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Redfin

In November 2017, Redfin CEO Glenn Kelman was on his way to an important meeting to discuss his company's strategic direction. Redfin was a customer-focused, technology-powered residential real estate brokerage that charged commissions in exchange for helping customers buy or sell their homes. The company had experienced significant growth since its founding in 2002 and had gone public at a $1.73 billion valuation in July 2017. Now, just a few months later, Kelman needed to meet with the rest of Redfin's senior management team to discuss the company's strategy as it entered 2018.

Kelman joined Redfin in 2005 with the intention of disrupting the change-resistant real estate industry; Redfin was the first to use online maps of real estate data and self-identified as "the first online real estate brokerage."[1] During its early years, Redfin had touted an innovative model that essentially cut traditional real estate agents out of the home buying process, which allowed the company to offer generous refunds to consumers. However, Redfin's original model had mixed success, with many consumers reporting that they preferred agents to have a more active role in the buying and selling processes. As a result, Redfin gradually began increasing the level of personal service it offered clients, hiring additional real estate agents to work with customers and raising prices to compensate for the additional costs. Despite increasing the level of service from agents, which more resembled a traditional real estate brokerage, the company remained committed to using technology to make the process more efficient, and still offering lower prices to customers than traditional brokers. Additionally, the company maintained its unique approach of employing its own real estate agents, rather than the traditional brokerage model of hiring them as independent contractors.

Redfin's revenue had steadily increased in recent years, reaching $267.2 million in fiscal 2016, and the company now operated in over 80 markets in the U.S.[2,3] (See **Exhibit 1** for a breakdown of Redfin's revenue and **Exhibit 2** for a summary of Redfin's performance by market cohort.) However, Redfin had yet to achieve profitability, and its share of the U.S. residential real estate market was still less than 1%.[4] Kelman believed Redfin had several options going forward. Redfin could use the recent capital influx from its initial public offering (IPO) to: gain market share by investing in new markets (by acquiring local listings, brokerages, and/or agents); investing in existing markets (by hiring additional agents, buying local brokerages, and/or increasing marketing efforts); acquiring new businesses or technologies; and/or modifying the services that it offered. By taking one or a combination of these approaches, Redfin might be able to increase its market share—and, consequently, its revenue—more quickly. However, Redfin had been operating at a net loss for several years and was more focused than

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ever on increasing operating margin and achieving profitability. Instead of investing capital to significantly accelerate market-share growth, Redfin could simply maintain its steady growth rate and continue its long-held focus on lowering cost of revenue, which might allow the company to generate a net profit sooner.

Kelman and the team would discuss the specifics around some major questions: How much capital could Redfin responsibly invest in growth? How aggressively should the company pursue profitability in the short term versus run at a loss for a bit longer while maximizing top-line revenue? How should the company allocate precious engineering resources across competing priorities that seemed similarly compelling?

U.S. Residential Real Estate Industry

In 2017, there were approximately 136 million housing units in the United States, of which approximately 75 million were owner-occupied.[5] (See **Exhibit 3** for annual estimates of total housing inventory and **Exhibit 4** for housing inventory in select U.S. cities.) The National Association of Realtors estimated that during the 12 months ended September 2017, approximately 5.39 million existing homes were sold in the U.S., and that the median sale price was $245,100.[6] (See **Exhibit 5** for median home values in select U.S. cities.) Real estate professionals and firms that assisted with residential home sale transactions earned revenue totaling approximately $106 billion in 2017.[7] In September, homes were on the market for a median of 34 days before the seller reached a sales agreement with a buyer.[8] (See **Exhibit 6** for U.S. residential real estate market seasonality and **Exhibit 7** for the average number of days a house spent on the market in select U.S. cities.) Approximately 30% of buyers were aged 34 or younger, while 51% of buyers were between ages 35 and 55.[9]

The U.S. real estate market was highly fragmented. Because real estate regulations and licensing requirements varied significantly from state to state, and because home buyers and sellers demanded that agents be familiar with local market conditions, most real estate offices (brokerages) operated at the local level. According to one estimate, Realogy, the top player, controlled just 13% of the residential real estate market based on transaction volume.[10] In the U.S., there were approximately two million active licensed real estate agents and approximately 86,000 real estate brokerages.[11,12]

The Role of the Agent

In the U.S., the vast majority of home sellers and buyers worked with licensed real estate agents to guide them through the often-complex process of a real estate transaction. Real estate licensing requirements varied by state, but aspiring agents usually had to take a certain number of real estate courses and pass a licensing exam. Typically, licensed agents worked as independent contractors for brokerages, meaning that their pay was entirely commission-based. Brokerages were often franchises, operating under recognizable brand names (e.g., Century 21) by paying fees to the companies that owned the brand names.[13] For example, Realogy owned the Century 21, Coldwell Banker, and Sotheby's brands, among others; Realogy owned and operated only about 700 offices but lent its brands to more than 13,000 offices worldwide.[14]

Working with a real estate agent was helpful to buyers in part because only licensed agents could access regional databases of property listings, known as multiple listing services (MLSs). In the U.S., there were approximately 700 regional MLSs, and agents typically had to pay a fee to become a member of a specific MLS.[15] As members, agents could view and post listings on the databases.[16] In addition to property descriptions, MLS listings typically contained the name and contact information of the property owner, details about how to visit the property, and other information not always available on

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public real estate websites. In high-end, competitive markets, brokerages might choose to hold their own listings confidentially rather than list properties on regional MLSs.

An agent hired to represent a home seller ("the listing agent") suggested an appropriate listing price using his or her industry expertise, listed the seller's property on relevant MLSs, handled other marketing (e.g., signs, newspaper ads, etc.), coordinated home tours with interested buyers, and provided advice and expertise to the seller. An agent representing a home buyer ("the buyer's agent") was responsible for using MLSs to find listings that matched the buyer's criteria, for contacting listing agents to arrange home tours, and for advising the buyer. The seller and buyer typically had little to no direct communication with each other; instead, communication and negotiation went through their respective agents. Both agents acted as their clients' fiduciaries, meaning that they were legally required to act in their clients' best interests, disclose any information that could impact a buying or selling decision, and maintain client confidentiality.

To purchase a property, buyers typically first made a written offer. The written offer contained the offer price along with contingencies, such as: the expiration of the offer, the buyer's rights to inspections, and mortgage approval. Buyers typically paid a small deposit with the offer. Offers also affirmed which party was responsible for paying any real estate commissions, the commission rate, and how much each agent or broker would receive. Once signed by both parties, offers were legally enforceable contracts. Within several weeks of an offer being accepted, the buyer and seller typically negotiated and signed a purchase and sales (P&S) agreement, which spelled out the responsibilities of each party to complete the transaction. Like written offers, P&S agreements were legal contracts. Finally, several weeks after the P&S was signed, a closing occurred, at which time the buyer paid the seller and the seller transferred the property deed to the buyer.

In residential real estate transactions, it was common for the seller to pay the real estate commission. Typically, when a seller decided to sell a property with the assistance of a real estate agent, the seller signed a listing agreement with the listing agent that described the services the listing agent would provide and the commission the listing agent would receive. This agreement also described how much the seller would pay to the buyer's agent. The details of the commission and its split could also be found in the MLS listing. Sellers and their agents knew that agents representing buyers were less likely to recommend or show properties that came with below-market commissions. Thus, while listing agents might be willing to reduce their own commission in order to obtain a listing, they were restricted in their ability to reduce the commission that would be paid to the buyer's agent. Sellers typically paid a total commission of between 5% and 6% of the sale price of the property. Typically, half of the commission went to the listing agent and half to the buyer's agent. In most cases, the agents each paid a portion of their own commissions to the brokerages for which they worked.

Online Real Estate: Online Brokers vs. Third-Party Data Aggregators

With the dawn of the Internet, information that had previously only been accessible through real estate agents—who typically maintained printed books or binders of current MLS information—became much more widely available. Now, buyers did not have to rely solely on agents to find listings that met their needs; instead of or in addition to working directly with an agent, customers could browse listing websites or mobile applications, such as Redfin, Realtor.com, Zillow, and Trulia, all of which had access to MLS data in some form.

