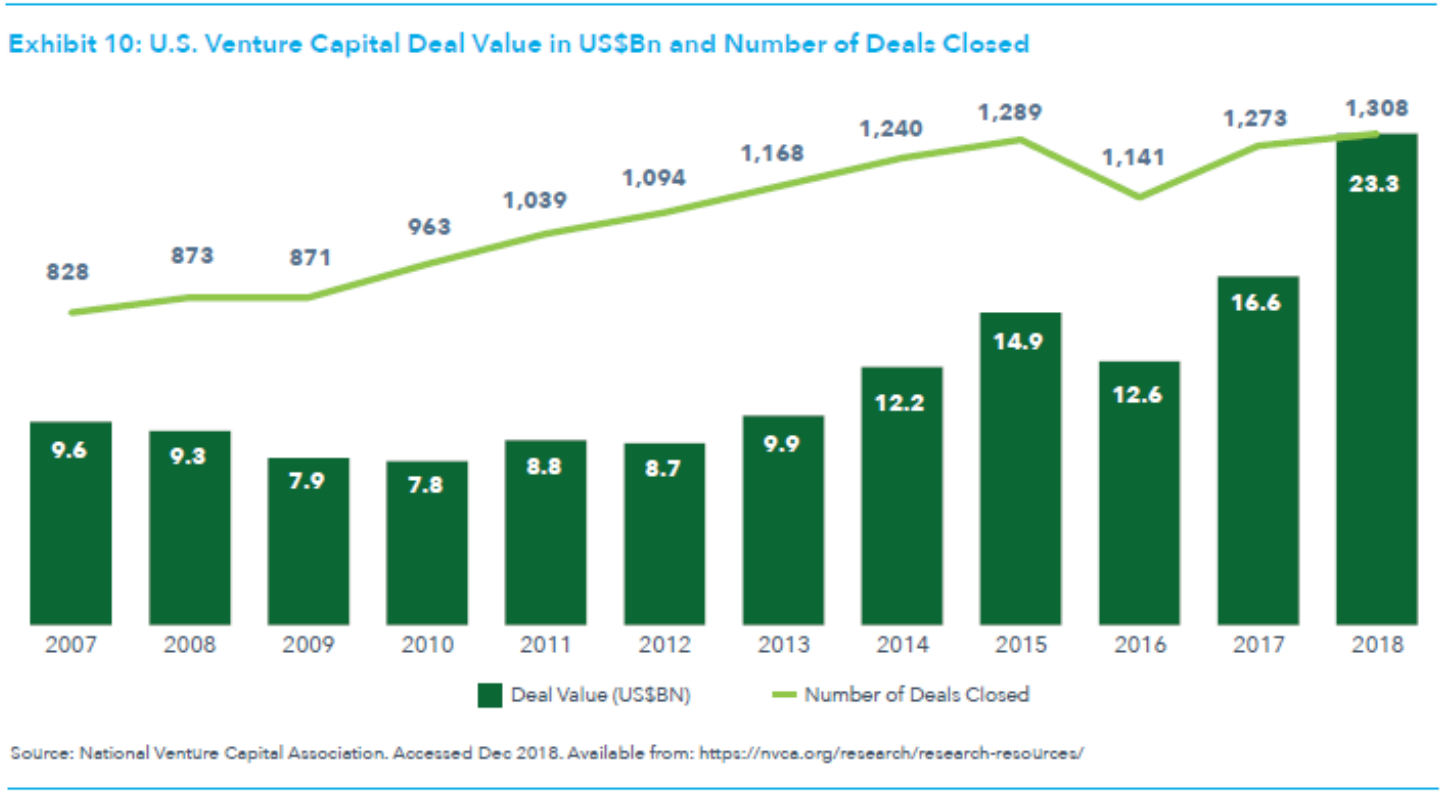
@ATS RIS | RESPIRATORY INNOVATION SUMMIT

The Future of Financing Respiratory Start-Ups

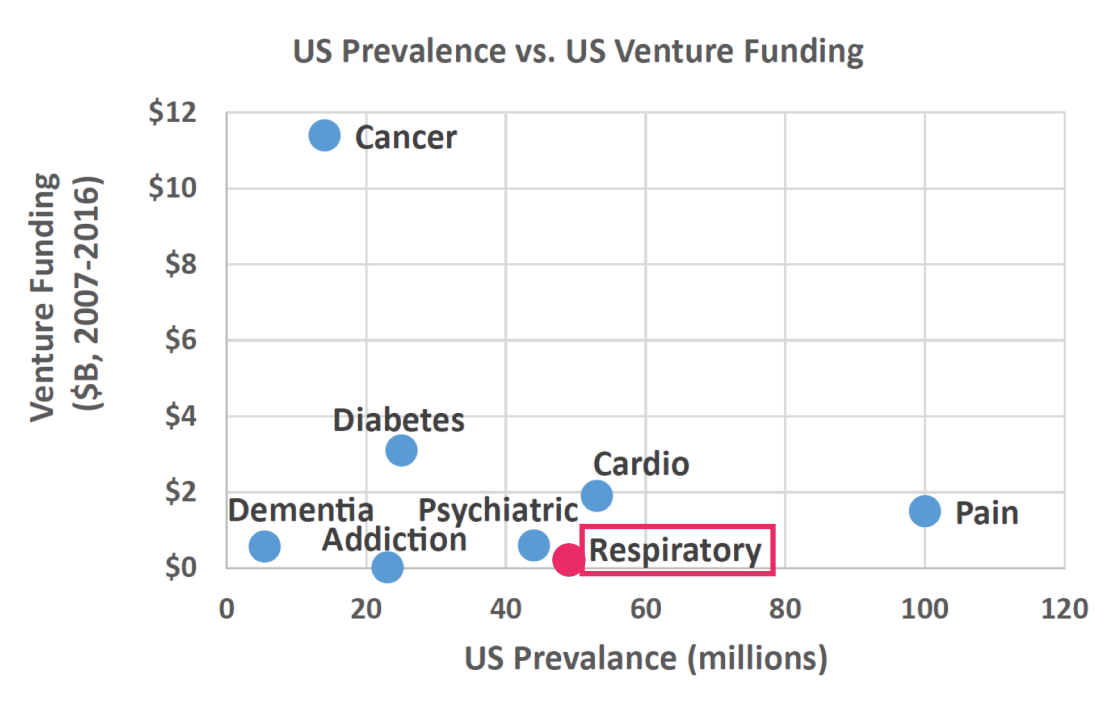
NVCA Data Shows Continued Growth in Venture Capital Investment in the Life Sciences Sector

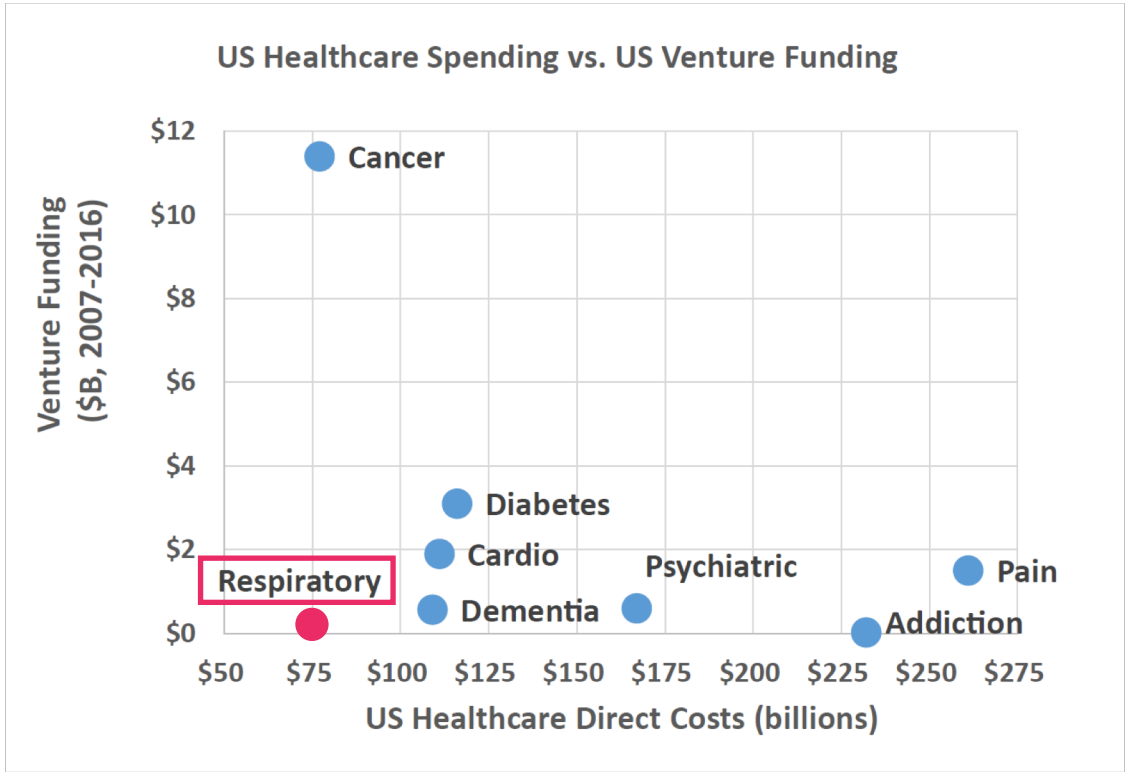


- >$23.3B invested in 2018
- >1,300 deals closed
- 2.5x dollars invested in 2018 versus 10 years ago

Source: IQVIA. "The Changing Landscape of Research and Development: Innovations, Drivers of Change, and Evolution of Clinical Trial Productivity." *IQVIA Institute for Human Data Science. April 2019, pg. 16.*

Respiratory Disease Presents a Significant Burden, Yet Garners Disproportionately Low VC Investment and Healthcare Spending





Source: Thomas, David and Chad Wessel. "Volume II: Pain and Addiction Therapeutics." *BIO Analysis,* Biotechnology Innovation Organization, May 2018, pg. 2.

