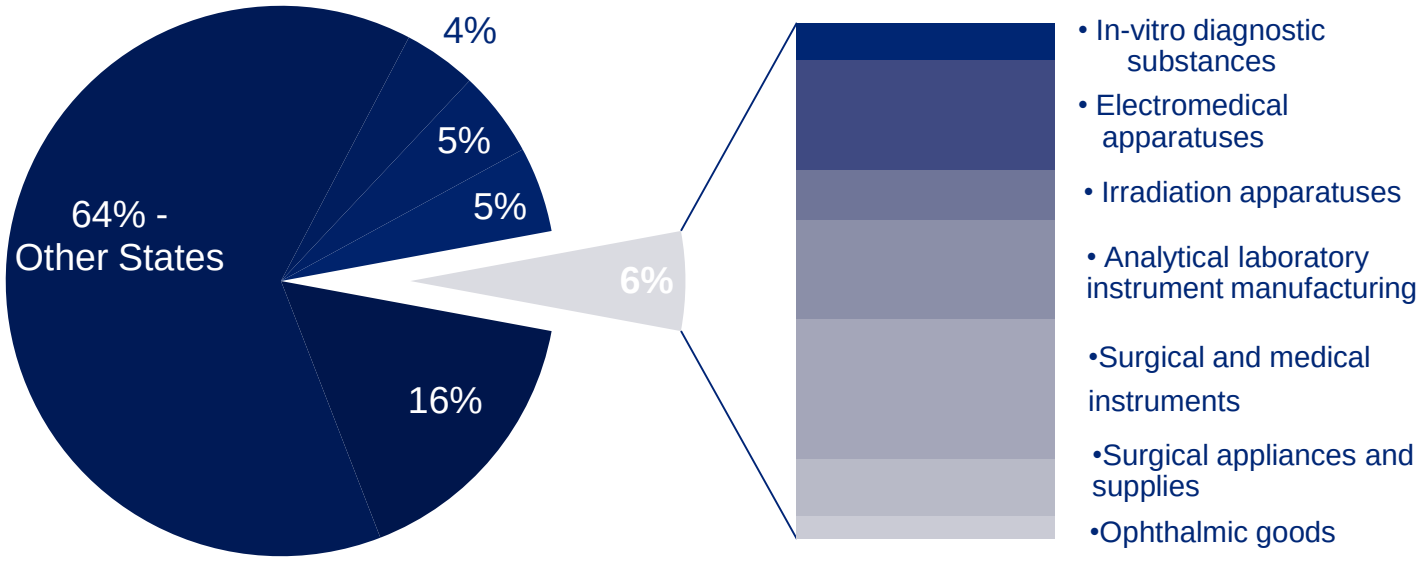


Source: Deloitte Research analysis, Hoovers, Dunn and Bradstreet, MassMedic and The Donahue Institute

Massachusetts is the second largest employer of people in the medical device industry, behind California

2008 medical device industry employment rankings & breakdown by surgical manufacturer

1. California
2. **Massachusetts**
3. Minnesota
4. New York
5. Florida



In 2008, the industry employed 392,282 people nationally

Massachusetts employed 24,268 within 7 medical device manufacturing categories

Source: 2008 US Census Bureau, County Business Patterns

The Massachusetts medical device industry has a strong impact on job creation in related industries