Zillow quickly gained a following after it launched in 2006, providing estimated home values ("Zestimates") for tens of millions of properties based on publicly available data.[17] Zillow generated most of its revenue by selling advertising space to real estate agents.[18] In September 2006, Zillow added a feature that allowed users to update property information,[19] and two months later, the company

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entered the real estate market more directly, allowing home sellers and agents to add for-sale listings at no charge.[20] In April 2009, Zillow launched an iPhone application, followed by an Android application in March 2010.[21] Zillow went public in July 2011, raising $69 million.[22]

Founded in 2005, Trulia was an online listings website from the start, first focusing on listings in California.[23] Trulia initially pulled its data from real estate brokers' websites rather than MLSs.[24] Like Zillow, the company generated revenue from advertisers and sought to be a tool for real estate agents rather than compete with them.[25] Trulia held an IPO in September 2012 and raised $102 million.[26] In 2015, Zillow acquired Trulia for $2.5 billion; the combined company (which also included real estate websites StreetEasy and HotPads) was called Zillow Group and employed approximately 2,000 people.[27]

As a registered broker, Redfin was able to access MLSs as easily as any other real estate broker after paying the required fees.[28] Similarly, Realtor.com, run by the National Association of Realtors, was able to access 97% of MLS listings.[29] By contrast, Zillow and Trulia were not registered brokers and instead acted as third-party data aggregators. Aggregators had to arrange syndication deals with local MLSs or large real estate firms to gain access to listings.[30]

As of November 2016, Zillow was the most popular real estate website, accounting for 27.2% of visits, followed by Realtor.com (11.5%), Trulia (9.4%), and Redfin (3.7%).[31] Kelman was wary about the potential impact as aggregators continued to increase in popularity. In 2011, he warned that if brokers did not build consumer-friendly websites and instead allowed aggregators to run the online market, aggregators would come to "enslave" real estate agents.[32] He explained, "[I]f we outsource our brains to them, they are going to make all of the money, and we are going to do all of the work. . . . This is a larger question about who is going to have the relationship with customers online."[33]

The Mortgage Crisis

In 2007, the U.S. residential real estate market entered a crisis after a period in which banks increasingly offered high-risk mortgage loans to "subprime" borrowers (home buyers with low credit scores or who did not provide income verification). The system collapsed when borrowers started defaulting on mortgage payments en masse. Banks foreclosed on many homes after their owners could no longer afford the mortgage payments. Banks also raised their credit standards, making it more difficult for buyers to qualify for mortgage loans. These factors, along with an economic recession, caused home prices to decline. Average U.S. home prices did not reach pre-crisis levels until 2016 (see **Figure 1**).[34]

As the residential real estate market recovered, nontraditional business models became more common. Opendoor, founded in 2014, bought homes in cash—appealing to sellers who preferred a quick sale over getting the best price—and later resold purchased homes for a profit.[35] Private equity firm Blackstone founded Invitation Homes in 2012, buying approximately 50,000 homes by 2016 (mainly in areas still slowly recovering from the mortgage crisis) and then renting them.[36] In 2017, Invitation Homes merged with Starwood Waypoint Homes, which similarly acquired and rented 30,000 homes.[37] These large investors had acquired these homes in bulk directly from the banks that foreclosed on the loans. Quicken Loans, founded in 1985, became even more prominent after the mortgage crisis by providing mortgages for individuals with lower incomes or credit scores, thus filling the void left by cautious banks.[38]

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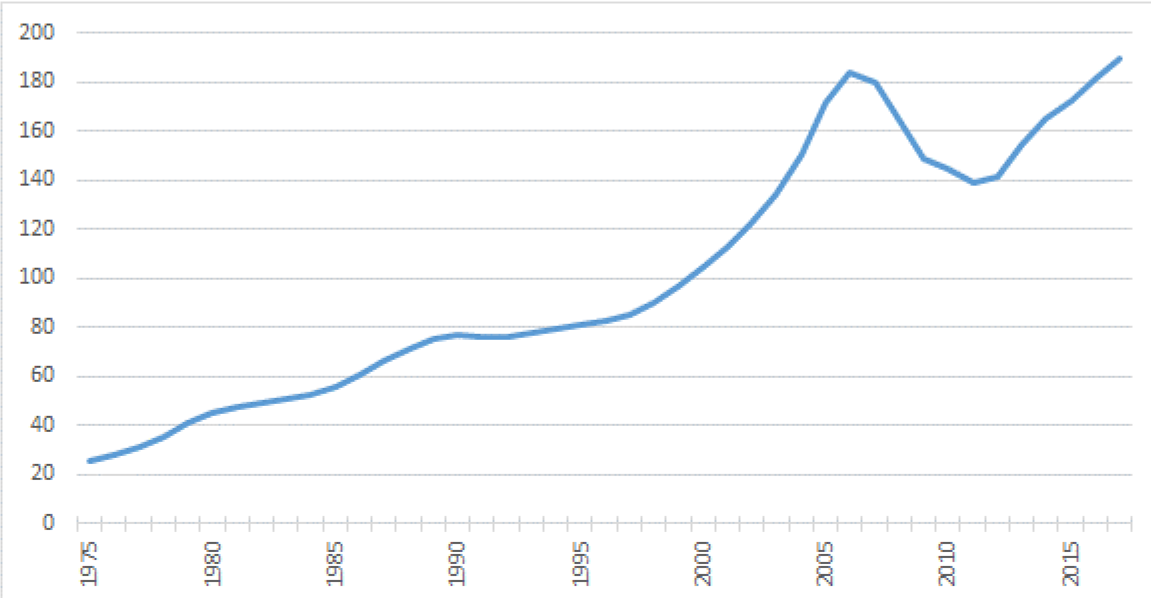
Figure 1 S&P/Case-Shiller U.S. National Home Price Index, 1975-2017



Source: Casewriter, using data from S&P/Case-Shiller U.S. National Home Price Index, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/CSUSHPINSA, accessed November 2017.

Note: Jan 2000=100. Not seasonally adjusted.

Redfin in 2017

In 2017, Redfin operated in more than 80 markets, most of which consisted of metropolitan areas such as Boston and Seattle, and employed approximately 2,200 people.[39,40] In the markets where Redfin operated, the company had access to all of the MLS listings.[41] Home buyers could browse property listings or schedule home tours through Redfin's website and mobile app. Redfin's website was able to show a listing within minutes of it being added to an MLS and could also notify home buyers when a house went off the market or if a price changed.[42] The company used machine-learning elements to improve the customer experience; for example, Redfin's algorithms made listing recommendations to customers based on which homes other customers had viewed or purchased.[43] Similarly, the company had the Redfin Estimate, an automated home-value tool, similar to the Zestimate, that estimated home values based on algorithms. A third-party study commissioned by Redfin to measure the accuracy of the Redfin Estimate found it to be the most accurate home-value estimate online.[44] Redfin also used machine learning to identify "Hot Homes," or homes that were likely to sell quickly.[45] Redfin also collected and published a wide range of real estate market data, including information on neighborhood walkability and a neighborhood's proximity to good jobs.[46]

Redfin's technological tools allowed the company to cut costs compared to other brokers, and these savings were passed along to home buyers and sellers.[47] For home sellers, Redfin charged a listing commission of 1.0–1.5%, lower than standard listing agent commission of 2.5–3.0%.[48] For home buyers, Redfin paid a portion of the buyer's agent commission back to the buyer, allowing them to save an average of $3,500 on closing costs in 2016.[49] In fiscal 2016, Redfin had revenue totaling $267.2 million (up from $187.3 million in 2015 and $125.4 million in 2014) and facilitated approximately 35,000 real

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estate transactions, earning an average of $7,366 per transaction.[50,51] (See **Exhibit 8** for Redfin's income statement, **Exhibit 9** for Redfin's balance sheet, and **Exhibit 10** for Redfin's cash flow summary.)

Rather than use the contractor model that was prevalent in the real estate industry, Redfin employed its real estate agents, paying them a fixed salary (accounting for 27% of total agent compensation on average) and bonuses based on customer satisfaction and the price of the home.[52] Redfin also provided benefits and training to these employees. Because Redfin's website received a lot of traffic, Redfin's agents did not have to spend as much time looking for clients compared to other agents; thus, they could spend more of their time working with existing clients.[53] In 2016, Redfin agents completed an average of 33.9 transactions per year,[a] compared to the average of 12 transactions per year reported by NAR members in 2017.[54,55] Redfin also partnered with third-party brokerages in certain markets, often relying on these brokerages during higher-than-usual periods of demand.[56] Agents from these brokerages ("partner agents") represented Redfin customers throughout the buying or selling process and paid a portion of their commissions to Redfin.[57]

In the third quarter of 2017, Redfin's website and mobile app together had more than 24.5 million monthly average visitors.[58] During the three months ended September 30, 2017, the aggregate home value of Redfin's real estate transactions totaled $6.34 billion, giving the company an estimated 0.71% of total U.S. market share.[59] (See **Exhibit 11** for an overview of Redfin's key business metrics.) In metropolitan markets where Redfin had operated for more than eight years, market share was higher, averaging approximately 1.66% in 2016.[60] (Refer to **Exhibit 2**.)

The Early Years

Founded in Seattle in 2002, Redfin pioneered the idea of online map-based real estate searches by accumulating MLS listing data and historical sales data into a single map.[61] (See **Exhibit 12** for a timeline of major events in Redfin's history.) Compared to traditional real estate brokerages, Redfin offered substantial savings to home buyers: the company offered to pay two-thirds of the traditional 3.0% buyer's agent commission back to the buyer (an average refund of $11,402 in 2006).[62] But to be able to afford this model, Redfin remained relatively hands-off throughout the buying process, and the company's real estate agents provided very little support to customers. Buyers who wanted to arrange home tours with a Redfin agent had to pay a $250 per-tour fee after the first two complimentary tours.[63] Once a buyer was ready to place an offer on a house, an agent would walk him or her through the final steps to complete a home purchase.[64]

For home sellers, Redfin provided a dedicated agent to help with the entire selling process, as well as some basic marketing tools.[65] Redfin's initial seller model charged sellers a flat fee of $1,350 to handle the sale, often well below the 3.0% commission traditionally paid to listing agents.[66] The company soon increased the selling fee to $4,000, still below the average commission in many cases, depending on the price of the home in question.[67]

Glenn Kelman, who had previously founded software company Plumtree Software, became Redfin's CEO in 2005. In 2006, Redfin raised $1 million in Series A funding, followed by $8 million in a Series B round.[68] Initially, Redfin only showed listings for the Seattle metropolitan area, but in 2006, the company also began operating in metropolitan areas in California.[69] By 2008, Redfin operated in seven metropolitan markets and had helped handle 1,500 transactions.[70] The company reported that 2007 revenue totaled $5 million.[71]

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[a] Calculated by dividing the total number of 2016 brokerage real estate transactions by the 2016 average number of lead agents.