US Mortality from Chronic Respiratory Diseases Continues to Increase

Mortality rates in the U.S. by category of deaths

CAUSE OF DEATH	EST. DEATHS PER 100K 1980	TREND	2014
Cardiovascular diseases	507.4		252.7
Cancers	240.2		192.0
Neurological diseases	80.3		95.4
Diabetes, blood and endocrine diseases	46.2		55.9
Chronic respiratory diseases	40.8		52.9
Diarrhea and common infectious diseases	38.5		30.0
Self-harm and interpersonal violence	25.2		19.6
Unintentional injuries	23.8		19.1
Cirrhosis and other chronic liver diseases	19.9		16.8
Digestive diseases	19.9		14.2
Transport injuries	25.2		13.8
Mental and substance use disorders	4.6		13.4
Other non-infectious diseases	9.7		5.8
Neonatal disorders	9.2		3.3
Musculoskeletal disorders	2.8		2.9
HIV/AIDS and tuberculosis	1.5		2.7
Other infectious diseases	1.9		1.4
Nutritional deficiencies	1.7		1.2
Maternal disorders	0.3	—	0.3
Forces of nature, war and legal intervention	0.3	—	0.1
Neglected tropical diseases and malaria	0.1	—	0.1

Trends not shown for causes of death with <1 death per 100,000 people

FiveThirtyEight SOURCE: INSTITUTE FOR HEALTH METRICS AND EVALUATION

Est. Deaths Per 100,000 People

Cardiovascular diseases
507.4 in 1980 → 252.7 in 2014

Cancers
240.2 in 1980 → 192.0 2014

Neurological diseases
80.3 in 1980 → 95.4 in 2014

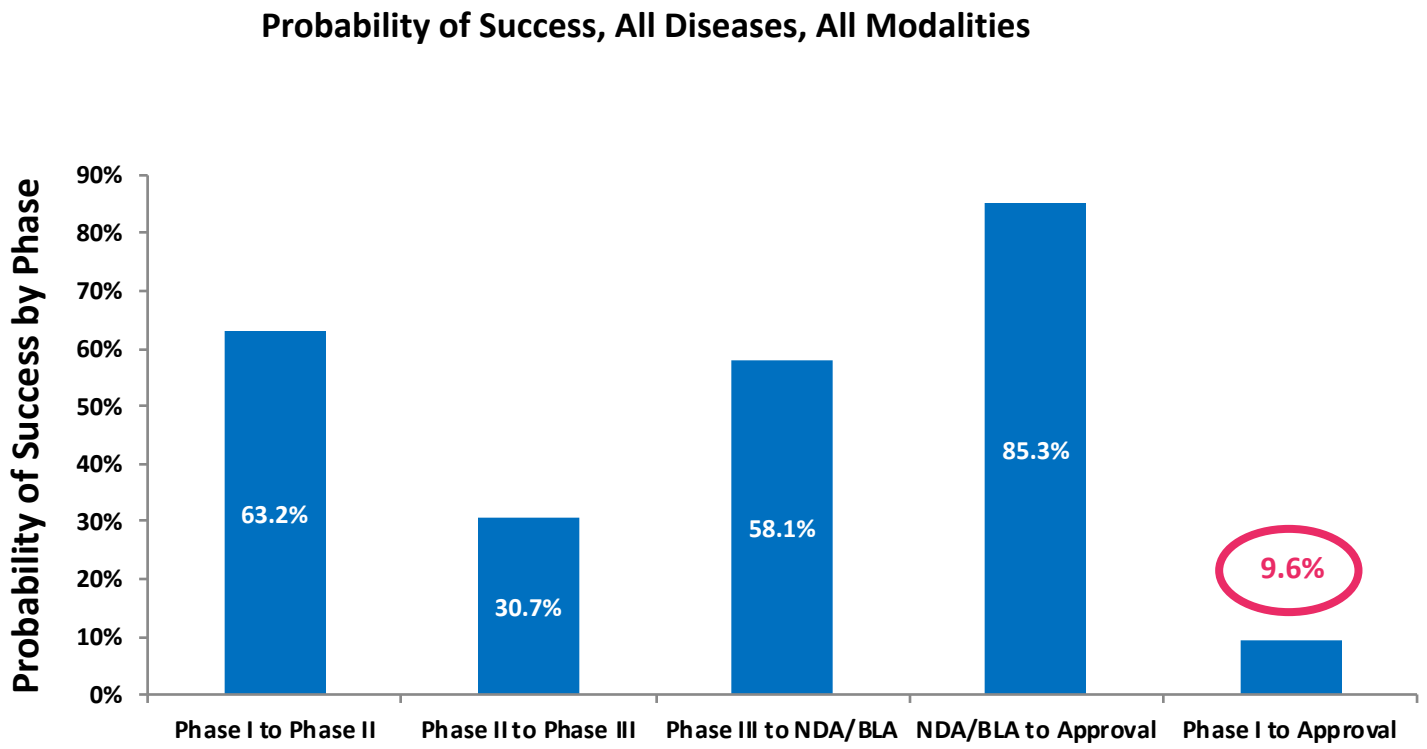
Diabetes, blood & endocrine diseases
46.2 in 1980 → 55.9 in 2014

