



Trends in Private Equity Acquisition of Dermatology Practices in the United States

Citation

Seiger, Kira. 2020. Trends in Private Equity Acquisition of Dermatology Practices in the United States. Doctoral dissertation, Harvard Medical School.

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Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

Date: 1 March 2020

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Scholarly Report Title: Trends in Private Equity Acquisition of Dermatology Practices in the United States

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Publication link: <https://www.ncbi.nlm.nih.gov/pubmed/31339521>

Publication citation: Tan S,* Seiger K,* Renehan P, Mostaghimi A. Trends in Private Equity Acquisition of Dermatology Practices in the United States. *JAMA Dermatol.* 2019;155(9):1013-1021. doi: 10.1001/jamadermatol.2019.1634.

*Denotes co-first author

Abstract

TITLE: Trends in Private Equity Acquisition of Dermatology Practices in the United States

Sally Tan, MD, MPH;* Kira Seiger, BA;* Peter Renehan, MD, MBA; Arash Mostaghimi, MD, MPA, MPH

*Denotes co-first author

Purpose: Private equity (PE) firms invest in dermatology management groups (DMGs), which are physician practice management firms that operate multiple clinics and often acquire smaller, physician-owned practices. The purpose of this study was to describe the historical and geographic scope of dermatology practice acquisitions by private equity (PE) firms. These trends are important to study because consolidation of dermatology practices as a result of PE investment may be associated with changes in practice management in the United States.

Methods: This cross-sectional study examined acquisitions of dermatology practices by PE-backed DMGs in the United States. Acquisition and investment data through May 31, 2018, were compiled using information from 5 financial databases. Transaction data were supplemented with publicly available information from 2 additional financial databases, 2 financial news outlets, and press releases from DMGs. All dermatology practices acquired by PE-backed DMGs were included. Acquisitions were verified to be dermatology practices that provided medical, surgical, and/or cosmetic clinical care. Private equity financing data were included when available. The addresses of clinics associated with acquired practices were mapped using spatial analytics software.

Results: Seventeen PE-backed DMGs acquired 184 practices between May 1, 2012, and May 22, 2018. These acquired practices accounted for an estimated 381 dermatology clinics as of mid-2018 (assessment period from May 1 to August 31). The total number of PE-owned dermatology clinics in the United States was substantially larger because these data did not reflect DMGs that opened new clinics (organic growth); acquisitions data represented only the ownership transfer of existing practices from physician to PE-backed DMG. Practice acquisitions increased each

year, from 5 in 2012 to 59 in 2017. An additional 34 acquisitions took place from January 1 to May 31, 2018. The number of financing rounds to sustain transactions mirrored the aforementioned trends in practice acquisitions. Clinics associated with acquired practices spanned at least 30 states, with 138 of 381 clinics (36%) located in Texas and Florida.

Conclusions: The study findings suggest that PE firms have a financial stake in an increasing number of dermatology practices throughout the United States. Further research is needed to assess whether and how PE-backed ownership influences clinical decision-making, health care expenditures, and patient outcomes.

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Glossary of Abbreviations

PE – Private equity

Private equity firms use capital from limited partners to invest in private businesses. Private equity firms aim to improve their portfolio companies (in this case dermatology management groups) in order to generate financial returns upon exiting their investments.

DMG – Dermatology management group

Dermatology management groups are physician practice management organizations that operate and consolidate dermatology clinics in order to capture value from potential synergies (e.g., centralizing back-office functions, such as billing, scheduling, marketing, information technology, and inventory management).

LP – Limited partner

Limited partners are entities (such as pension funds, endowments, and sovereign wealth funds) that provide capital for investment to private equity firms. Limited partners seek investment returns for their beneficiaries (e.g., pensioners and universities).

Scholarly Project Description

Private equity firms are financially invested in a growing number of medical practices across the United States, and this trend of consolidation is particularly prominent among dermatology clinics.¹ Ideally, investor-owned clinics with streamlined operations would be able to expand their services, serve more patients, and reduce administrative burden for physicians.²⁻⁴ However, it is not widely known how private equity firms' fiduciary responsibilities to generate returns might affect the price of services, overall healthcare spending, procedure utilization, staffing by midlevel clinicians, insurance acceptance, physician autonomy and behavior, and clinic optionality for patients.^{1,5-7} Crucially, physicians have historically lacked robust data on these trends that may help inform their personal employment decisions, as well as whether and to whom they should sell their practices.

This scholarly project details the historical and geographic scope of private equity acquisition of dermatology clinics in the United States by charting trends in the transition of ownership from physician-owned clinics to private equity-owned clinics. The results demonstrated that dermatology clinic acquisitions increased every year from 2012 to mid-2018, with nearly 12 times as many acquisitions taking place in 2017 than in 2012.⁸ Clinics owned by private equity firms spanned at least 30 states by mid-2018, and many clinics were acquired in a regional strategy.⁸ Importantly, this research lays a foundation for studying the effect of investors on the delivery of patient care in the United States. Additionally, this work demonstrates that financial databases can be useful resources in conducting research that is relevant to a broad physician readership.

This research is tremendously meaningful for me not only because of its potential impact, but also because I played a key role in all stages of the project from inception to publication, including: designing the methodology; obtaining access to financial databases; collecting the data; analyzing and interpreting the results; creating tables, figures, and online supplemental materials; and preparing the manuscript for publication (writing, revising, and proof editing). I am co-first author of the manuscript which was published in July 2019 as an Original Investigation in *JAMA Dermatology*, and I presented this work in an oral presentation in

Washington, DC at the American Academy of Dermatology 2019 Annual Meeting. I also presented this work at the Harvard Medical School Soma Weiss Student Research Day 2019 and was awarded Honorable Mention (2nd place) for the Leon Eisenberg Prize for Medicine in Society Research.