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Shifting the Model

Customer feedback indicated that most consumers did not like Redfin's home-tour fee and wanted more support from agents.[72] In a survey conducted by Redfin in June 2008, 70% of respondents said that unlimited home tours were "the most important service an agent could offer."[73] Redfin's management made the decision to increase the level of service provided by real estate agents in response to the negative consumer feedback, referring to the overhaul as "Redfin 2.0."[74] In 2008, just as the mortgage crisis was intensifying, Redfin began offering a more traditional full-service model.[75] For buyers, the company provided free tours and the option to have a real estate agent walk them through more steps of the buying process.[76] For sellers, Redfin offered more options to market their for-sale properties, including free home photography.[77] From a service perspective, these changes made Redfin more similar to a traditional real estate brokerage.

To accommodate the changes, Redfin increased the size of its real estate team by 70% between March 2008 and November 2008.[78] The company also raised prices. For buyers, Redfin decreased the refund from two-thirds of the 3.0% broker commission to half.[79] For sellers, the company raised its flat fee from $4,000 to $5,000.[80] Sellers could also now purchase a premium option that provided more property marketing services for an additional $2,000.[81]

In 2012, Redfin overhauled its services again to become what it referred to as "Redfin 3.0."[82] As part of this second overhaul, the company hired 50 more real estate agents with the goal of assigning each customer his or her own real estate agent who handled that customer's needs from beginning to end.[83] However, once again, the increased level of service was accompanied by a price increase: the buyer rebate was changed to a fixed-rate amount that varied based on home price (for more expensive homes, Redfin refunded a greater proportion of the commission), coming to an average price increase of 16%.[84]

New Features and New Markets

Redfin continued to launch new services that were intended to distinguish the company from other real estate brokerages. In 2011, Redfin launched Agent Insights, which allowed agents to rate and review homes.[85] Later that year, Redfin launched Scouting Report, an online scorecard of real estate agents, including metrics such as median sales price and number of homes sold.[86] (The company ended up removing Scouting Report just five days later after critics pointed out that the scorecard's data was buggy and unreliable.[87]) In 2013, Redfin announced a new Builder Services program, which would allow real estate developers to list their newly-built properties on Redfin and have Redfin agents handle the sales of new residential units in exchange for a commission.[88] In 2014, Redfin began offering its 3D Walkthrough feature that let home buyers virtually tour houses listed for sale.[89] In 2015, Redfin launched its Last Call feature that notified potential buyers if a home listed by a Redfin agent had received an offer.[90]

The company also continued to raise additional funding. In 2013, Redfin raised $50 million at a $500 million valuation in a round led by Tiger Global Management.[91] In late 2014, Redfin raised an additional $70.9 million in a round led by Wellington Management and Glynn Capital Management.[92] Redfin used the new capital to fund continued national expansion. In 2013, Redfin operated in 22 markets across the U.S.; by the end of 2014, Redfin operated in 48 markets; and by late 2015, Redfin operated in 80 markets.[93,94,95]

To enter a new market, Redfin needed hire a manager to run the market and hire a team to begin serving customers. The competitive advantage for buyers was convenience and speed when touring homes, an agent compensated based on customer satisfaction, and the refund at closing. Historically,

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Redfin had been focused mostly on buyers, but being the seller's agent became increasingly important to the company. As one blogger explained, "[Y]ou list to last in real estate."[96] Selling more homes meant more branded yard signs in people's front yards, which gave a real estate brokerage brand awareness and legitimacy among buyers, sellers, and other agents. Additionally, having its own inventory let Redfin use its significant website traffic to market listings. Finally, because sellers were more price-sensitive than buyers, Redfin could use its technical and operational efficiency to create an extremely compelling listing product for customers. In October 2017, Redfin rolled out its 1% listing product to the majority of its markets. In 2016, seller commissions comprised approximately 30% of Redfin's brokerage transactions, up from approximately 20% in 2014.[97] From December 2013 to June 2017, Redfin's employee count increased from 753 to 2,193.[98]

During the first quarter of 2017, Redfin introduced Redfin Mortgage, a subsidiary that underwrote mortgage loans for customers in Texas.[99] The idea behind Redfin Mortgage was to apply the same principles of technology, focus on customers, and transparency that underpinned the Redfin brokerage business to the mortgage process. The long-term vision for Redfin Mortgage was to be a fully digital process, with a faster closing process and lower fees than traditional mortgage brokers. By late 2017, Redfin Mortgage had expanded to Illinois, Pennsylvania, and the District of Columbia.

Around the same time, the company began experimenting with a new service called Redfin Now, where the company purchased homes directly from consumers and then resold them for a profit.[100] As of late 2017, the Redfin Now experiment was still limited to the Inland Empire and San Diego markets, both in Southern California, and the company had announced no plans for expansion.

As of the third quarter of 2017, Redfin reported that "neither business has had a material impact on our liquidity or results of operations."[101]

Going Public

In June 2017, Redfin filed for an IPO, in part to "increase our capitalization and financial flexibility, create a public market for our common stock, and provide access to the public equity markets for us and our stockholders."[102] Just prior to the IPO, Kelman and other Redfin team members embarked on a roadshow along with salespeople from Goldman Sachs, the IPO's lead underwriter, to pitch Redfin to potential investors.

The travel schedule and constant pitches were grueling at times; in less than two weeks, Kelman and the others attended 56 meetings in seven cities, traveling on commercial flights to avoid spending extravagantly on private jets.[103] To Kelman's dismay, investors initially seemed hesitant about Redfin: "There was a line chart showing how many orders each recent IPO had had at the end of each day on the road; a dozen lines sloped steeply upwards except ours, which looked like a dying slug. When [we] got on the plane home that first Friday, we were at a third of where our bankers said a strong IPO should be at that point."[104] Although the Goldman Sachs team remained optimistic, Kelman was privately disappointed in the initial reception and worried that the IPO would be "a fiasco."[105] During the weekend before the IPO, Kelman reflected: "We had wanted to go public our way, and now we had 48 hours to wonder whether that had been a mistake."[106]

But that weekend, things turned around; Redfin's stock orders tripled.[107] Kelman recalled, "I don't know what changed that weekend. [. . .] We wanted to believe that everything strange about our half-website, half-broker business was why investors didn't decide right away, but also why so many came our way in the end. We'll never know."[108]

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Risks to Investors

In the IPO prospectus filed in July, Redfin confirmed that its revenue had been steadily increasing year over year. However, Redfin also faced numerous industry- and company-specific risks as it prepared for its IPO. The mortgage crisis had illustrated how factors outside of Redfin's control—including interest rates, consumer confidence, access to credit, and economic growth—could significantly impact real estate market prices.[109] Additionally, Redfin's new programs, such as Redfin Mortgage, were complicated by the various federal and state laws that regulated the real estate market.[110]

As a technology company, Redfin was heavily dependent on online marketing to drive traffic and could be adversely impacted by changes to search engine algorithms or increases in pay-per-click rates that it had to pay.[111] Similarly, the company could be impacted by cybersecurity breaches or changes to its third-party network and mobile infrastructure, its software licensing, or consumer privacy laws.[112] Additionally, Redfin—like its competitors—relied on data from MLSs and would be negatively impacted by any restricted accessibility to MLS listings.[113]

The residential real estate market was highly competitive, especially in highly populated urban markets, and had low barriers to entry. Redfin's business remained highly concentrated in major cities such as Boston, Chicago, and Los Angeles; in 2016, the company's top 10 markets generated 72% of its revenue.[114] Redfin acknowledged that many of its competitors had advantages—including brand recognition, superior resources, or better relationships with data providers—that could make gaining additional market share difficult.[115] Because Redfin employed its agents rather than use a contractor model, it had to pay additional costs, such as training and benefits, that many traditional brokerages did not have.[116] Furthermore, Redfin's use of partner agents meant that the company had limited control over the service provided to consumers in some cases, and sending customers to partner agents could also reduce repeat business or referrals.[117]

Post-IPO

On July 28, 2017, Redfin went public. Although Redfin's prospects looked much better than they had just a few days earlier, Kelman was still worried about stock price volatility: "[W]e didn't want the stock to go down, but we didn't want it to go up too much either. When the stock price doubles on the first day of trading, it makes for a nice headline, but leaves you with shareholders set up for disappointment."[118] Ultimately, Redfin's share price increased 45% during the company's first day of trading, giving Redfin a valuation of $1.73 billion.[119] In total, Redfin sold 10.6 million shares and raised approximately $159.2 million.[120] (See **Figure 2** for changes to share price for Redfin and competitors over time.) "[I]t was the best day of my professional life," Kelman said. "Every startup, every group of people who works together for a long time, should have a day like that."[121]

During its first quarter as a public company (the three months ended September 30, 2017), Redfin's monthly average visitors increased by 38% compared to the third quarter of 2016.[122] Redfin's quarterly revenue totaled $109.5 million, up from $81.1 million the year prior, and the company reported a net profit of $10.6 million for the quarter.[123] However, when also considering the first two quarters of 2017, Redfin had to date generated a total net loss of $13.2 million on total revenue of $274.3 million.[124]