Chronic respiratory diseases
40.8 in 1980 → 52.9 in 2014

Mental and substance use disorders
4.6 in 1980 → 13.4 in 2014

Source: FiveThirtyEight; Institute for Health Metrics and Evaluation

Drug Development Overall Probability of Success By Stage

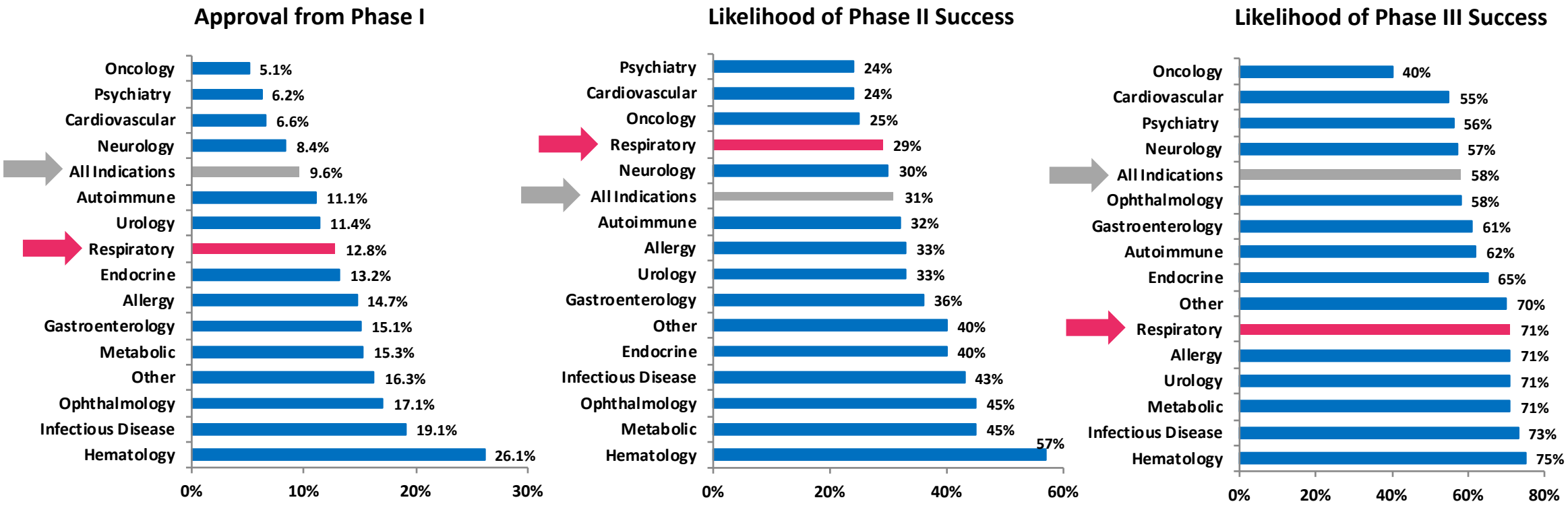


- …But how does *respiratory* drug development POS compare to the averages?

Source: Biotechnology Innovation Organization, Biomedtracker, Amplion. *Clinical Development Success Rates 2006-2015.*
Data based on 9,985 clinical and regulatory phase transitions from 7,455 development programs across 1,103 companies.

NDA = New Drug Application; BLA = Biologics License Application.

Respiratory Likelihood of Clinical Success vs. Other Therapeutic Areas is Relatively In-line…



Source: Biotechnology Innovation Organization, Biomedtracker, Amplion. *Clinical Development Success Rates 2006-2015.*
Data based on 9,985 clinical and regulatory phase transitions from 7,455 development programs across 1,103 companies.