Medical device industry job creation, direct and related 2008

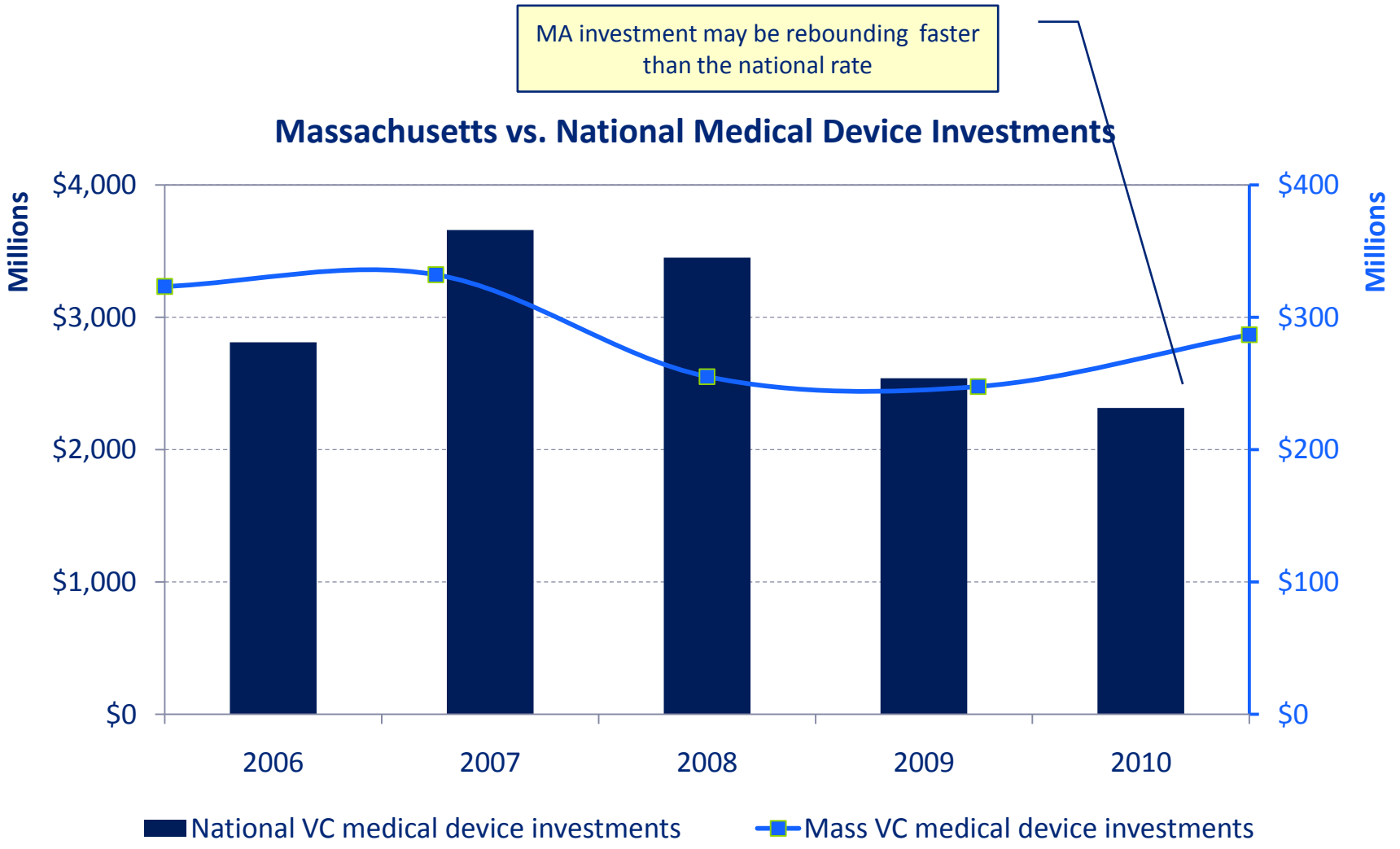
	MDI Employment (per thousand)	MDI-Related Employment (per thousand)	Multiplier Effect
California	2.3	8.2	3.5
Minnesota	5.2	16.1	3.1
Massachusetts	3.7	12.7	3.4
Pennsylvania	1.8	6.4	3.6
New Jersey	2.4	7.4	3.1
Florida	1.2	3.4	2.8

The medical device industry has created approximately 82,500 jobs in related Massachusetts industries

Note: *Taken from "The Lewin Group: State Economic Impact of the Medical Technology Industry, prepared for AdvaMed June 7, 2010" , calculation of the MDI vary*