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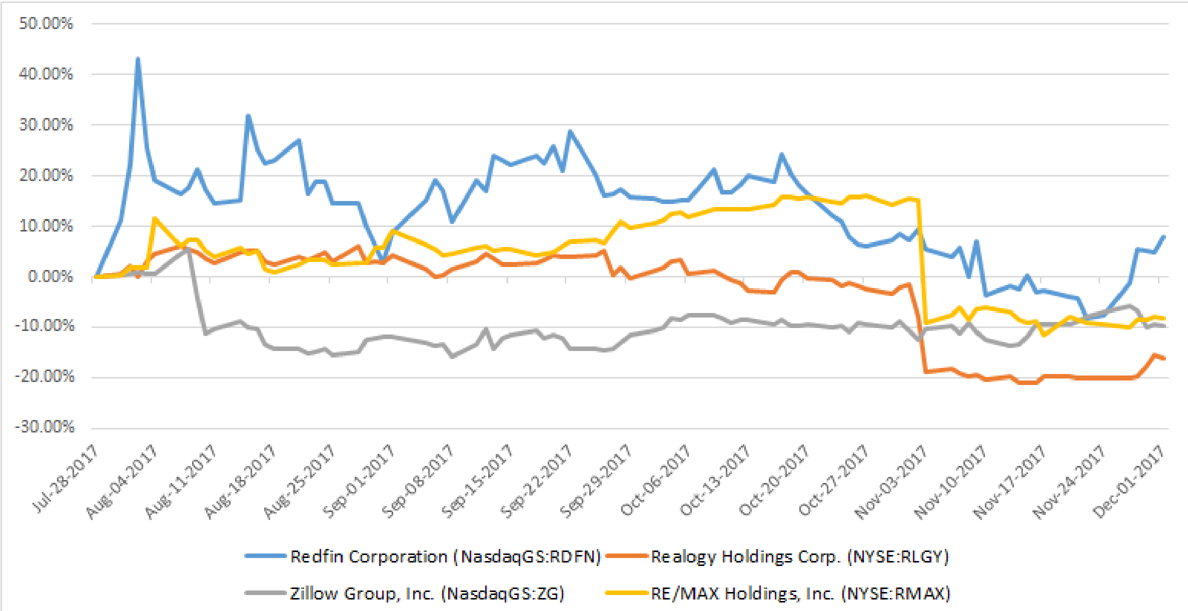
Figure 2 Share Price Changes over Time



Source: Casewriter, from Capital IQ, accessed December 2017.

The Path to Profitability

In November 2017, Redfin was in the process of deciding where to focus its resources as it entered 2018. The company's accumulated deficit as of month-end September 2017 was $127.2 million.[125] But during the three months ended September 30, 2017, Redfin's total U.S. market share was still just 0.71%.[126] Redfin's management team needed to decide how best to grow revenue and market share while balancing costs. (See **Exhibit 13** for an overview of Redfin's and competitors' financial performance metrics and projections, **Exhibit 14a** for comparable companies' betas, and **Exhibit 14b** for risk-free rates.)

Redfin could use its recent capital influx to expand to new markets and/or by increasing its marketing spend in existing markets. From 2015 to 2016, Redfin had gained market share in 81 out of 84 markets.[127] However, even in the markets where Redfin had been operating since 2006–2008 (primarily major metropolitan areas), there was significant room to grow: Redfin's market share in these areas was only 1.66% in 2016.[128] In markets that Redfin had entered between 2014 and 2016 (mainly smaller cities like Minneapolis and Cincinnati), market share was even lower, reaching just 0.20% in 2016.[129] However, investing resources to further accelerate market-share growth meant that the company might have to widen its loss and/or run at a loss for a longer period of time. Furthermore, as one observer pointed out, Redfin had yet to generate an annual net profit even though it was already operating in the most expensive housing markets in the U.S. (Boston, San Francisco, etc.); given the current trends, expanding into additional, less expensive markets would only further erode the company's already-negative margins.[130]

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Alternatively, the company could play it safe and focus on achieving profitability sooner rather than later. Redfin's revenue and market share had been increasing steadily in existing markets over the past few years,[131] and it might continue to do so even without a big marketing push. Plus, given the large size and fragmentation of the real estate market, there could be decades of growth ahead for Redfin, even without significant market share any time soon.

Kelman had a lot to discuss with his team. What was the right amount of capital to invest in advertising versus hiring more engineers? How many real estate agents could the company hire while maintaining its quality standards and culture? Would achieving a much larger market share—say 5 percent—in the short term pay off in long run? Would investors remain patient about profitability while the company focused on the top line? And if so, how long?

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Exhibit 1 Redfin Revenue Breakdown, 2014–2017, $ Thousands

	Year Ended December 31, 2014	2015	2016	9 Months Ended September 30, 2016	2017
Real estate revenue:					
Brokerage revenue	$115,701	$171,276	$244,079	$183,440	$247,327
Partner revenue	6,103	10,170	16,304	11,763	15,567
Total real estate revenue	121,804	181,446	260,383	195,203	262,894
Other revenue	3,559	5,892	6,813	5,211	11,388
Revenue	$125,363	$187,338	$267,196	$200,414	$274,282

Source: Redfin Corporation, November 9, 2017, Form 10-Q, p. 11, http://investors.redfin.com/static-files/34c97dbe-6b9f-4ff2-9e74-2cdca0f673ec; and Redfin Corporation, July 28, 2017, Form 424(b)4, pp. 64, 66, and 68 http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967; both accessed November 2017.

Exhibit 2 Redfin Cohorts

	Cohort of Markets Opened in Years: 2006-2008	2009-2013	2014-2016
Number of markets in cohort	10	19	55
Cohort's 2016 completed market transactions (in billions)t	$328	$319	$265
Cohort's 2016 mean home sale price	$530,617	$313,180	$245,684
Redfin market share by value:			
2014	1.15%	0.29%	0.02%
2015	1.41%	0.39%	0.10%
2016	1.66%	0.47%	0.20%
Redfin real estate revenue (in thousands):			
2014	$97,801	$23,268	$735
2015	136,261	37,786	7,399
2016	186,922	55,334	18,127
Redfin real estate revenue per brokerage transaction:			
2014	$9,590	$7,561	$6,790
2015	9,889	7,791	6,815
2016	10,208	8,026	7,389
Redfin real estate cost of revenue (in thousands):			
2014	$69,055	$19,099	$1,466
2015	94,740	28,804	7,978
2016	122,439	39,367	14,602
Redfin real estate gross profit (in thousands):			
2014	$28,747	$4,168	$ (731)
2015	41,522	8,981	(579)
2016	64,483	15,967	3,525
Redfin real estate gross margin:			
2014	29.4%	17.9%	N.M.
2015	30.5%	23.8%	-7.8%
2016	34.5%	28.9%	19.4%

Source: Redfin Corporation, July 28, 2017, Form 424(b)4, p. 59, http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967, accessed November 2017.

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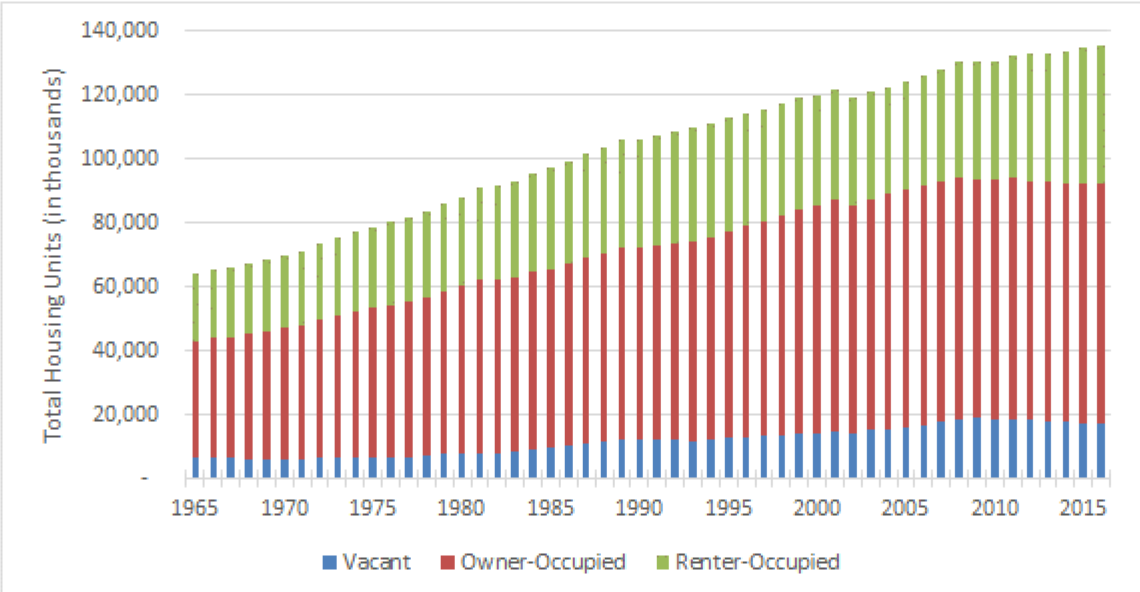
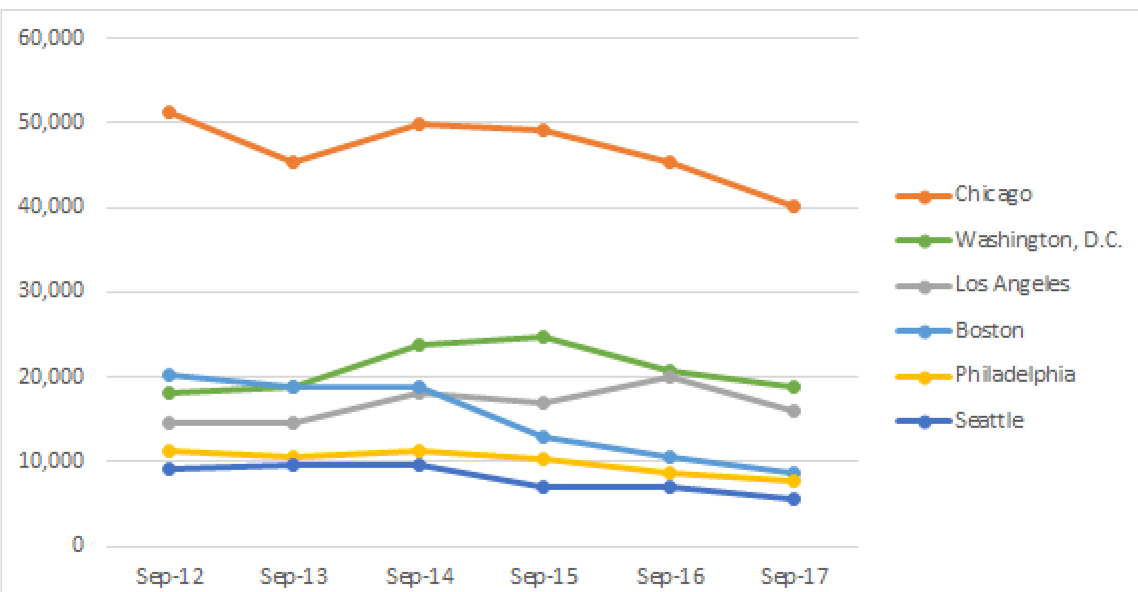
Exhibit 3 Annual Estimates of Total Housing Inventory, 1965–2016