Co-authors of the manuscript include Sally Tan, MD, MPH; Peter Renehan, MD, MBA; and Arash Mostaghimi, MD, MPA, MPH. Author contributions are listed in the manuscript as follows: “Dr. Tan and Ms. Seiger were the primary co-authors. Ms. Seiger and Dr. Mostaghimi had full access to all of the data in the study and take responsibility for the integrity of the data analysis. Concept and design: All authors. Acquisition, analysis, or interpretation of data: Tan, Seiger. Drafting of the manuscript: Tan, Seiger, Renehan. Critical revision of the manuscript for important intellectual content: Tan, Seiger, Mostaghimi. Statistical analysis: Tan, Seiger. Obtained funding: Mostaghimi. Administrative, technical, or material support: Tan, Seiger, Mostaghimi. Supervision: Mostaghimi. Additional contributions: Jeff Blossom, MA, of the Center for Geographic Analysis at Harvard University, received compensation from the Department of Dermatology at Brigham and Women’s Hospital for the preparation of Figures 3 and 4.”⁸

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Trends in Private Equity Acquisition of Dermatology Practices in the United States

Sally Tan, MD, MPH; Kira Seiger, BA; Peter Renehan, MD, MBA; Arash Mostaghimi, MD, MPA, MPH

IMPORTANCE Private equity (PE) firms invest in dermatology management groups (DMGs), which are physician practice management firms that operate multiple clinics and often acquire smaller, physician-owned practices. Consolidation of dermatology practices as a result of PE investment may be associated with changes in practice management in the United States.

OBJECTIVE To describe the scope of PE-backed dermatology practice acquisitions geographically over time.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional study examined acquisitions of dermatology practices by PE-backed DMGs in the United States. Acquisition and investment data through May 31, 2018, were compiled using information from 5 financial databases. Transaction data were supplemented with publicly available information from 2 additional financial databases, 2 financial news outlets, and press releases from DMGs. All dermatology practices acquired by PE-backed DMGs were included. Acquisitions were verified to be dermatology practices that provided medical, surgical, and/or cosmetic clinical care. Private equity financing data were included when available. The addresses of clinics associated with acquired practices were mapped using spatial analytics software.

MAIN OUTCOMES AND MEASURES The number and location of PE practice acquisitions over time were measured based on the date of deal closure, the geographic footprint of each DMG's acquisition, and the financing of each DMG.

RESULTS Seventeen PE-backed DMGs acquired 184 practices between May 1, 2012, and May 22, 2018. These acquired practices accounted for an estimated 381 dermatology clinics as of mid-2018 (assessment period from May 1 to August 31). The total number of PE-owned dermatology clinics in the United States was substantially larger because these data did not reflect DMGs that opened new clinics (organic growth); acquisitions data represented only the ownership transfer of existing practices from physician to PE-backed DMG. Practice acquisitions increased each year, from 5 in 2012 to 59 in 2017. An additional 34 acquisitions took place from January 1 to May 31, 2018. The number of financing rounds to sustain transactions mirrored the aforementioned trends in practice acquisitions. Clinics associated with acquired practices spanned at least 30 states, with 138 of 381 clinics (36%) located in Texas and Florida.

CONCLUSION AND RELEVANCE The study findings suggest that PE firms have a financial stake in an increasing number of dermatology practices throughout the United States. Further research is needed to assess whether and how PE-backed ownership influences clinical decision-making, health care expenditures, and patient outcomes.

JAMA Dermatol. doi:10.1001/jamadermatol.2019.1634
Published online July 24, 2019.

- [+ Editorial](#)
- [+ Author Audio Interview](#)
- [+ Supplemental content](#)

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Dermatology practices have caught the attention of private equity (PE) investors, who have sought to consolidate practices and produce economic value through operational efficiencies, revenue enhancement, increased market share, and economies of scale.¹

Although PE firms vary in their investment strategies, the typical investment process within dermatology practice management is described herein (Figure 1). Limited partners, such as endowments, pension funds, and high-net worth individuals, provide capital to a PE firm and seek future returns on their investment.^{2,3} The PE firm then makes a platform investment into a dermatology management group (DMG), which is a physician practice management company with integrated back-office functions that operates several dermatology clinics and often seeks to acquire and open new clinics.^{2,4-6} The DMG may subsequently receive financing, in the form of equity investments and debt, to fund the acquisition of dermatology practices (add-on acquisitions) or to grow organically by opening new clinics and hiring health care professionals to staff them (de novo growth).^{1,2,4,5} Additional strategies may be used to increase the valuation of the DMG by increasing revenue or decreasing costs.⁴ A robust bull market, which has been the case over the past decade, also contributes to rising practice valuations.^{3,7,8} After a holding period of 3 to 7 years, many PE firms seek to exit their investments, often through a secondary sale of the DMG to another PE firm.¹ The roll-up model, which is characterized by platform investments into physician practice management companies, with subsequent add-on acquisitions and de novo growth, has also been reported in medical specialties beyond dermatology.^{6,9}

Other researchers, including Konda et al,¹⁰ have sought to describe PE investment in dermatology practices. The purpose of our study was to use a systematic and reproducible method to describe the recent trends and geographic reach of PE-backed acquisitions of dermatology practices through May 31, 2018, and to identify the major stakeholders completing these deals.

Methods

Building a Data Set of PE-Backed Transactions

Private equity-backed transactions in dermatology were identified using a methodical search of 5 financial databases—Capital IQ, CB Insights, Zephyr, Thomson ONE, and PitchBook—that compile data on business transactions in public and private markets.¹¹⁻¹⁵ The first 4 databases were searched for dermatology practice acquisitions in the United States through May 31, 2018. The fifth financial database, PitchBook, was used to identify and quantify PE-backed financing rounds into DMGs. Additional transactions through May 31, 2018, were identified by searching press releases from the websites of DMGs and publicly available data on Bloomberg, Crunchbase, PR Newswire, and Business Wire.¹⁶⁻¹⁹ Detailed search criteria are described in eTable 1 in the Supplement. This study was approved by the institutional review board of Partners HealthCare, Boston, Massachusetts, with a waiver of consent because all data were publicly available.

Key Points

Question What are the recent trends in private equity dermatology practice acquisitions throughout the United States?

Findings This cross-sectional study of 5 financial databases found that private equity-backed dermatology management groups acquired 184 dermatology practices from 2012 to 2018, with the number of acquisitions increasing over time and broadening in geographic reach. These acquired practices comprised an estimated 381 dermatology clinics as of mid-2018, and the number of financing deals in which dermatology management groups raised capital increased over time.

Meaning In recent years, private equity firms have increased their financial stakes in dermatology practices throughout the United States.