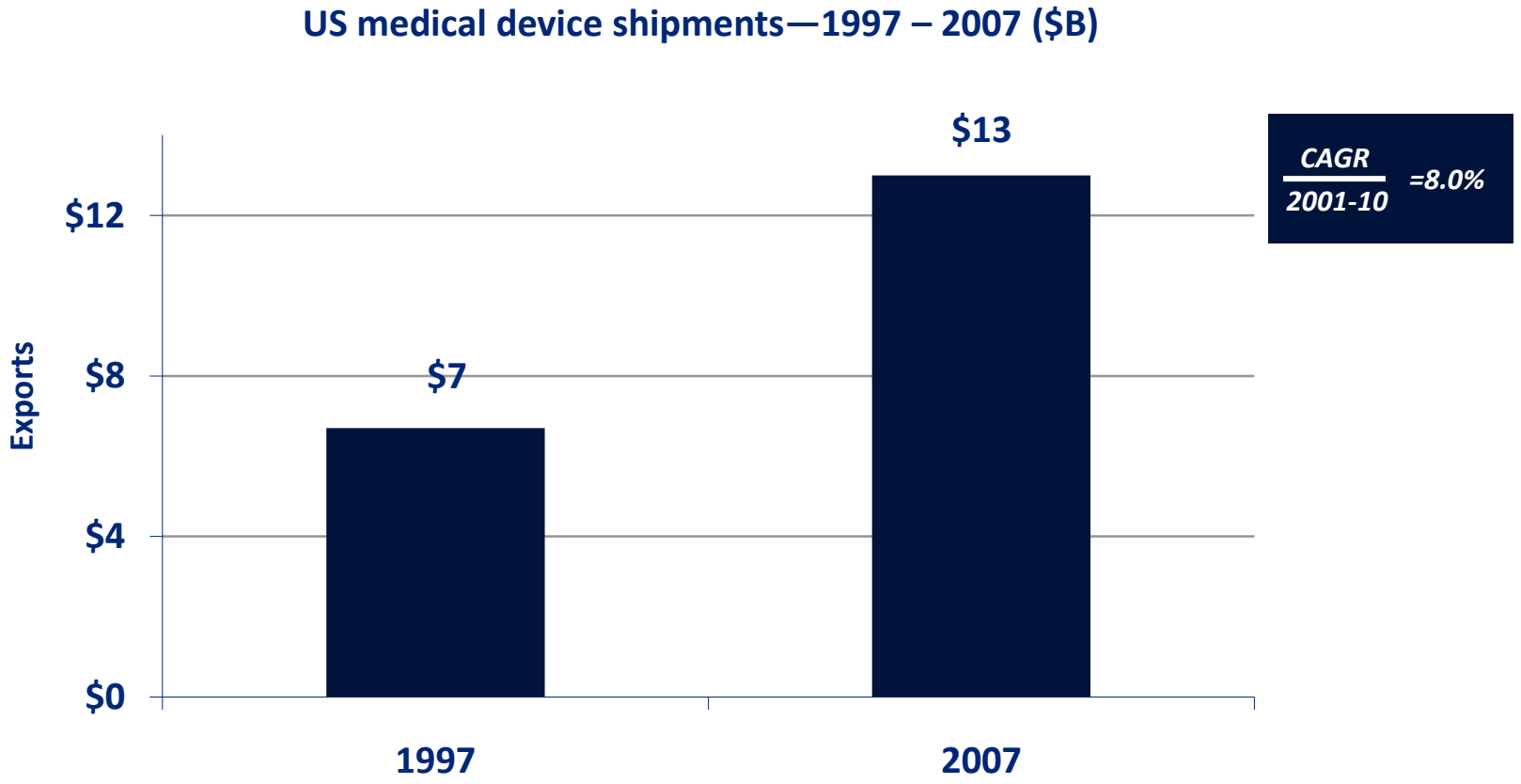
Source: The Lewin Group: State Economic Impact of the Medical Technology Industry, prepared for AdvaMed June 7, 2010; US Census 2007, County Business Patternrns

Massachusetts medical device firms received $286 million, or 12% of national medical device venture funds in 2010