Source: Casewriter, using data from United States Census Bureau, Housing Vacancies and Homeownership (CPS/HVS), "Table 7. Annual Estimates of the Housing Inventory: 1965 to Present," https://www.census.gov/housing/hvs/data/histtabs.html, accessed November 2017.

Exhibit 4 Inventory of Houses for Sale in Select U.S. Cities, 2012–2017



Source: Casewriter, using data from Redfin Data Center, https://www.redfin.com/blog/data-center, accessed November 2017.

Note: For comparison purposes, data is for the month of September.

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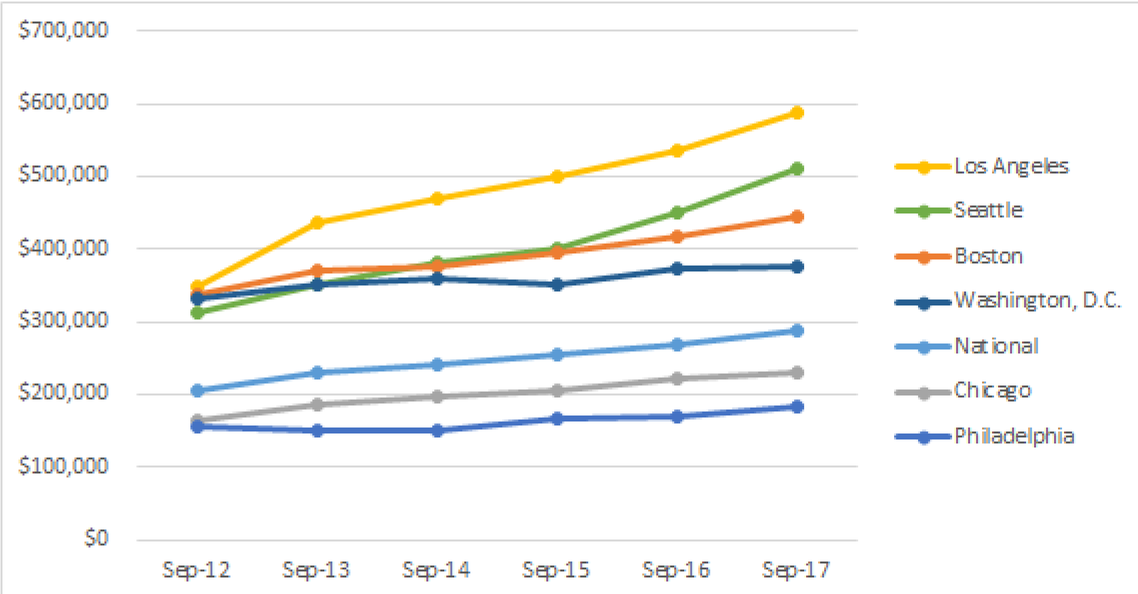
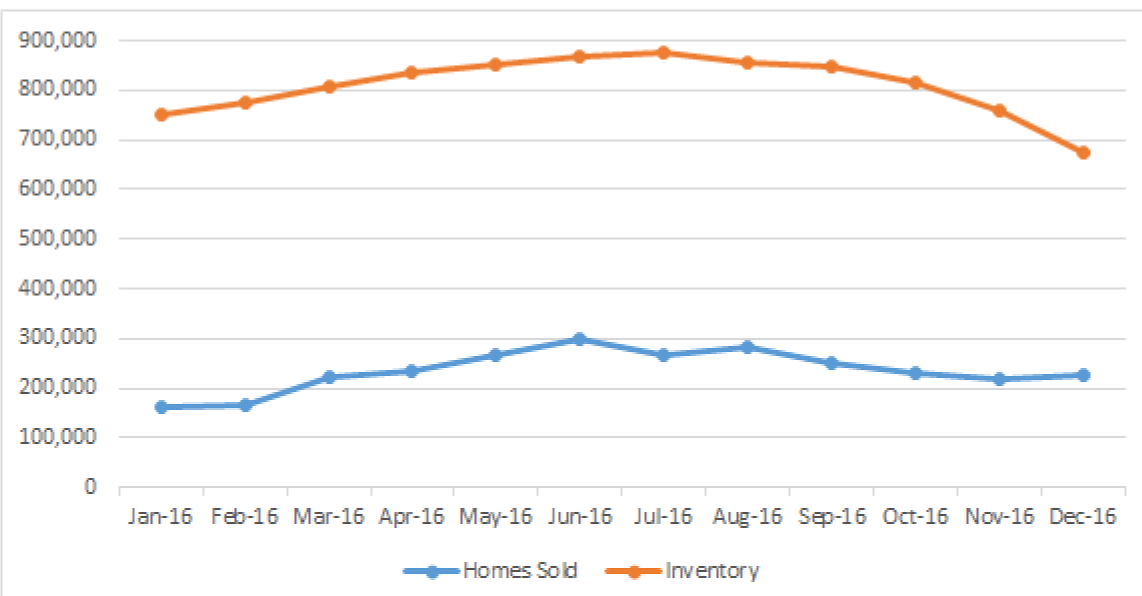
Exhibit 5 Median Home Value for Select U.S. Cities, 2012–2017



Source: Casewriter, using data from Redfin Data Center, https://www.redfin.com/blog/data-center, accessed November 2017.

Note: For comparison purposes, data is for the month of September.

Exhibit 6 U.S. Real Estate Market Seasonality, 2016



Source: Casewriter, using data from Redfin Data Center, https://www.redfin.com/blog/data-center, accessed November 2017.

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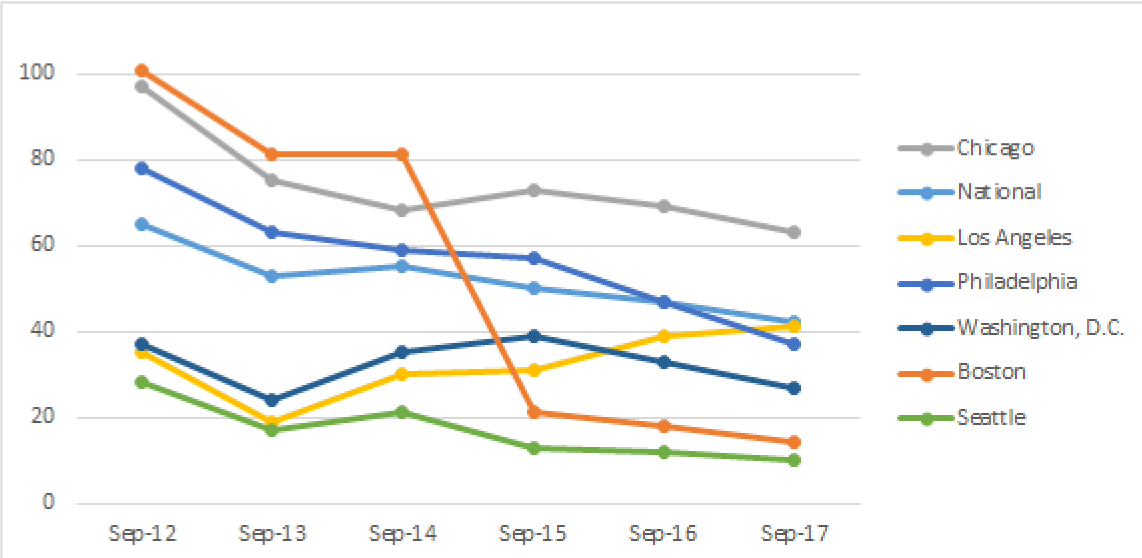
Exhibit 7 Average Number of Days House Spends on Market in Select U.S. Cities, 2012–2017



Source: Casewriter, using data from Redfin Data Center, https://www.redfin.com/blog/data-center, accessed November 2017.

Note: For comparison purposes, data is for the month of September.