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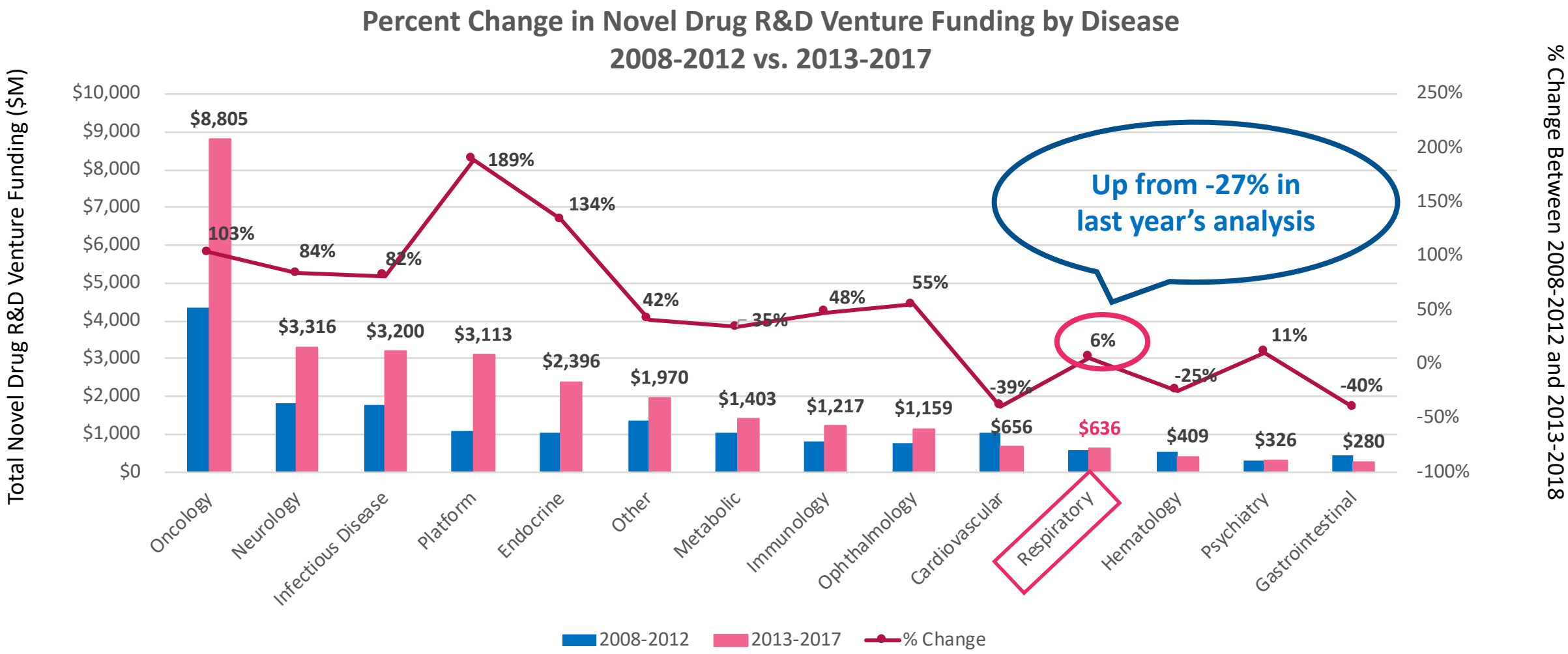
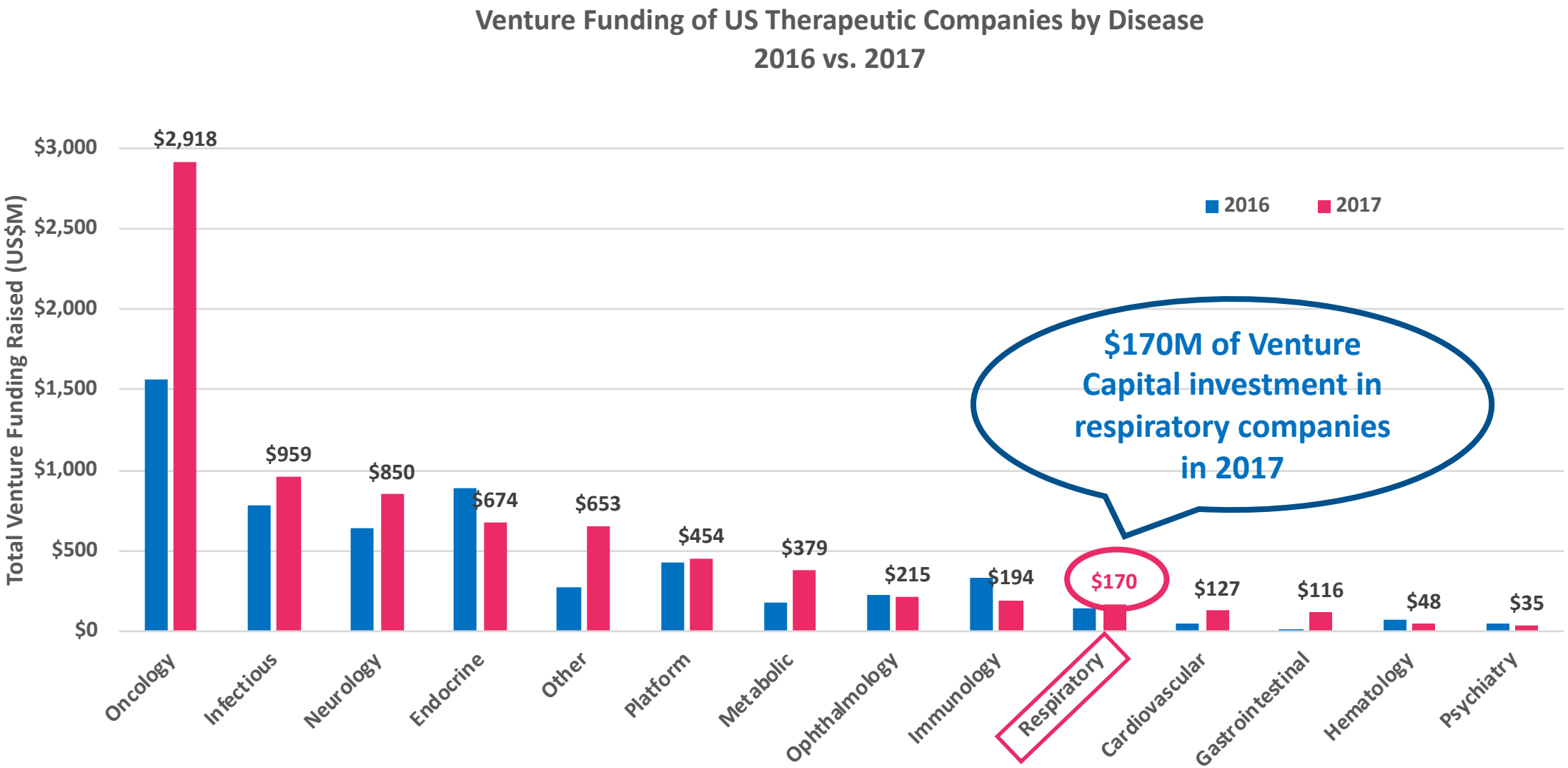
…Yet VC Funding in Novel Respiratory Ventures Continues to Be Low Relative to Other TAs