Identifying Acquisitions of Dermatology Practices by PE-Backed DMGs

Private equity firms typically invest in large DMGs that subsequently expand in 2 ways: (1) through the acquisition of smaller practices and (2) through organic or de novo growth, defined as the opening of additional dermatology clinics.^{1,2,4,5} The search conducted for this study focused on the former strategy and aimed to quantify DMG expansion through practice acquisition. In addition, the search included only DMGs that had received at least 1 PE investment.

All firms that acquired dermatology practices were confirmed to be DMGs with PE financing. The names of all acquired entities were verified using Google searches to confirm that they were clinical practices offering services in medical, cosmetic, and/or surgical dermatology. The date of ownership turnover was assigned based on the date of deal closure. Transactions were excluded if the acquired entity was a hospital or clinic with multiple medical specialties, a pharmaceutical company, or a biotechnology firm. Acquisitions of dermatopathology facilities were also excluded, as were duplicate deals across databases, canceled deals, declarations of bankruptcy, and deals with no clear PE financing.

For DMGs with affiliated practices listed on their websites that were not captured in the database search but likely represented acquisitions, the practice acquisitions were included only if the year of acquisition could be identified through press releases.

Estimating Clinic Locations Associated With Acquired Practices

Because multiple clinic locations may have been acquired through the acquisition of a single practice, the specific dermatology clinic addresses associated with each acquired practice were identified. The number of clinics associated with each practice acquisition was not consistently reported; therefore, clinics associated with those practices as of mid-2018 (henceforth indicating the assessment period from May 1 to August 31) were identified through internet searches (eg, searches for clinic locations listed on the websites of acquired practices).

Of note, DMGs had more clinic locations listed on their websites as of mid-2018 than the number of clinics associated with the practice acquisitions identified by this search.

Figure 1. Flow of Private Equity (PE) Investment Into Dermatology Practices

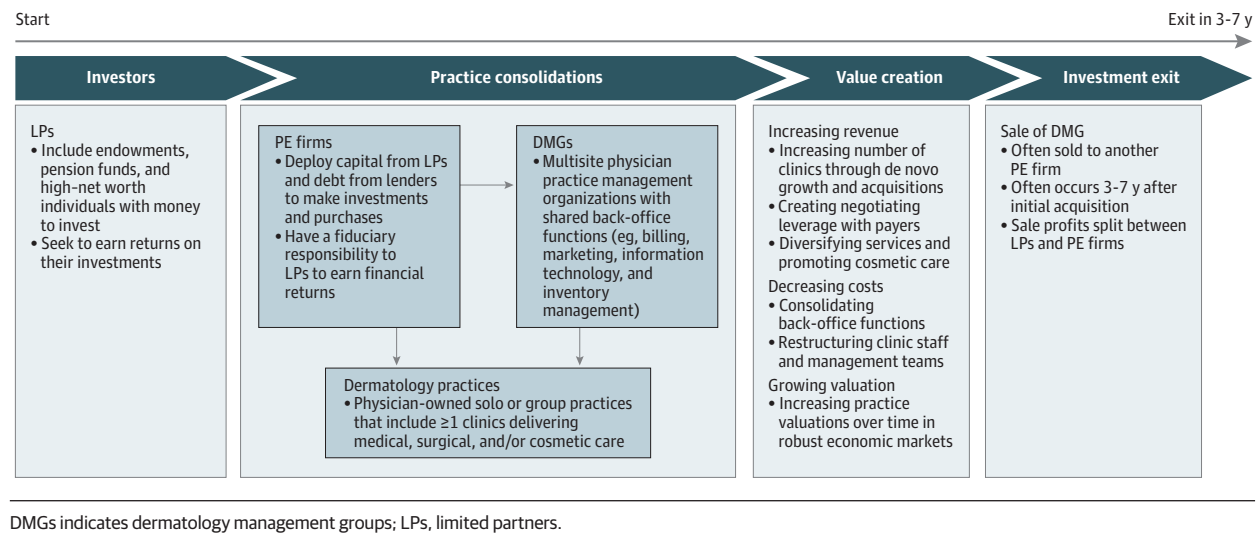
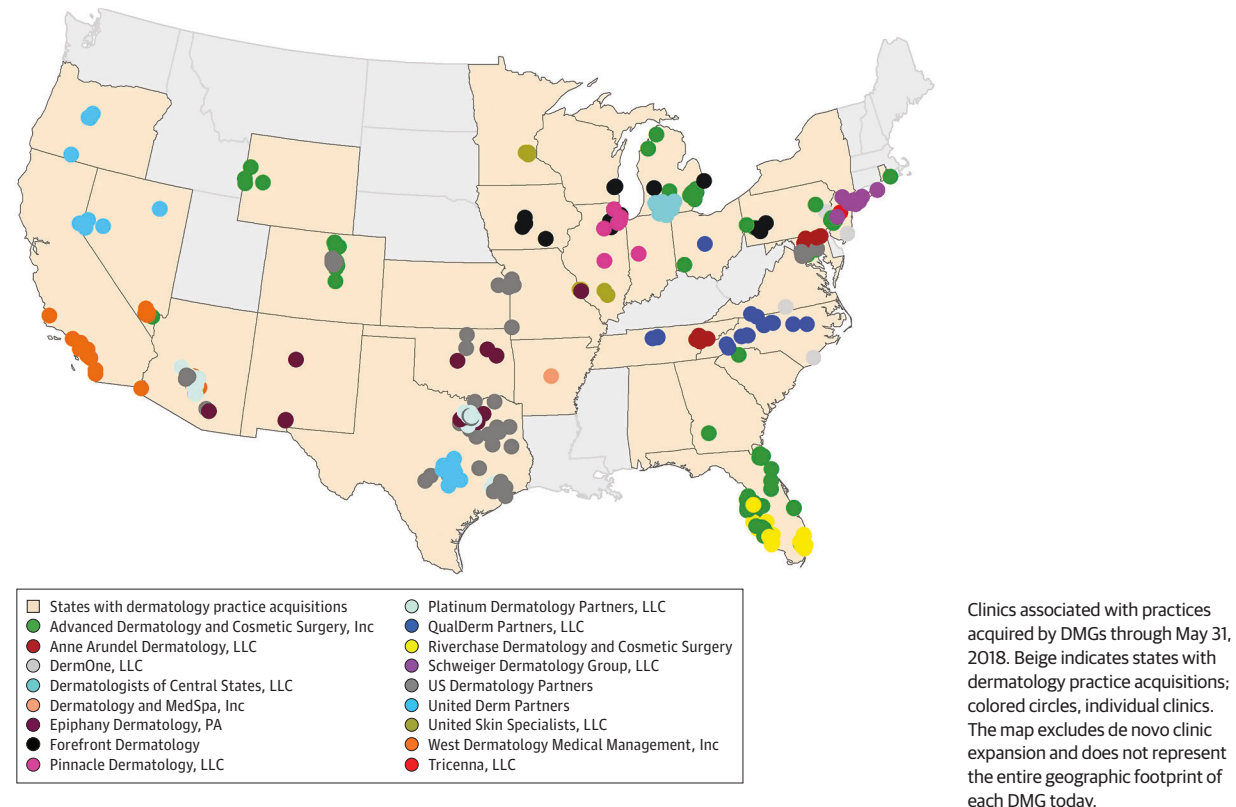