Source:PWC MoneyTree

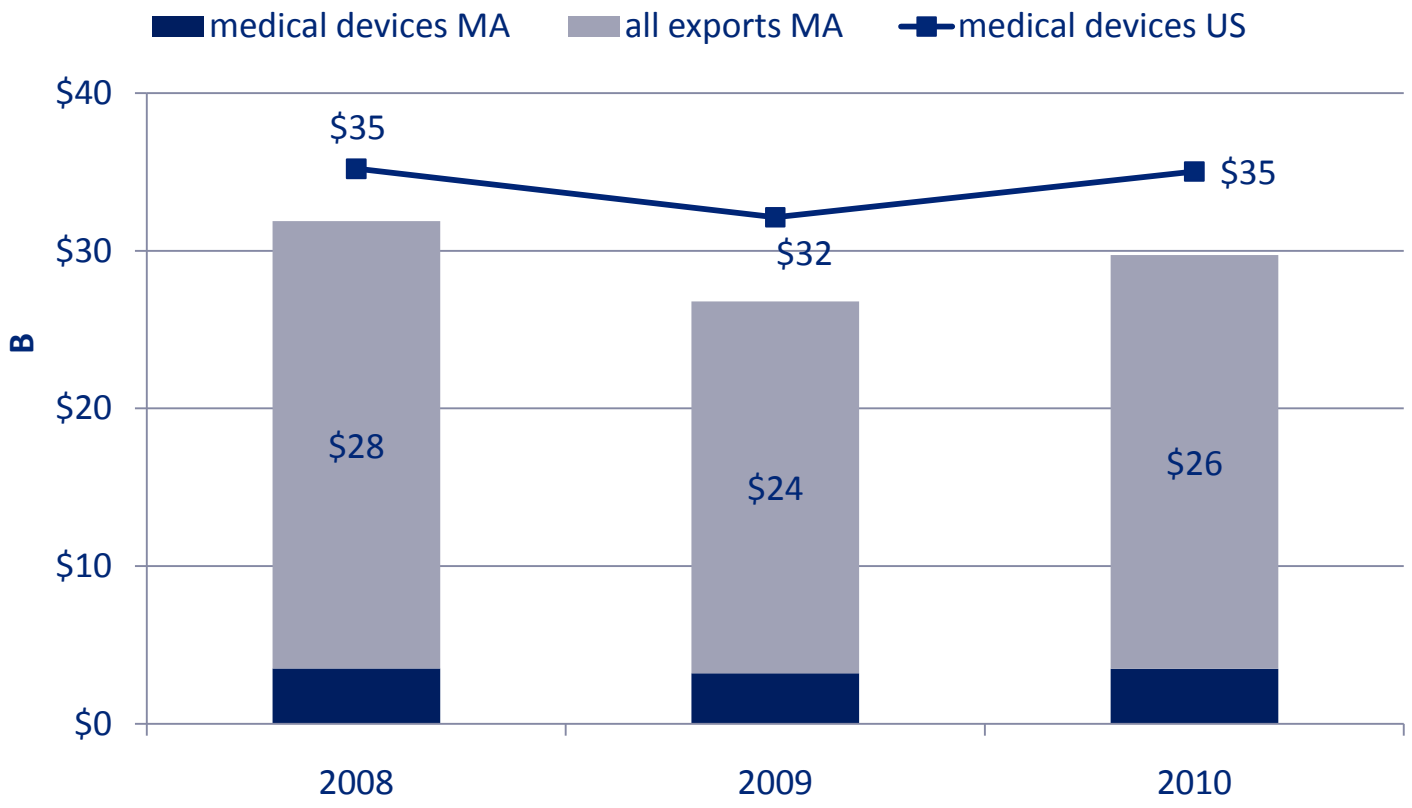
US medical devices shipments have been growing steadily