Exhibit 8 Redfin Income Statement, 2014–2017, $ Thousands

Consolidated Statements of Operations Data:	Year Ended December 31, 2014	2015	2016	Nine Months Ended September 30, 2016	2017
Revenue	$125,363	$187,338	$267,196	$200,414	$274,282
Cost of revenue	93,272	138,492	184,452	138,955	191,633
Gross profit	32,091	48,846	82,744	61,459	82,649
Operating expenses:					
Technology and development	17,876	27,842	34,588	25,739	31,245
Marketing	15,058	19,899	28,571	23,133	26,179
General and administrative	24,240	31,394	42,369	29,948	38,828
Total operating expenses	57,174	79,135	105,528	78,820	96,252
Income (loss) from operations	(25,083)	(30,289)	(22,784)	(17,361)	(13,603)
Interest income and other income, net:					
Interest income	23	46	173	133	387
Other income, net	24	7	85	37	13
Total interest income and other income, net	47	53	258	170	400
Income (loss) before tax benefit (expense)	(25,036)	(30,236)	(22,526)	(17,191)	(13,203)
Income tax benefit (expense)	306	-	-	-	-
Net income (loss)	$(24,730)	$(30,236)	$(22,526)	$(17,191)	$(13,203)

Source: Redfin Corporation, November 9, 2017, Form 10-Q, p. 2, http://investors.redfin.com/static-files/34c97dbe-6b9f-4ff2-9e74-2cdca0f673ec; and Redfin Corporation, July 28, 2017, Form 424(b)4, p. F-4, http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967; both accessed November 2017.

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Exhibit 9 Redfin Balance Sheet, 2015–2017, $ Thousands

	December 31, 2015	December 31, 2016	September 30, 2017
Assets:			
Current assets:			
Cash and cash equivalents	$85,597	$64,030	$212,436
Restricted cash	3,423	3,815	10,101
Short-term investments	1,744	1,749	1,258
Prepaid expenses	6,632	4,388	4,472
Accrued revenue, net	5,604	10,625	13,336
Other current assets	10	8,781	5,623
Loans held for sale	-	-	726
Total current assets	103,010	93,388	247,952
Property and equipment, net	7,378	19,226	21,600
Intangible assets, net	4,270	3,782	3,416
Goodwill	9,186	9,186	9,186
Deferred offering costs	-	720	-
Other assets	1,210	7,175	6,931
Total assets:	$125,054	$133,477	$289,085
Liabilities, redeemable convertible preferred stock and stockholders' equity (deficit):			
Current liabilities:			
Accounts payable	$1,490	$5,385	$3,343
Accrued liabilities	14,892	22,253	30,202
Other payables	3,394	3,793	9,858
Loan facility	-	-	705
Current portion of deferred rent	-	1,512	1,104
Total current liabilities	19,776	32,943	45,212
Deferred rent, net of current portion	1,077	8,852	10,365
Total liabilities	20,853	41,795	55,577
Commitments and contingencies (Note 10)			
Redeemable convertible preferred stock--par value $0.001 per share; 166,266,114 shares authorized, 55,422,002 shares issued and outstanding; and aggregate liquidation preference of $167,488	599,914	655,416	-
Stockholders' equity (deficit)			
Common stock--par value $0.001 per share; 255,000,000, 290,081,638 and 290,081,638 shares authorized, respectively; 14,059,601, 14,687,024 and 14,883,766 shares issued and outstanding, respectively	14	15	81
Additional paid-in capital	-	-	360,631
Accumulated deficit	(495,727)	(563,749)	(127,204)
Total stockholders' equity (deficit)	(495,713)	(563,734)	233,508
Total liabilities, redeemable convertible preferred stock, and stockholders' equity:	$125,054	$133,477	$289,085

Source: Redfin Corporation, July 28, 2017, Form 424(b)4, p. F-3, http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967 and Redfin Corporation, November 9, 2017, Form 10-Q, p. 1, http://investors.redfin.com/static-files/34c97dbe-6b9f-4ff2-9e74-2cdca0f673ec; both accessed November 2017.

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Exhibit 10 Redfin Cash Flow Statement, 2014–2017, $ Thousands

	Year Ended December 31,			9 Months Ended September 30,	
	2014	2015	2016	2016	2017
Operating activities					
Net income (loss)	$(24,730)	$(30,236)	$(22,526)	$(17,191)	$(13,203)
Adjustments to reconcile net income (loss) to net cash used in operating activities:					
Depreciation and amortization	2,672	4,395	6,293	4,532	5,326
Stock-based compensation	5,196	5,562	8,413	5,890	8,028
Tax benefit from business acquisition	(306)	-	-	-	-
Change in assets and liabilities:					
Restricted cash	275	(1,761)	(392)	(3,371)	(6,286)
Prepaid expenses	(726)	(3,963)	2,244	2,755	(84)
Accrued revenue	499	(2,685)	(5,021)	(5,423)	(2,712)
Other current assets	(120)	721	(8,778)	(1,838)	3,157
Other long-term assets	(474)	(36)	(5,964)	(5,953)	244
Accounts payable	913	152	638	1,858	1,227
Accrued expenses	3,412	3,890	6,581	7,086	8,513
Other payables	(322)	1,822	399	3,362	6,065
Deferred lease liability	115	(21)	8,768	1,770	1,001
Origination of loans held for sale	-	-	-	-	(5,755)
Proceeds from sale of loans originated as held for sale	-	-	-	-	5,030
Net cash provided by (used in) operating activities	(13,596)	(22,160)	(9,345)	(6,523)	10,551
Investing activities					
Maturities of short-term investments	1,477	1,590	1,744	1,744	1,484
Purchases of short-term investments	(1,481)	(1,550)	(1,744)	(1,744)	(993)
Acquisition of business, net of cash acquired	(4,074)	-	-	-	-
Purchases of property and equipment	(4,961)	(4,607)	(13,567)	(5,116)	(10,499)
Net cash used in investing activities	(9,039)	(4,567)	(13,567)	(5,116)	(10,008)
Financing activities					
Proceeds from issuance of redeemable convertible preferred stock	71,517	-	-	-	-
Issuance costs of redeemable convertible preferred stock	(2,928)	(9)	-	-	-
Proceeds from tender offer	225	2,659	-	-	-
In-substance dividend paid in relation to tender offer	(225)	(2,659)	-	-	-
Proceeds from exercise of stock options	996	1,732	1,495	1,069	2,519

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Exhibit 10 (continued)

	Year Ended December 31,			9 Months Ended September 30,	
	2014	2015	2016	2016	2017
Payment of initial public offering costs	-	-	(150)	-	(3,449)
Proceeds from initial public offering, net of underwriting discounts	-	-	-	-	148,088
Borrowings from warehouse credit facilities	-	-	-	-	5,603
Repayments of warehouse credit facilities	-	-	-	-	(4,898)
Net cash provided by (used in) financing activities	69,585	1,723	1,345	1,069	147,863
Net change in cash and cash equivalents	46,950	(25,004)	(21,567)	(10,570)	148,406
Cash and cash equivalents:					
Beginning of period	63,651	110,601	85,597	85,597	64,030
End of period	$110,601	$85,597	$64,030	$75,027	$212,436
Supplemental disclosure of non-cash investing and financing activities					
Fair value of common stock issued for acquisition of businesses	$(8,520)	-	-	-	-
Reversal of treasury stock receivable	$(1,170)	-	-	-	-
Accretion of redeemable convertible preferred stock	$(101,251)	$(102,224)	$(55,502)	$56,819	$(175,915)
Stock-based compensation capitalized in property and equipment	-	$(49)	$(100)	$(57)	$(194)
Initial public offering cost accruals	-	-	-	-	$(200)
Deferred initial public offering cost accruals	-	-	$(570)	-	$(190)
Property and equipment additions in accounts payable and accrued expenses	-	-	$(3,466)	-	$(37)
Leasehold improvements paid directly by lessor	-	-	$(520)	-	$(104)

Source: Redfin Corporation, July 28, 2017, Form 424(b)4, p. F-5, http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967 and Redfin Corporation, November 9, 2017, Form 10-Q, p. 3, http://investors.redfin.com/static-files/34c97dbe-6b9f-4ff2-9e74-2cdca0f673ec; both accessed November 2017.

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Exhibit 11 Redfin Key Business Metrics, 2014–2017

	Year Ended December 31,			Three Months Ended September 30,	
	2014	**2015**	**2016**	**2016**	**2017**
Monthly average visitors (in thousands)	8,720	11,705	16,215	17,795	24,518
Real estate transactions:					
Brokerage	$12,688	$18,586	$25,868	$7,934	$10,527
Partner	6,144	8,906	9,482	2,663	3,101
Total	18,832	27,492	35,350	10,597	13,628
Real estate revenue per real estate transaction:					
Brokerage	$9,119	$9,215	$9,436	$9,333	$9,289
Partner	993	1,142	1,719	1,932	1,960
Aggregate	6,468	6,600	7,366	7,474	7,621
Aggregate home value of real estate transactions (in millions)	$8,412	$12,296	$16,199	$4,898	$6,341
U.S. market share by value	0.33%	0.44%	0.54%	0.57%	0.71%
Revenue from top-10 Redfin markets as a percentage of real estate revenue	80%	76%	72%	72%	69%
Average number of lead agents	422	591	763	756	1,028

Source: Redfin Corporation, July 28, 2017, Form 424(b)4, p. 57, http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967 and Redfin Corporation, November 9, 2017, Form 10-Q, p. 19, http://investors.redfin.com/static-files/34c97dbe-6b9f-4ff2-9e74-2cdca0f673ec; both accessed November 2017.

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Exhibit 12 Timeline of Key Events

2006 Hired first lead agent. Launched in Seattle and San Francisco Bay Area.

2007 Expanded to Los Angeles, Orange County, San Diego, Boston, Baltimore, and Washington, D.C.

2008 Expanded to Chicago.

2009 Built and rolled out Redfin *Agent Tools*, proprietary customer relationship and workflow software. Launched iPhone application.