Figure 2. Regional Footprint of Dermatology Practice Acquisitions by Dermatology Management Groups (DMGs)



If the additional clinics were not associated with a known acquisition, they were not included in the results because they likely reflected organic growth.

Mapping Geographic Footprint of Acquisition Activity

Spatial analytics software (ArcGIS; Esri) was used to create nationwide maps illustrating annual trends in dermatology

practice acquisitions and the regional geographic footprint of acquisitions made by PE-backed DMGs (Figure 2 and Figure 3).²⁰

Identifying DMG Financing for Acquisitions

Private equity investments into DMGs were identified using Capital IQ, CB Insights, Zephyr, and Thomson ONE databases. All DMGs with documented PE financing were then searched

Figure 3. Geographic Distribution of Dermatology Practice Acquisitions Over Time

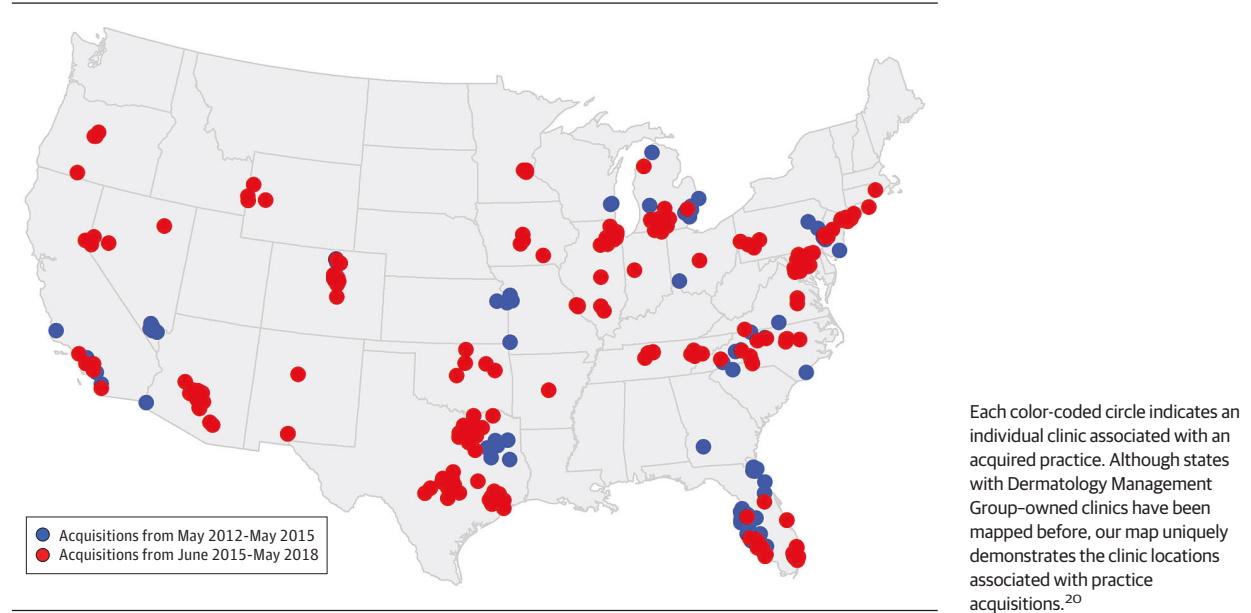
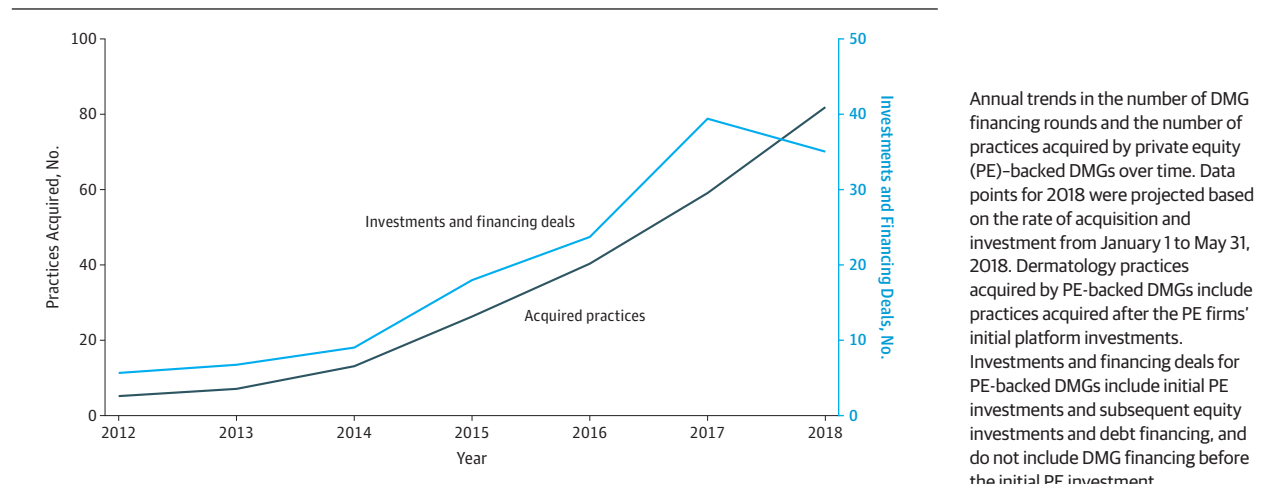


Figure 4. Dermatology Practice Acquisitions and Dermatology Management Group (DMG) Financing Over Time



using PitchBook to identify the first PE investment and all subsequent financing rounds, which included equity investments and debt financing. Results were triangulated among the databases, and transactions that appeared to be duplicates were excluded.