Source: 1997 and 2007 Economic Census Data

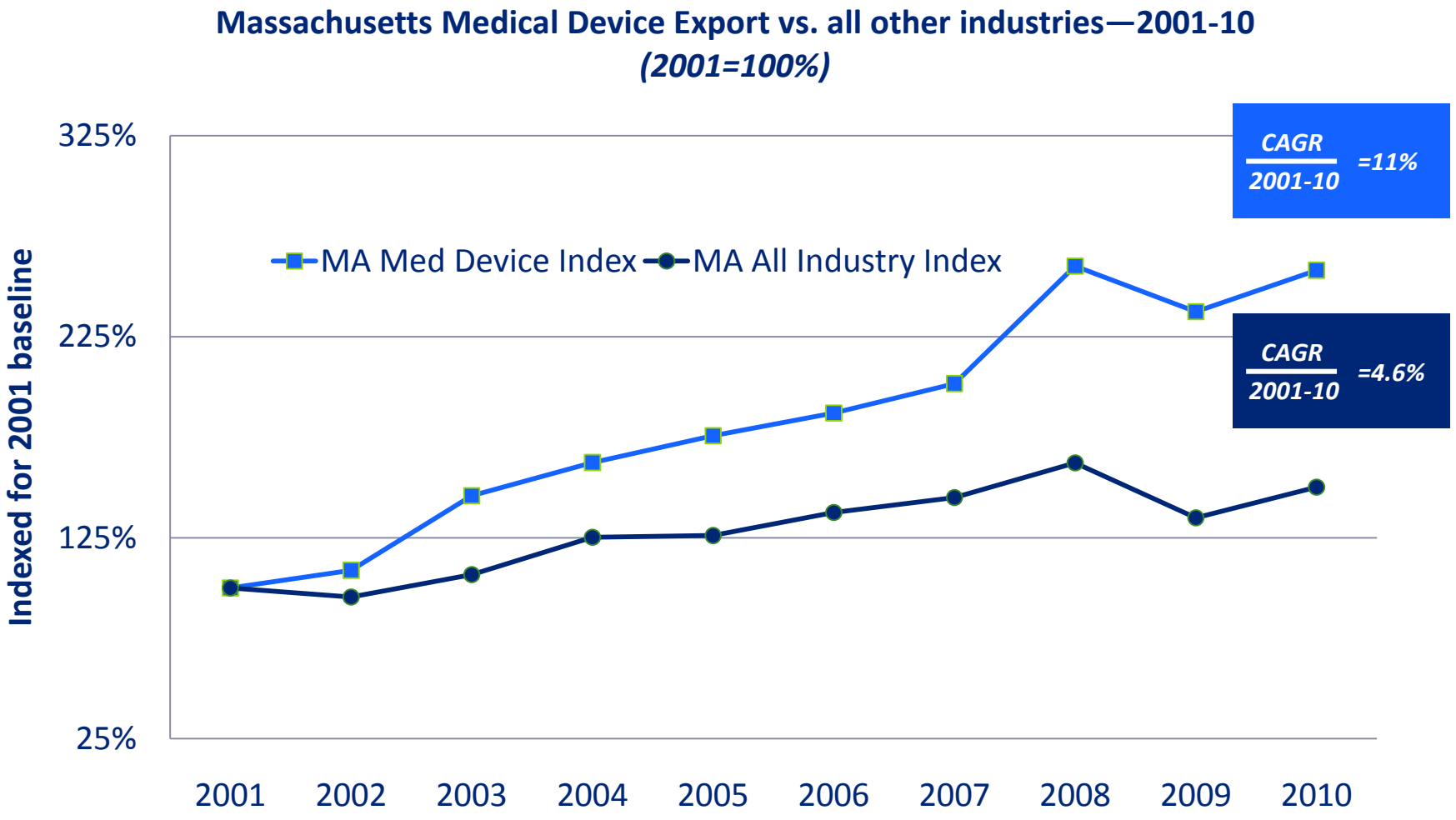
MA medical devices are more than 10% of total state exports and $1 out of every $10 of US medical device exports

Massachusetts medical device exports compared to statewide industrial exports & US medical device exports—2008-10 ($B)



MA med devices as a %			
Total MA exports	12%	14%	13%
US medical device exports	10%	10%	10%

…and have been growing faster than aggregate state exports



Previous analysis by the Donahue Institute indicates the trend began in 2001

Source: WiserTrade; The Medical Device Industry in Massachusetts, A Presentation to MassMEDIC's XXth Annual Meeting – prepared by the Donahue Institute 2007