2010 Launched *Deal Room* to guide customers through to deal closing.

2011 Published first *Tour Insights* of agent notes about homes we've toured.

2012 Released *Instant Updates* to alert homebuyers about new homes for sale and price changes.

2013 Expanded to Charlotte, Houston, and Miami. Served markets covering 43% of the U.S. population.

2014 Launched *3D Walkthrough,* powered by Matterport. Aired first TV commercial. Acquired Walk Score.

2015 Served markets covering 73% of the U.S. population. Launched *Book It Now* to schedule home tours. Launched *Redfin Estimate.*

2016 Launched *Fast Offers* in selected markets and *CMA Tool* to help lead agents price homes.

Source: Redfin Corporation, July 28, 2017, Form 424(b)4, p. 55, http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967, accessed November 2017.

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Exhibit 13 Redfin and Competitors' Key Financial Data, 2012–2019E

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017E	FY2018E	FY2019E
Total Revenue ($ millions)								
Redfin Corporation	NA	NA	125.4	187.3	267.2	366.0	476.1	614.7
Zillow Group, Inc.	116.9	197.5	325.9	644.7	846.6	1,022.1	1,072.2	1,291.3
RE/MAX Holdings, Inc.	143.7	158.9	171.0	176.9	176.3	196.2	210.3	227.8
Realogy Holdings Corp.	4,672.0	5,289.0	5,328.0	5,706.0	5,810.0	6,123.4	6,397.0	6,591.0
Total Revenue Growth Over Prior Year (%)								
Redfin Corporation	NA	NA	NA	49.4	42.6	NA	30.1	29.1
Zillow Group, Inc.	76.9	69.1	65.0	97.8	31.3	26.7	20.4	17.3
RE/MAX Holdings, Inc.	3.9	10.6	7.6	3.4	(0.3)	11.3	7.2	8.3
Realogy Holdings Corp.	14.1	13.2	0.7	7.1	1.8	5.4	4.5	3.0
Gross Profit ($ millions)								
Redfin Corporation	NA	NA	32.1	48.8	82.7	NA	NA	NA
Zillow Group, Inc.	102.8	178.7	296.4	583.1	775.0	NA	NA	NA
RE/MAX Holdings, Inc.	143.7	158.9	171.0	176.9	176.3	NA	NA	NA
Realogy Holdings Corp.	2,353.0	2,598.0	2,573.0	2,775.0	2,865.0	NA	NA	NA
Gross Profit Margin (%)								
Redfin Corporation	NA	NA	25.6	26.1	31.0	30.7	30.9	31.7
Zillow Group, Inc.	88.0	90.5	91.0	90.4	91.5	92.4	92.6	93.0
RE/MAX Holdings, Inc.	100.0	100.0	100.0	100.0	100.0	52.1	53.5	NA
Realogy Holdings Corp.	50.4	49.1	48.3	48.6	49.3	43.3	42.8	42.6
Net Income ($ millions)								
Redfin Corporation	NA	NA	(24.7)	(30.2)	(22.5)	(17.7)	(8.7)	11.8
Zillow Group, Inc.	5.9	(12.5)	(43.6)	(148.9)	(220.4)	105.4	172.7	246.4
RE/MAX Holdings, Inc.	0.0	1.5	13.4	16.7	22.7	56.9	58.8	55.3
Realogy Holdings Corp.	(543.0)	438.0	143.0	184.0	213.0	214.5	250.1	260.5
Net Income Margin (%)								
Redfin Corporation	NA	NA	(19.7)	(16.1)	(8.4)	(4.8)	(1.8)	1.9
Zillow Group, Inc.	5.1	(6.3)	(13.4)	(23.1)	(26.0)	9.8	13.4	16.3
RE/MAX Holdings, Inc.	0.0	0.9	7.9	9.4	12.9	29.0	28.0	24.3
Realogy Holdings Corp.	(11.6)	8.3	2.7	3.2	3.7	3.5	3.9	4.0

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Exhibit 13 (continued)

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017E	FY2018E	FY2019E
EBITDA ($ millions)								
Redfin Corporation	NA	NA	(22.2)	(25.9)	(14.7)	(0.5)	13.9	38.7
Zillow Group, Inc.	13.0	(5.5)	(6.0)	(14.4)	(2.1)	236.4	317.5	404.2
RE/MAX Holdings, Inc.	63.8	63.1	84.0	89.7	91.7	105.9	113.1	121.9
Realogy Holdings Corp.	523.0	701.0	716.0	754.0	761.0	731.7	777.0	789.8
EBITDA margin (%)								
Redfin Corporation	NA	NA	(17.7)	(13.8)	(5.5)	NA	2.9	6.3
Zillow Group, Inc.	11.1	(2.8)	(1.8)	(2.2)	(0.3)	22.1	24.6	26.7
RE/MAX Holdings, Inc.	44.4	39.7	49.1	50.7	52.0	54.0	53.8	53.5
Realogy Holdings Corp.	11.2	13.3	13.4	13.2	13.1	12.0	12.2	12.0
EBIT ($ millions)								
Redfin Corporation	NA	NA	(24.8)	(30.3)	(21.0)	(18.4)	(8.7)	10.6
Zillow Group, Inc.	7.1	(16.6)	(23.2)	(65.9)	(62.7)	13.8	75.3	151.2
RE/MAX Holdings, Inc.	51.7	47.9	68.7	74.6	75.6	80.9	91.9	102.9
Realogy Holdings Corp.	350.0	525.0	526.0	553.0	559.0	516.5	558.3	565.0
EBIT Margin (%)								
Redfin Corporation	NA	NA	(19.8)	(16.2)	(7.9)	NA	NA	1.7
Zillow Group, Inc.	6.0	(8.4)	(7.1)	(10.2)	(7.4)	1.3	5.8	10.0
RE/MAX Holdings, Inc.	36.0	30.2	40.2	42.2	42.9	41.2	43.7	45.2
Realogy Holdings Corp.	7.5	9.9	9.9	9.7	9.6	8.4	8.7	8.6
Earnings from Continuing Ops ($ millions)								
Redfin Corporation	NA	NA	(24.7)	(30.2)	(22.5)	NA	NA	NA
Zillow Group, Inc.	5.9	(12.5)	(43.6)	(148.9)	(220.4)	NA	NA	NA
RE/MAX Holdings, Inc.	33.3	28.3	44.0	51.4	47.8	NA	NA	NA
Realogy Holdings Corp.	(540.0)	443.0	147.0	188.0	217.0	NA	NA	NA
Earnings from Continuing Ops Margin (%)								
Redfin Corporation	NA	NA	(19.7)	(16.1)	(8.4)	NA	NA	NA
Zillow Group, Inc.	5.1	(6.3)	(13.4)	(23.1)	(26.0)	NA	NA	NA
RE/MAX Holdings, Inc.	23.2	17.8	25.7	29.0	27.1	NA	NA	NA
Realogy Holdings Corp.	(11.6)	8.4	2.8	3.3	3.7	NA	NA	NA

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Exhibit 13 (continued)

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017E	FY2018E	FY2019E
Diluted EPS Excl Extra Items ($)								
Redfin Corporation	NA	NA	(11.76)	(9.87)	(5.42)	(0.25)	(0.10)	0.14
Zillow Group, Inc.	0.06	(0.12)	(0.36)	(0.88)	(1.22)	0.54	0.86	1.16
RE/MAX Holdings, Inc.	NA	0.12	1.10	1.30	1.29	1.90	2.05	2.25
Realogy Holdings Corp.	(14.41)	2.99	0.97	1.24	1.46	1.54	1.84	2.03
Diluted EPS Excl Extra Items Growth over Prior Year (%)								
Redfin Corporation	NA	NA	NA	NM	NM	NA	NA	NA
Zillow Group, Inc.	NA	NM	NM	NM	NM	145.8	59.4	35.2
RE/MAX Holdings, Inc.	NA	NA	816.7	18.2	(0.8)	9.3	7.9	9.6
Realogy Holdings Corp.	NM	NM	(67.6)	27.8	17.7	(6.0)	19.3	10.2

Source: Casewriter, from Key Financial Statistics, Capital IQ, Inc., a division of Standard & Poor's, accessed December 2017.

Exhibit 14a Comparables' Betas, December 1, 2017

Company	Beta
Zillow Group, Inc.	1.47
RE/MAX Holdings, Inc.	0.61
Realogy Holdings Group	1.18

Source: Yahoo! Finance, Zillow Group, Inc. (ZG), https://finance.yahoo.com/quote/ZG?p=ZG; RE/MAX Holdings, Inc. (RMAX), https://finance.yahoo.com/quote/RMAX?p=RMAX; and Realogy Holdings Corp. (RLGY), https://finance.yahoo.com/quote/RLGY?p=RLGY; all accessed December 2017.

Exhibit 14b Risk-Free Rates, December 1, 2017

Maturity	Yield
1 Month	1.14%
6 Months	1.27%
1 Year	1.62%
5 Years	2.13%
10 Years	2.27%
20 Years	2.58%
30 Years	2.76%

Source: U.S. Department of the Treasury, Daily Treasury Yield Curve Rates, December 1, 2017, https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield, accessed December 2017.

This document is authorized for use only by Nkengie Charles in STRATEGIC PROBLEM SOLVING at Babson College, 2019.