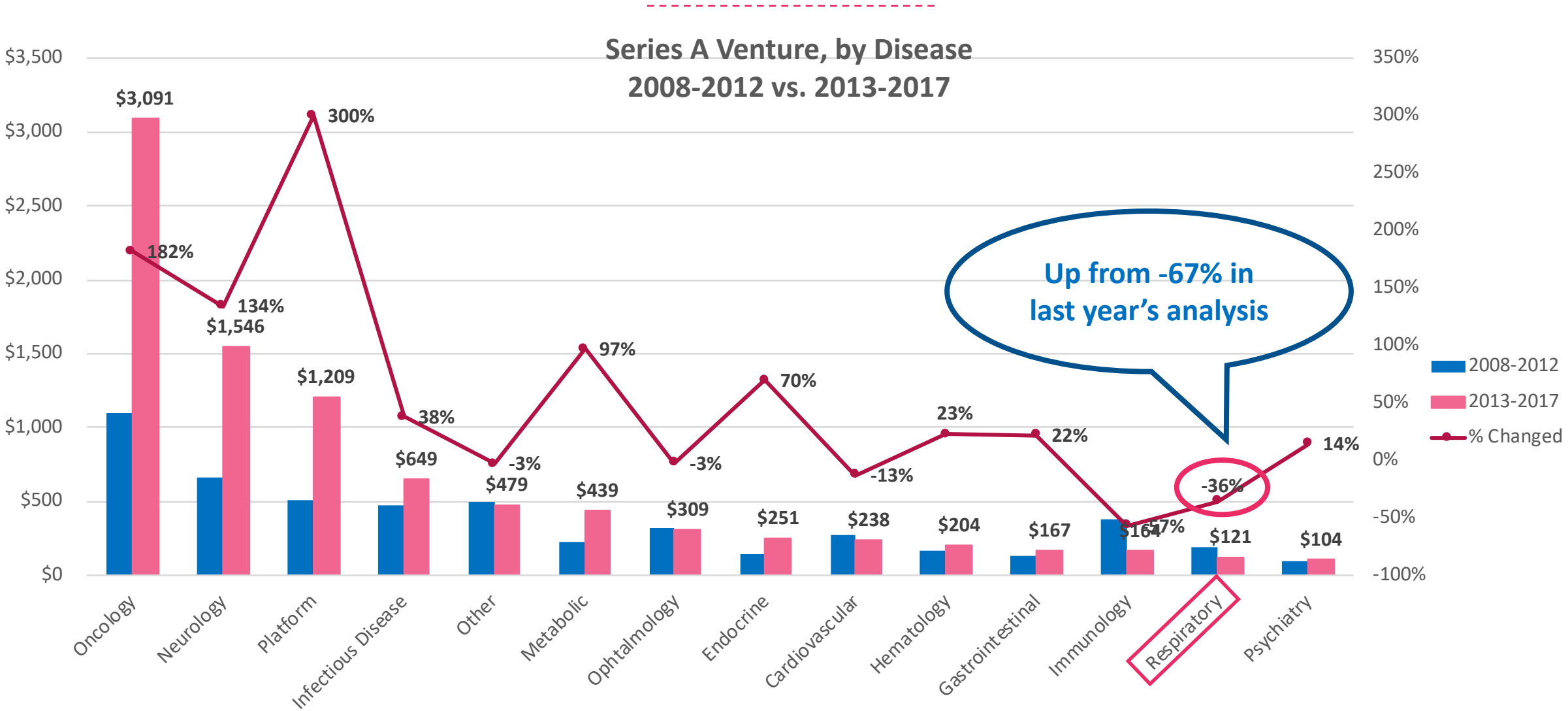
Source: Thomas, David and Chad Wessel. "Emerging Therapeutic Company Investment and Deal Trends." *BIO Industry Analysis,* Biotechnology Innovation Organization, May 2018, pg. 10.