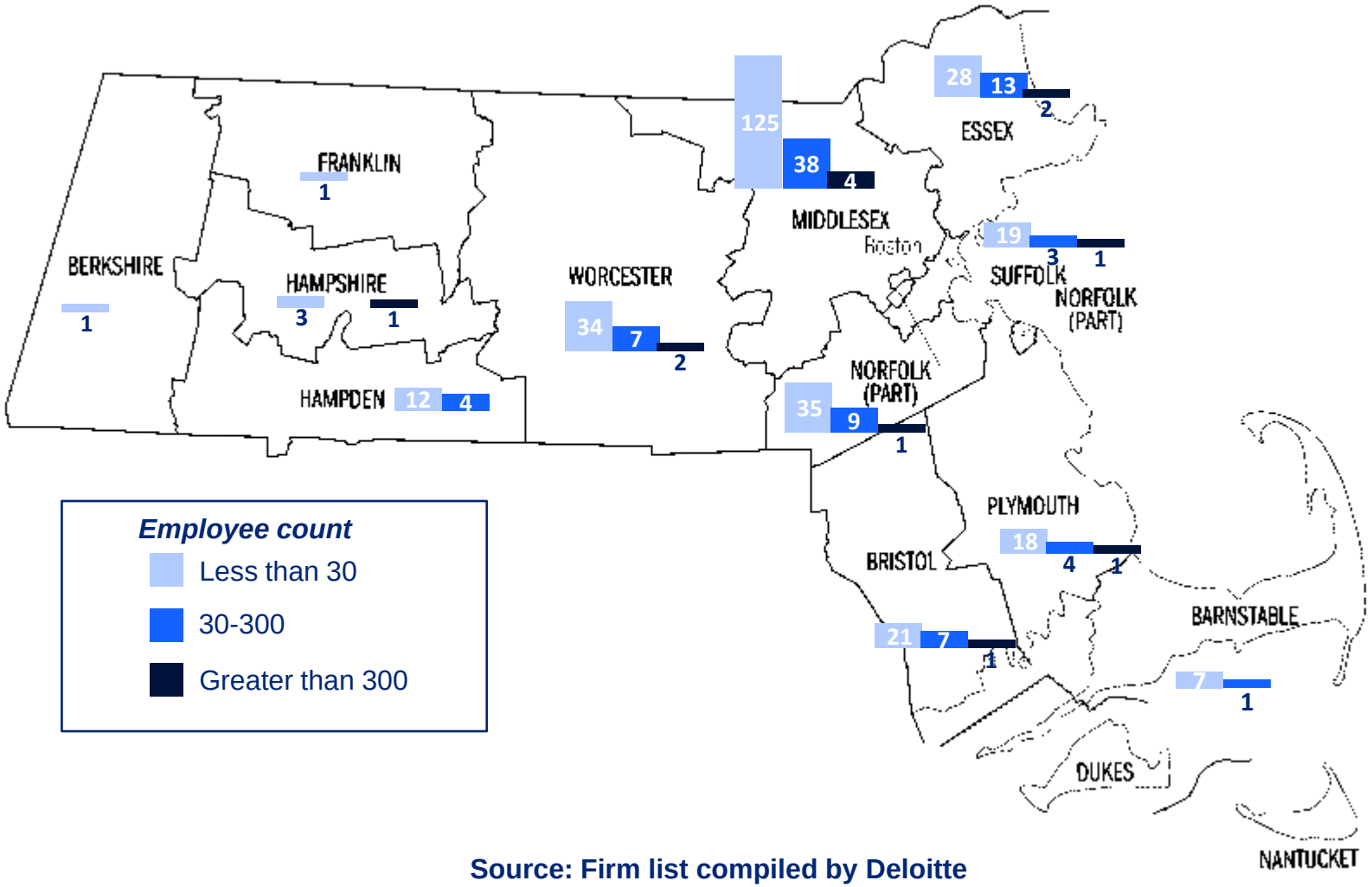
Despite year-to-year variation, Asian and European markets are the biggest consumers of Massachusetts's medical devices

Massachusetts international exports breakdown by region ($M)

	Massachussets exports ($M)	% of 2010 international exports	% change since 2008
Europe	$1,721	49%	6%
Asia	$1,282	37%	-9%
N America	$321	9%	10%
Australia & Region	$75	2%	-8%
S America	$68	2%	1%
Africa	$43	1%	16%

Source: WiserTrade

While heavily concentrated in Eastern Massachusetts, firms are present in almost all regions of the state



Source: Firm list compiled by Deloitte

Source: ***Hoovers, Dun and Bradstreet, Deloitte Analysis***

Massachusetts's research, funding, and talent environment help contribute to new medical device companies …

Cambridge based iWALK is developing mechanical foot prosthetics to help amputees achieve a stable gait