Results

Historical Trends in Acquisition of Dermatology Practices by PE-Backed DMGs

Our search found that PE-backed DMGs acquired 184 physician-owned dermatology practices between May 2012 and May 2018. These acquired practices accounted for an estimated 381 dermatology clinics as of mid-2018 and represented first-time transition of ownership from physician to PE-backed DMG. No dermatology practices in the data set were acquired by PE-backed DMGs before May 2012.

The number of practices acquired by PE-backed DMGs increased each year, with 5 acquisitions in 2012, 7 in 2013, 13 in 2014, 26 in 2015, 40 in 2016, and 59 in 2017. Thirty-four practices were acquired from January 1 to May 31, 2018 (Figure 4). Forty-one practice acquisitions occurred from May 1, 2012, to May 31, 2015, and 143 occurred from June 1, 2015, to May 31, 2018. The 41 practices acquired in the first 3 years were associated with an estimated 98 clinics as of mid-2018, and the 143 practices acquired in the subsequent 3 years were associated with an estimated 283 clinics as of mid-2018.

Seventeen PE-backed DMGs participated in acquisitions of dermatology practices. These DMGs collectively listed ownership on their websites of an estimated 743 dermatology clinics by mid-2018, with each DMG owning between an estimated 9 and 193 dermatology clinics (median, 36 clinics) as of mid-2018. This tally of DMG-owned clinics was higher than the 381 clinics attributed to practice acquisitions identified through the search strategy because it included organic growth (new

clinics opened by DMGs), dermatopathology practices, and other nonpublicly reported acquisitions.

Historical Trends in PE Financing of DMGs

The search identified 23 DMGs that received PE investments. The earliest PE investment into a DMG was Charterhouse Equity Partners' 1998 acquisition of Dermatology Partners, Inc (also known as MyskinMD), which subsequently filed for bankruptcy. The next PE investment was Vicente Capital Partners' 2009 acquisition of US Dermatology Medical Management (also known as VCP Medical Management, Inc). All remaining transactions occurred between February 6, 2012, and May 24, 2018.

Seventeen PE-backed DMGs subsequently acquired dermatology practices. These DMGs raised capital 96 times between February 6, 2012, and May 24, 2018, including initial PE platform investments and subsequent equity investments and debt financing. The number of new financing deals each year increased, from 3 in 2012 to 32 in 2017, and 11 took place from January 1 to May 31, 2018. The number of new financing deals doubled, from 8 in 2014 to 17 in 2015, which corresponded to a doubling of practice acquisitions, from 13 to 26, during the same period.

Our search found that 6 DMGs in the data set received PE investments but did not subsequently acquire any dermatology practices. These DMGs received 16 financing rounds (1 in 1998, 2 in 2009, 4 in 2011, and 9 from 2012-2018).

Regional Distribution of DMGs

Some DMGs acquired practices in several regions of the United States (Table and Figure 2). However, many had a regional focus. For example, Schweiger Dermatology Group, LLC focused on acquiring New York practices, while Riverchase Dermatology and Cosmetic Surgery acquired a number of practices in Florida (Figure 2).

Geographic Expansion of Acquisition Activity Over Time

As the number of practice acquisitions increased, the geographic footprint of PE-funded consolidation expanded. Private equity-backed acquisitions of dermatology clinics occurred in 30 states, with Florida and Texas accounting for 36% of the clinics associated with acquired practices (Figure 3 and eTable 2 in the Supplement). Many early acquisitions occurred in Florida, and acquisition activity in Texas increased between 2016 and 2018 (Figure 2 and eTable 2 in the Supplement). Recent acquisitions also occurred in less populous states, such as Arkansas, Iowa, Minnesota, Oklahoma, Oregon, and Wyoming. Clinics associated with practices acquired in the 3 years after May 2015 were located in 26 states compared with 18 states for practices acquired in the previous 3 years (Figure 2).

Discussion

The data analysis identified 184 dermatology practices that were acquired by 17 PE-backed DMGs from May 2012 to May 2018. These practices comprised an estimated 381 clinics as of mid-2018. Consolidation increased each year beginning in 2012,

with 11.8 times as many practices acquired in 2017 (59) than in 2012 (5). A 349% increase was noted in the number of practices acquired from the 3 years before June 1, 2015 (41), to the 3 years after June 1, 2015 (143) (Figure 2). The number of practices acquired increased a mean of 65% each year between 2012 and 2017 (range, 40%-100%), corresponding with a compound annual growth rate of 50.9%.

The results suggest that PE-backed dermatology practice consolidation is increasing, which is consistent with data reporting that fewer dermatologists are working in solo practices than they were a decade ago.²¹⁻²³ This study used a method that was reproducible and, to our knowledge, novel, and its results supported similar findings by Konda et al.¹⁰

Financing of DMGs has increased over time, suggesting that practice acquisitions by DMGs may continue in the future. However, this trend may be tempered by changes in market conditions (eg, stock market volatility, rising interest rates, or recession), the uncertainty of future changes to physician reimbursement, and rising valuation multiples for DMGs. As valuation multiples for DMGs increase, PE firms must spend more to acquire them, with lower potential returns on investment.

The geographic footprint of PE acquisitions continues to expand. While some DMGs have acquired practices in multiple regions of the United States, many have strong regional footprints, with increasing local market share. Texas and Florida together account for more than one-third of clinics associated with the practices acquired to date, although consolidations have broadened to include clinics in at least 30 states. This geographic expansion may be a response to a number of factors, such as the growing demand for dermatology services, the opportunity for increased market share, regional variation in the cost of acquiring add-on practices, and the emergence of more DMGs.