Respiratory VC Investment Continues to be Less Popular vs. Other TAs (e.g. Oncology, etc.)…



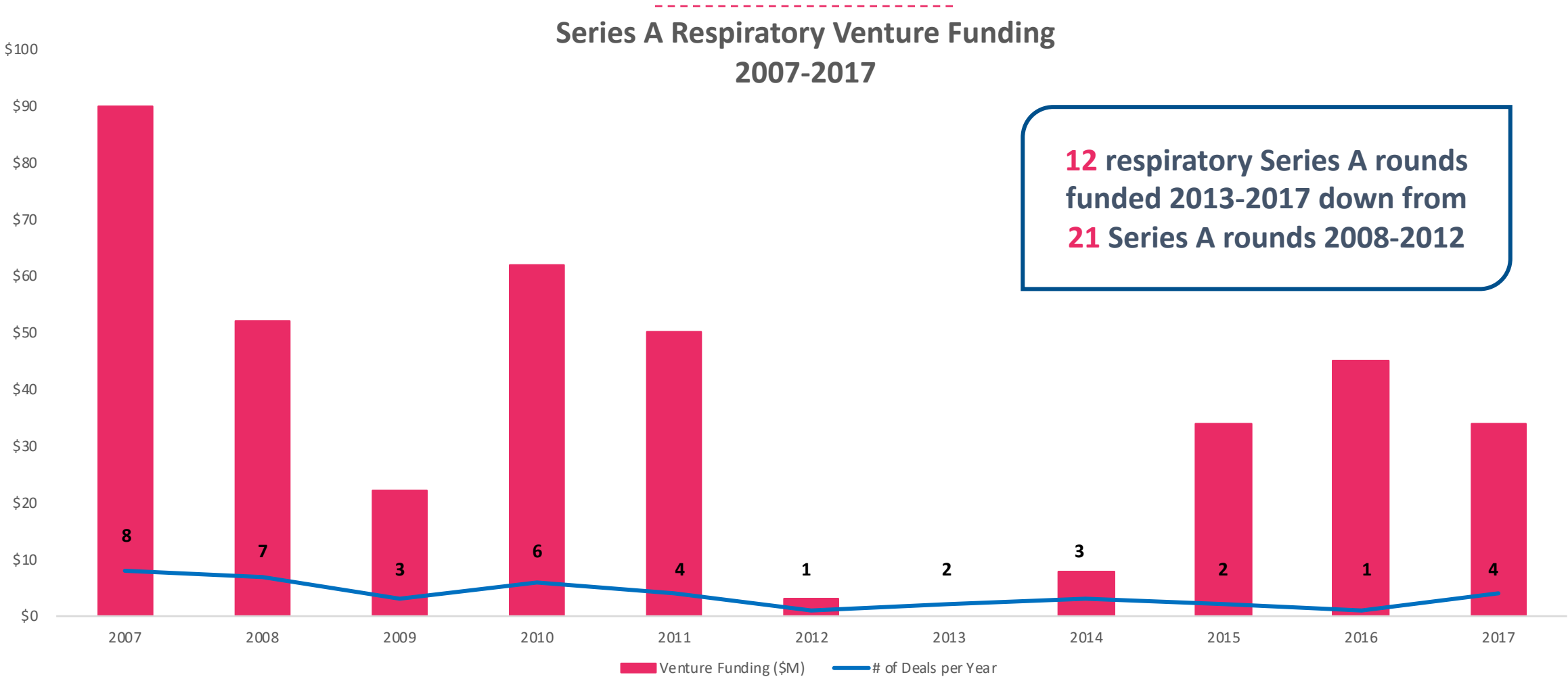
Source: Thomas, David and Chad Wessel. "Emerging Therapeutic Company Investment and Deal Trends." *BIO Industry Analysis,* Biotechnology Innovation Organization, May 2018, pg. 8.