From MIT's Media Lab

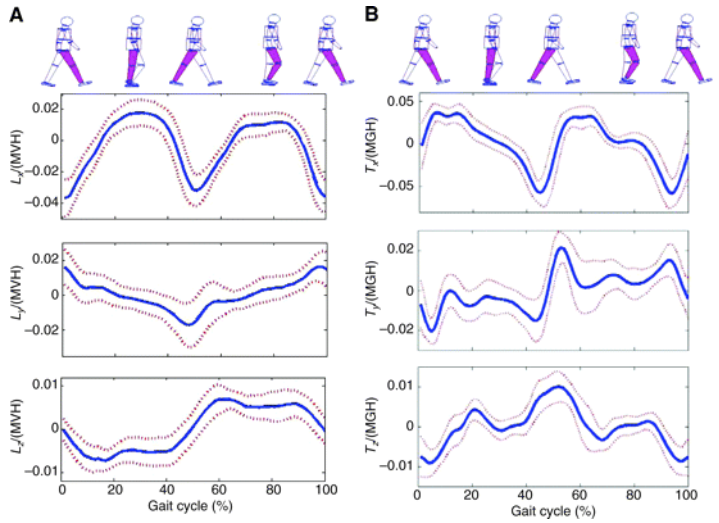


Fig. 3. Whole-body angular momentum and moment. (A) A normalized angular momentum for walking is plotted about three orthogonal directions versus percentage gait cycle. The angular momentum is normalized by the product of each participant's mass, CM height and self-selected gait speed (MVH; see Table 1 for values). (B) Normalized CM moment is plotted about three orthogonal directions versus percentage gait cycle. Moment is normalized by the product of each participant's weight and CM height (MGH). For both A and B, the solid line is the mean normalized value, and the dashed lines are one standard deviation about the mean (10 participants and seven walking trials per participant). In addition, 0% and 100% gait cycles correspond to consecutive heel strikes of the same foot.

To Cambridge based iWALK

- Founded in 2006 by Dr. Hugh Herr of MIT
- Garnered $15 M in third round funding led by Boston based General Catalyst and Sigma
- Delivered its product "the PowerFoot BiOM" , which iWALK calls "the world's first bionic lower leg system" to Walter Reed Army Medical Center

Source : Journal of Experimental Biology 211, 467-481 2008, "MIT spin-out iWalk, bringing to market prosthetic foot, raises $15 million from General Catalyst and Sigma Partners" Boston Globe January 11, 2011

Waltham based On-Q-ity is turning research from MGH into potential oncology diagnostics

From MGH

- Mehmet Toner's lab at MGH developed a microfluidic chip that can capture circulating tumor cells, a potential tissue source for characterizing solid tumors
- The initial research showed that the "CTC-Chip" could isolate cells from early stage patients indicating its usefulness in detection and monitoring

To Waltham based On-Q-ity

- On-Q-ity further developed technology to capture CTCs by size and affinity for specific cellular markers enabling selection for specific types of CTCs
- Together with LabCorp, On-Q-ity is developing CTC-chips that will enable clinical trialists to stratify and monitor oncology patients by genomic inspection of their CTCs
- This research offering will provide proof-of-concept for potential clinical diagnostics

Source : Nagrath S, Sequist LV, Maheswaran S, Bell DW, Irimia D, Ulkus L, Smith MR, Kwak EL, Digumarthy S, Muzikansky A, Ryan P, Balis UJ, Tompkins RG, Haber DA, Toner M. Isolation of rare circulating tumour cells in cancer patients by microchip technology. Nature. 2007 Dec 20;450(7173):1235–9.,"A New Microfluidic Platform Capturing Circulating Tumor Cells from Metastatic Breast Cancer by Both Affinity and Size" Peter J Maimonis, Kurt Dietenhofer, Lucy Yen, Keith Merdek,Yi Dong, and Gary Palmer On-Q-ity, Waltham, MA 02451 ASCO Breast Cancer Symposium 2010; "On-Q-ity Announces Strategic Alliance With LabCorp " January 10, 2011

The future is bright, but not without challenges

Medical devices are a contributor to MA's economy

- Massachusetts's political, educational, and business environment are contributing to a robust Medical Device Industry
- Massachusett's Medical Device Industry employs almost 25,000 people and is responsible for creating more than 80,000 jobs in related industries
- Venture investment in MA medical devices is robust and may be picking up faster than the national trend
- Over the past decade, MA Medical Device exports have been growing at more than twice the rate of MA exports as a whole

Opportunities for the industry to grow

- Address the increasing complexity of the regulatory process
- Understand how Health Care Reform will impact the industry
  - Which investments will meet the shifting health care landscape?
  - How will payment reform impact the industry's business model?
- Determine how to meet the funding challenges for new start-ups as investors demand faster returns
- Embrace globalization and consider the best methods for opening up and competing in overseas markets

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