It is important to consider this wave of dermatology practice consolidations in the broader context of the health care landscape. Physician practice consolidation began in the 1990s, when managed care and increased administrative burdens led to mergers of practices primarily owned by primary care physicians in an effort to improve efficiency and gain bargaining leverage.²⁴ More recently, PE-funded consolidation has diversified into other sectors of health care delivery, from store-front retail medicine (eg, CVS MinuteClinic) to hospices and behavioral health practices.²³ From 2012 to 2017, a 34% compound annual increase was reported in buyouts of North American retail health companies, including those providing dermatology, dentistry, ophthalmology, physical therapy, veterinary, fertility, and urgent care services.²

Practice consolidation offers theoretical economies of scale through the shared use of back-office functions, such as marketing, billing, scheduling, inventory management, and information technology. Large group practices may also negotiate more favorable reimbursement contracts with payers; alternatively, practices may offer below-market rates in exchange for relative exclusivity of a managed care patient population.^{22,25,26} Private equity firms can provide capital for real estate, specialized equipment (eg, laser therapy and phototherapy), and electronic health record systems. Ideally, these changes allow practices to improve

Table. DMGs With PE Investments^a

DMG	DMG Notes	Equity Investors ^b	Disclosed Funding Since First PE Investment or Buyout, \$, Millions ^c	Total Clinics, No. ^d	Practices Acquired, No. (No. of Clinics) ^e	Acquisition Activity, y	States With Clinics ^d
Adult & Pediatric Dermatology, PC	Also known as APDerm	Waud Capital Partners, LLC	39.4	11 ^g	0	NA	MA, NH
Advanced Dermatology & Cosmetic Surgery, Inc	Also known as ADCS or ADCS Clinics	Audax Group ^f ; First Capital Partners, LLC ^f ; Harvest Partners, LP	463.7	193	47 (92)	2012-2017	AZ, CO, FL, GA, MD, MI, NV, OH, PA, RI, SC, TX, VA, WY
Anne Arundel Dermatology, LLC	Also known as AAD or ADM	New MainStream Capital; New Mountain Capital, LLC; Pantheon Ventures, Inc	94.2	43	12 (20)	2015-2018	MD, TN, VA
Dermatologists of Central States, LLC	Also known as DOCS	Sheridan Capital Partners	160.9	41 ^g	1 (6)	2017	IN, MS, OH
Dermatology and MedSpa, Inc	Formerly The Dermatology Center	Pharos Capital Group, LLC	Undisclosed	21 ^g	1 (18)	2016	AR, NC, TN, TX, VA
Dermatology Partners, Inc	Also known as MySkin MD; filed for bankruptcy on an undisclosed date	Charterhouse Equity Partners	Undisclosed	Unknown	0	NA	FL
Dermatology Solutions Group, LLC	Formerly Gulf Coast Dermatology; clinical practice known as Dermatology Specialists; PE investor sold its stake on an undisclosed date	Cressey & Company, LP ^f	Undisclosed	23 ^g	0	NA	AL, FL, GA, MS
DermOne, LLC	Formerly Accredited Dermatology; 9 clinics were acquired by Schweiger Dermatology Group, LLC, and 1 clinic was acquired by Forefront Dermatology in March 2018	Westwind Investors, LP	Undisclosed	9 ^g	4 (4)	2012-2013	NJ, NC, VA
Epiphany Dermatology, PA	NA	CI Capital Partners, LLC	Undisclosed	36	9 (19)	2017-2018	AZ, IA, MO, NM, OK, TX
Forefront Dermatology	Formerly Dermatology Associates of Wisconsin, SC	Goldman Sachs Merchant Banking Division ^f ; OMERS Private Equity, Inc; Penfund; Varsity Healthcare Partners ^f ; undisclosed investors	570.0	121	9 (17)	2012-2017	AL, DC, FL, IL, IN, IA, KY, MD, MI, MN, MO, OH, PA, VA, WI
Pinnacle Dermatology, LLC	NA	Chicago Pacific Founders, Inc	Undisclosed	22	4 (7)	2017-2018	IL, IN, MI
Platinum Dermatology Partners, LLC	NA	Sterling Partners	77.0	31	11 (30)	2016-2018	AZ, TX
QualDerm Partners, LLC	Also known as QDP	Apple Tree Partners ^f ; Cressey & Company, LP; Granite Growth Health Partners, LP	31.8	18	11 (17)	2014-2018	NC, OH, SC, TN, VA
Riverchase Dermatology and Cosmetic Surgery	Also known as Riverchase MSO, LLC; formerly Naples Center for Dermatology and Cosmetic Surgery	GMB Mezzanine Capital, LP; GTCR, LLC; Prairie Capital, LP ^f	Undisclosed	37	11 (22)	2013-2018	FL
Schweiger Dermatology Group, LLC	Formerly Clear Clinic and Schweiger Dermatology Management Company	LLR Partners, Inc; LNK Partners; SV Health Investors, LLC; Zenyth Partners, LP; undisclosed investors	175.4 ^h	40	7 (9)	2016-2017	NJ, NY
Skin and Beauty Center, Inc.	Also known as SBC	Gemini Investors; Granite Capital Partners, LLC	Undisclosed	6 ^g	0	NA	CA
Skin & Cancer Associates, LLP	Also known as SCA	Susquehanna Private Capital, LLC	Undisclosed	27 ^g	0	NA	FL
Tricenna LLC, PC	Formerly The Dermatology Group	PNC Erreview Capital; The Riverside Company	Undisclosed	23	2 (2)	2017	CT, NJ, NY, PA
United Derm Partners	Also known as UDP	Frazier Healthcare Partners	Undisclosed	22 ^g	4 (20)	2016-2018	CA, NV, OR, TX
United Skin Specialists, LLC	Also known as USS	Clearwater Equity Group, Inc; Tonka Bay Equity Partners, LLC	Undisclosed	9	6 (9)	2015-2016	IL, MN, MO

(continued)

Table. DMGs With PE Investments^a (continued)