…Including Series A Rounds, Reflecting New Company Formations…



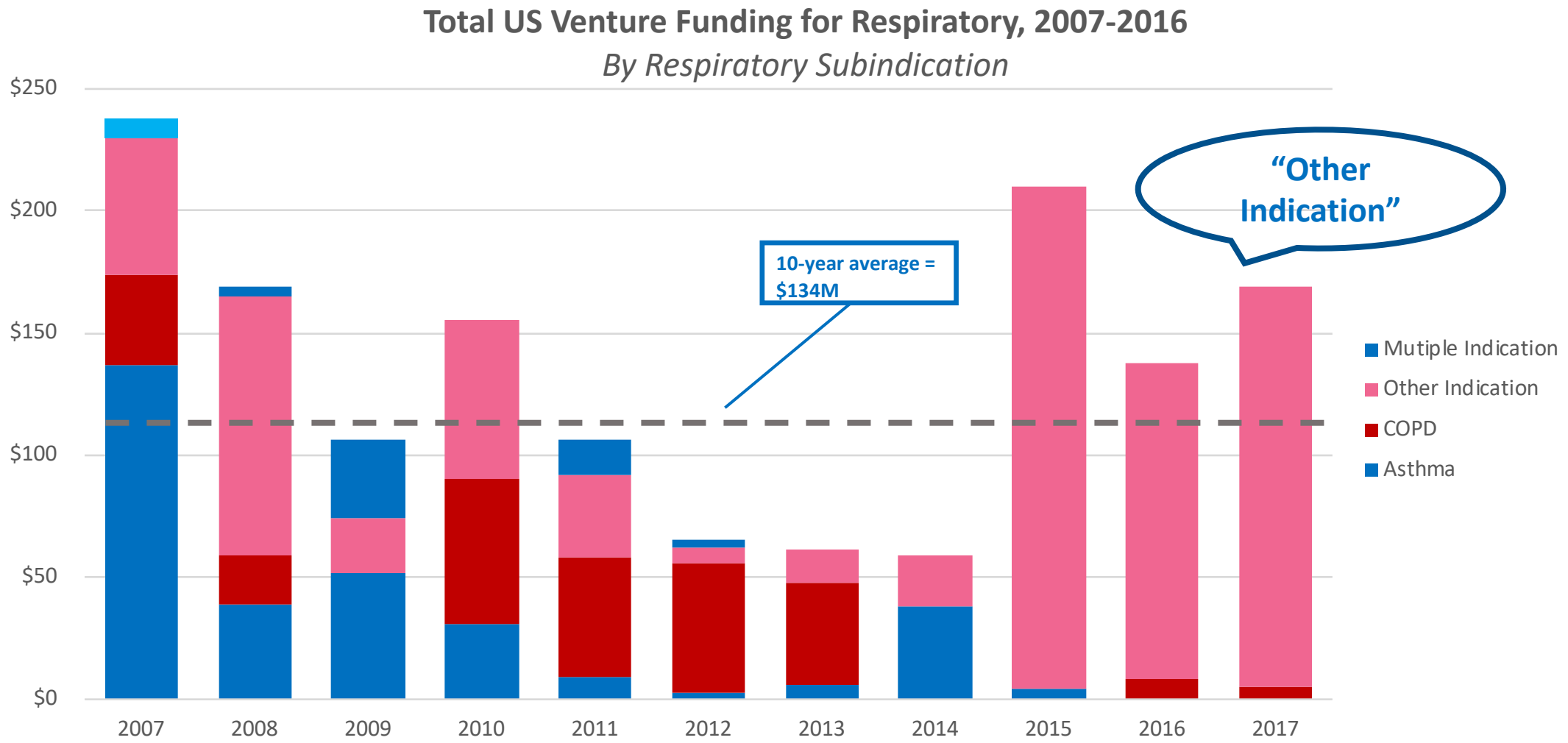
Source: Thomas, David and Chad Wessel. "Emerging Therapeutic Company Investment and Deal Trends." *BIO Industry Analysis,* Biotechnology Innovation Organization, May 2018, pg. 14.

Only Four Series A Rounds in 2017; Single-Digit #'s in Last 10 Years



Source: Thomas, David and Chad Wessel. "Emerging Therapeutic Company Investment and Deal Trends." *BIO Industry Analysis,* Biotechnology Innovation Organization, May 2018, pg. 14.

When They do Invest, Where are VC Investors Deploying Capital Within the Respiratory Space?



Source: Thomas, David and Chad Wessel. "Emerging Therapeutic Company Investment and Deal Trends." *BIO Industry Analysis,* Biotechnology Innovation Organization, May 2018, pg. 34.