DMG	DMG Notes	Equity Investors ^b	Disclosed Funding Since First PE Investment or Buyout, \$, Millions ^c	Total Clinics, No. ^d	Practices Acquired, No. (No. of Clinics) ^e	Acquisition Activity, y	States With Clinics ^d
US Dermatology Medical Management, Inc	PE investor sold its stake as of 2016	Vicente Capital Partners, LLC ^f	10.2	Unknown	0	NA	Unknown
US Dermatology Partners	Also known as Oliver Street Dermatology Management, LLC; formerly Dermatology Associates and Dermatology Associates of Tyler	ABRY Partners, LLC; Bay Capital Investment Partners ^g ; Brookside Mezzanine Partners ^g ; Candescant Partners, LLC ^g ; Eagle Private Capital, LLC ^g ; Harbert Credit Solutions ^g ; Providence Equity Partners, LLC ^g ; Resolute Capital Partners ^g ; Spring Capital Partners, LP ^g ; undisclosed investors	399.2	65	32 (63)	2012-2018	AZ, KS, LA, MD, MO, OK, TX, VA
West Dermatology, LLC	NA	Enhanced Equity Funds, LP	Undisclosed	34	13 (26)	2015-2018	AZ, CA, NV

Abbreviations: AL, Alabama; AR, Arkansas; AZ, Arizona; CA, California; CO, Colorado; CT, Connecticut; DC, District of Columbia; DMGs, Dermatology Management Groups; FL, Florida; GA, Georgia; IA, Iowa; IL, Illinois; IN, Indiana; KS, Kansas; KY, Kentucky; LA, Louisiana; MA, Massachusetts; MD, Maryland; MI, Michigan; MN, Minnesota; MO, Missouri; MS, Mississippi; NA, not applicable; NC, North Carolina; NH, New Hampshire; NJ, New Jersey; NM, New Mexico; NV, Nevada; NY, New York; OH, Ohio; OK, Oklahoma; OR, Oregon; PA, Pennsylvania; PE, private equity; RI, Rhode Island; SC, South Carolina; TN, Tennessee; TX, Texas; VA, Virginia; WI, Wisconsin; WY, Wyoming.

^a Obtained from Capital IQ, CB Insights, Thomson ONE, and Zephyr databases.
^b Includes all firms with equity investments and does not include lenders or other debt financing firms without equity co-investments.
^c Includes initial platform investments and subsequent equity investments and debt financing, and does not include DMG financing prior to initial PE investment. The dollar amounts of many investments were undisclosed.
^d Therefore, the amounts reported underestimate each firm's total financing as of mid-2018. Most dollar amounts were calculated from data reported on PitchBook; other databases containing financing information were used to supplement the calculations for Forefront Dermatology, Platinum Dermatology Partners, LLC, Schweiger Dermatology Group, LLC, US Dermatology Medical Management, Inc, and US Dermatology Partners.
^e Obtained from DMG websites as of mid-2018 (assessment period from May 1 to August 31).
^f Estimated number of clinics associated with these DMGs as of mid-2018 (assessment period from May 1 to August 31).
^g Former rather than active investor.
^h Estimated number of total clinics as of December 31, 2018.
ⁱ Raised an additional \$14.1 million in angel investments before the first PE investment.

profitability and diversify services while relieving physicians of administrative burdens.

Despite enthusiasm from investors, PE-backed dermatology practice acquisitions remain controversial.^{1,21} Physicians have raised concerns about the loss of physician autonomy and conflicts of interest that may arise from profit-seeking behaviors, as PE firms have a fiduciary responsibility to generate investor returns.^{21,27} Large groups that employ multispecialty physicians (eg, dermatopathologists, Mohs and cosmetic surgeons, and pediatric dermatologists) can take advantage of the in-office exception to the Stark Law, which allows physicians to legally refer patients to other professionals employed by the same group practice.²⁸ Physicians may also be required by their employers to do so. These self-referrals enable large group practices to keep highly reimbursed services, such as Mohs surgery, within their network, and may also provide incentives that increase usage of these services.²⁸

Physicians have also expressed concern that PE-backed dermatology practices may emphasize the employment of midlevel clinicians (eg, physician assistants and nurse practitioners) with varying levels of formal dermatology training.²⁹ The employment of physician extenders in dermatology increased across all practice models, from 28% in 2005 to 46% in 2014, although such employment remains more common in large group practices (46%) than in practices with a single physician (34%).³⁰ Concern has also been raised about potentially insufficient levels of direct physician supervision of midlevel clinicians.²⁹ In addition, PE firms generally invest in a given entity for 3 to 7 years and therefore may be more motivated by short-term profits than long-term sustainability.¹

The implications of PE-backed consolidation may stem from the significant differences between physician-owned and PE-backed practices. Physicians who operate solo practices have financial responsibility for themselves and their employees, while PE firms have an additional fiduciary responsibility to generate financial returns for their investors. Solo practices are also typically led by physicians, while DMGs may have nonphysician managers employed in key decision-making roles. The effect of external accountability to investors will be important to monitor.

While practice consolidations have likely produced operational efficiencies that benefit both physicians and patients, the effect of consolidation on patient clinical outcomes and health care expenditures has not, to our knowledge, been addressed in the literature. Additional studies are also needed to understand the effect of consolidation on solo practitioners. For example, large group practices may direct referrals for highly lucrative services, such as Mohs surgery and dermatopathology, to physicians within their own network and may have the bargaining power to negotiate more favorable reimbursement contracts with insurers.^{1,27} Future research regarding practice

patterns should assess staffing of physicians and midlevel clinicians, usage of procedures and tests, reimbursement rates and acceptance of Medicaid patients, use of information technology services, and trends in provider compensation, autonomy, satisfaction, and burnout. The changing business models of care delivery will necessitate a closer look at the subsequent effects on patient outcomes. As value-based care and alternative payment models become increasingly prevalent, outcomes data may soon play a more central role in the valuation and strategic rationale for physician practice consolidation.³¹

Limitations

These findings must be interpreted in the context of the study's design. Public data regarding PE-backed transactions are inherently limited; thus, it was difficult to determine the extent of missing data. We sought to be as comprehensive as possible by triangulating nonoverlapping data from multiple financial databases and verifying closed deals through internet searches and press releases published on the websites of the DMGs. Because many transactions are not publicly disclosed, the results likely underestimated the scope of dermatology practice acquisitions. PitchBook reported at least 15 additional PE-backed DMGs that were not identified by the search methods but that may have acquired practices.^{10,15}

The results also likely underreported direct acquisitions of small physician-owned practices by small PE firms. In addition, the data underestimated the number of clinics transitioning from physician to PE-backed ownership because the specific clinics associated with each DMG at the time of the DMG's initial PE investment had not been disclosed.

The number of clinic locations was estimated because the clinic addresses associated with each practice acquisition were identified through an internet search. However, the clinic locations associated with acquired practices as of mid-2018 could be used to determine an approximation of the number of clin-

ics that transferred from physician to PE-backed ownership at the time of acquisition. This approximation was possible because while DMGs expand through add-on acquisitions and organic growth, add-on dermatology practices are less likely to expand their clinic locations after being acquired.

In addition, the study sought to describe the ownership transfer, from physician to PE-backed DMG, of existing dermatology practices through acquisitions. By excluding the organic growth of DMGs through the direct opening of new clinics, this method underestimated the total footprint of PE-backed ownership of dermatology practices. Acquisitions of dermatopathology clinics, acquisitions not publicly reported, and acquisitions with an unknown date of deal closure were also excluded. The search strategy therefore identified 381 clinics associated with practice acquisitions by 17 DMGs, yet these DMGs collectively listed ownership of 743 individual dermatology clinics on their websites as of mid-2018.

Conclusions

Private equity-backed consolidation of dermatology practices has increased in recent years. The proliferation of PE investments into DMGs that manage multi-site delivery networks has contributed to the increase in practice acquisitions and the potential achievement of economies of scale. Although many DMGs have focused their acquisition activity within a specific region, acquisitions have spread geographically over time. Operational and management differences between PE-backed and physician-owned dermatology practices have not publicly been well described; thus, their effect on patients is not fully understood. Future studies should investigate the effect of PE-backed practice consolidation on practice patterns, health care expenditures, and patient outcomes.

ARTICLE INFORMATION

Accepted for Publication: May 2, 2019.

Published Online: July 24, 2019.

doi:10.1001/jamadermatol.2019.1634

Author Contributions: Dr Tan and Ms Seiger were the primary co-authors. Ms Seiger and Dr Mostaghimi had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: All authors.

Acquisition, analysis, or interpretation of data: Tan, Seiger.

Drafting of the manuscript: Tan, Seiger, Renehan.

Critical revision of the manuscript for important intellectual content: Tan, Seiger, Mostaghimi.

Statistical analysis: Tan, Seiger.

Obtained funding: Mostaghimi.

Administrative, technical, or material support: Tan, Seiger, Mostaghimi.

Supervision: Mostaghimi.

Conflict of Interest Disclosures: Dr Mostaghimi reported receiving personal fees from Pfizer and hims outside the submitted work and serving as a clinical investigator for clinical trials conducted by

Concert, Incyte, Aclaris, and Eli Lilly and Company. No other disclosures were reported.

Funding/Support: This study was funded in part by the Department of Dermatology at Brigham and Women's Hospital.

Role of the Funder/Sponsor: The Department of Dermatology at Brigham and Women's Hospital funded the preparation of Figures 3 and 4 but had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Disclaimer: Dr Mostaghimi is an associate editor of *JAMA Dermatology*, but he was not involved in any of the decisions regarding review of the manuscript or its acceptance.

Additional Contributions: Jeff Blossom, MA, of the Center for Geographic Analysis at Harvard University, received compensation from the Department of Dermatology at Brigham and Women's Hospital for the preparation of Figures 3 and 4.

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Supplementary Online Content

Tan S, Seiger K, Renehan P, Mostaghimi A. Trends in private equity acquisition of dermatology practices in the United States. *JAMA Dermatol*. Published online July 24, 2019. doi:10.1001/jamadermatol.2019.1634

eTable 1. Database Search Strategy

eTable 2. Practice Acquisitions by State

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Database Search Strategy

Source	Search Criteria
Capital IQ	Target primary geography (“United States”), Announcement date of transactions (“All history”), Industry primary classification (“Dermatology Services”) <i>Yield prior to exclusions: 128 transactions</i>
CB Insights	Advanced Search, Company Search, Industry & Geography Geography (“United States, North America”) Company Industries (“Healthcare,” “Medical Facilities & Services”) Company Attributes, Keyword (“Dermatology”) No Financing & Exit specifications selected No date range selected <i>Yield prior to exclusions: 100 transactions</i>
Thomson ONE	Screening & Analysis (“Private Equity,” “Companies & Investors”), Search Entity Type (“Company”) View in Currency (“USD - US Dollar”), Search Currency (“USD – US Dollar”), Entities Involved In (“All Private Equity Deals”), Business Description (“Dermatology”), Portfolio Status (“Currently PE/VC Backed,” “Formerly PE/VC Backed”), Real Estate Properties (“Exclude”), Disclosed Valuations Only? (“No”), Investment Date (“Any Investment”), Equity Amount (Mil) (“All”), Investment Security Type (“Primary”), Previous Investor (“All”), Total Equity Invested by Fund (Mil) (“All”) <i>Yield prior to exclusions: 109 firms (with variable depth of information on investments and acquisitions for each)</i>
Zephyr	Business description (“dermatology”), Target address country (“US”), US SIC (“801 - Offices and clinics of doctors of medicine”) <i>Yield prior to exclusions: 122 transactions</i>
PitchBook	The name of each DMG identified in the above databases
Google	Media/news tabs on the websites of DMGs, Bloomberg and Crunchbase pages for DMGs, PR Newswire and Businesswire articles for identified acquisitions

eTable 2. Practice Acquisitions by State

State	Number of total clinics associated with practice acquisitions	Number of clinics associated with practices acquired from May 2012-May 2015	Number of clinics associated with practices acquired from June 2015-May 2018
Texas	88	7	81
Florida	50	28	22
Arizona	31	4	27
Colorado	21	9	12
Michigan	19	9	10
North Carolina	19	7	12
Maryland	17	1	16
Pennsylvania	17	6	11
Nevada	15	9	6
Illinois	14		14
Virginia	11	1	10
California	11	5	6
Tennessee	11		11
New York	10		10
Missouri	7	3	4
Oklahoma	6		6
Wyoming	4		4
Iowa	4		4
Minnesota	4		4
Oregon	4		4
Kansas	3	3	
New Mexico	3		3
Ohio	2	1	1
Wisconsin	2	2	
Indiana	2		2
New Jersey	2	1	1
Arkansas	1		1
Rhode Island	1		1
Georgia	1	1	
South Carolina	1	1	