Endnotes

[1] Joel Burslem, "Real Estate 2.0 Market Leader: Redfin.com," Inman, June 14, 2006, https://www.inman.com/next/real-estate-20-market-leader-redfincom/, accessed December 2017.

[2] Redfin Corporation, July 27, 2017 Form 424(b)4 (filed July 28, 2017), p. 59, http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=12196967, accessed November 2017.

[3] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 14.

[4] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 10.

[5] United States Census Bureau, Housing Vacancies and Homeownership (CPS/HVS), "Table 7. Annual Estimates of the Housing Inventory: 1965 to Present," https://www.census.gov/housing/hvs/data/histtabs.html, accessed November 2017.

[6] National Association of Realtors, "Existing-Home Sales," https://www.nar.realtor/infographics/existing-home-sales, accessed November 2017.

[7] "Real Estate Sales & Brokerage in the US," July 2017, IBISWorld, accessed November 2017.

[8] National Association of Realtors, "Realtors Confidence Index Survey," September 2017, https://www.nar.realtor/research-and-statistics/research-reports/realtors-confidence-index, accessed November 2017.

[9] National Association of Realtors, "Realtors Confidence Index Survey."

[10] David Trainer, "Redfin's Valuation Requires Viewing It As Tech Firm, Not Brokerage," *Forbes,* July 26, 2017, https://www.forbes.com/sites/greatspeculations/2017/07/26/redfins-valuation-requires-viewing-it-as-tech-firm-not-brokerage/#61e2a9be2d7e, accessed November 2017.

[11] National Association of Realtors, "Quick Real Estate Statistics," https://www.nar.realtor/quick-real-estate-statistics, accessed November 2017.

[12] Trainer, "Redfin's Valuation Requires Viewing It As Tech Firm, Not Brokerage."

[13] "Real Estate Sales & Brokerage in the US," July 2017, IBISWorld, accessed November 2017.

[14] Realogy, "About Our Business", https://jobs.realogy.com/content/our-businesses/#nrt, accessed November 2017.

[15] Cathie Ericson, "What Is the MLS? The Multiple Listing Service, Explained," Realtor.com, August 2, 2016, https://www.realtor.com/advice/buy/what-is-the-mls-multiple-listing-service/, accessed November 2017.

[16] Ericson, "What Is the MLS? The Multiple Listing Service, Explained."

[17] Michael Arrington, "Zillow Has Competition," TechCrunch, March 29, 2006, https://techcrunch.com/2006/03/29/zillow-has-competition/, accessed November 2017.

[18] James R. Hagerty, "How Good Are Zillow's Estimates?" *The Wall Street Journal,* February 14, 2007, https://www.wsj.com/articles/SB117142055516708035?mg=prod/accounts-wsj, accessed November 2017.

[19] Michael Arrington, "Zillow Adds User Generated Home Information," TechCrunch, September 19, 2006, https://techcrunch.com/2006/09/19/zillow-adds-user-generated-home-information/, accessed November 2017.

[20] Jeffrey M. O'Brien, "What's your house really worth?" *Fortune,* February 15, 2007, http://archive.fortune.com/magazines/fortune/fortune_archive/2007/02/19/8400262/index.htm, accessed November 2017.

[21] Leena Rao, "Zillow Launches Android App To Browse Home Sales And Rental Listings On The Go," TechCrunch, March 17, 2010, https://techcrunch.com/2010/03/17/zillow-launches-android-app-to-browse-home-sale-and-rental-listings-on-the-go/, accessed November 2017.

[22] Leena Rao, "Zillow Soars 200 Percent In First Trade With Over $1 Billion Valuation," TechCrunch, July 20, 2011, https://techcrunch.com/2011/07/20/zillow-soars-200-percent-in-first-trade-with-over-1-billion-valuation/, accessed November 2017.

[23] Michael Arrington, "Real Estate vertical search with Trulia," TechCrunch, October 30, 2005, https://techcrunch.com/2005/10/30/real-estate-vertical-search-with-trulia/, accessed November 2017.

This document is authorized for use only by Nkengie Charles in STRATEGIC PROBLEM SOLVING at Babson College, 2019.

[24] Arrington, "Real Estate vertical search with Trulia."

[25] Arrington, "Real Estate vertical search with Trulia."

[26] Leena Rao, "Real Estate Site Trulia Sees Shares Soar 40 Percent In First Day Of Trading, Valued At Over $500 Million," TechCrunch, September 20, 2012, https://techcrunch.com/2012/09/20/trulia-shares-pop-30-percent-on-first-trade/, accessed November 2017.

[27] John Cook, "Zillow closes $2.5 billion acquisition of Trulia, plans to cut 350 staffers," GeekWire, February 17, 2015, https://www.geekwire.com/2015/zillow-closes-2-5-billion-acquisition-of-trulia-plans-to-cut-350-staffers/, accessed November 2017.

[28] David Trainer, "Sales Sizzle But Profits Elusive At Zillow Group," *Forbes,* March 17, 2016, https://www.forbes.com/sites/greatspeculations/2016/03/17/sales-sizzle-but-profits-elusive-at-zillow-group/#7c34b6cd4ff9, accessed November 2017.

[29] Trainer, "Sales Sizzle But Profits Elusive At Zillow Group."

[30] Trainer, "Sales Sizzle But Profits Elusive At Zillow Group."

[31] "Leading real estate websites in the United States in November 2016, based on market share of visits," Statista, accessed November 2017.

[32] John Cook, "Redfin CEO Glenn Kelman sounds warning bell about money-hungry 'media sites,'" GeekWire, October 17, 2011, https://www.geekwire.com/2011/redfin-ceo-glenn-kelman-sounds-warning-bell-moneyhungry-media-sites/, accessed November 2017.

[33] Cook, "Redfin CEO Glenn Kelman sounds warning bell about money-hungry 'media sites.'"

[34] Renee Lightner, "Home Values Rebound, But Not For Everyone," *The Wall Street Journal,* February 10, 2017, http://graphics.wsj.com/housing-market-recovery/, accessed November 2017.

[35] Amy Feldman, "Silicon Valley Upstart Opendoor Is Changing The Way Americans Buy And Sell Their Homes," *Forbes,* November 30, 2016, https://www.forbes.com/sites/amyfeldman/2016/11/30/home-shopping-networkers-opendoor-is-upending-the-way-americans-buy-and-sell-homes/#74a6e9f5430c, accessed November 2017.

[36] Antoine Gara, "Blackstone's $9.6 Billion Bet On The U.S. Housing Recovery Files To Go Public," *Forbes,* January 6, 2017, https://www.forbes.com/sites/antoinegara/2017/01/06/blackstones-big-bet-on-the-u-s-housing-recovery-files-to-go-public/#63ac54943dba, accessed November 2017.

[37] Samantha Sharf, "Wall Street Firms Build A Single-Family Rental Giant, But It's Still A Minnow In Housing Market," *Forbes,* August 10, 2017, https://www.forbes.com/sites/samanthasharf/2017/08/10/single-family-rental-leaders-invitation-homes-starwood-waypoint-homes-to-combine/#71bbba5a467a, accessed November 2017.

[38] Julie Creswell, "Quicken Loans, the New Mortgage Machine," *The New York Times,* January 21, 2017, https://www.nytimes.com/2017/01/21/business/dealbook/quicken-loans-dan-gilbert-mortgage-lender.html, accessed November 2017.

[39] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 59.

[40] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 91.

[41] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 85.

[42] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 85.

[43] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 3.

[44] Ali Kramer, "We Put the Redfin Estimate to the Test, and the Results Are In," Redfin (Blog), February 2, 2017, https://www.redfin.com/blog/2017/02/redfin-estimate-accuracy.html, accessed January 2018.

[45] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 4.

[46] Chris Matthews, "Meet the Internet's Truth-Telling Economist," *Fortune,* September 19, 2016, http://fortune.com/2016/09/19/nela-richardson-redfin-economist/, accessed November 2017.

[47] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 1.

This document is authorized for use only by Nkengie Charles in STRATEGIC PROBLEM SOLVING at Babson College, 2019.

[48] Redfin Corporation, "Sell With Redfin," https://www.redfin.com/why-sell, accessed November 2017.

[49] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 1.

[50] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 14.

[51] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 57.

[52] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 58.

[53] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 5.

[54] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 57.

[55] National Association of Realtors, "2017 Member Profile," https://www.nar.realtor/research-and-statistics/research-reports/member-profile, accessed November 2017.

[56] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 5.

[57] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 5.

[58] Redfin Corporation, September 30, 2017 Form 10-Q (filed November 9, 2017), p. 19, http://investors.redfin.com/static-files/34c97dbe-6b9f-4ff2-9e74-2cdca0f673ec, accessed November 2017.

[59] Redfin Corporation, September 30, 2017 Form 10-Q, p. 19.

[60] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 59.

[61] Michael Arrington, "Redfin To Change the Rules of Real Estate Sales," TechCrunch, May 31, 2006, https://techcrunch.com/2006/05/31/redfin-can-rewrite-real-estate-rules/, accessed November 2017.

[62] Arrington, "Redfin To Change the Rules of Real Estate Sales."

[63] Redfin Corporation, Press Center, "Redfin Upgrades Online Brokerage Service," November 6, 2008, http://press.redfin.com/phoenix.zhtml?c=252734&p=irol-newsarticle&ID=2230769, accessed November 2017.

[64] Arrington, "Redfin To Change the Rules of Real Estate Sales."

[65] Redfin Corporation, Press Center, "Redfin Upgrades Online Brokerage Service."

[66] Arrington, "Redfin To Change the Rules of Real Estate Sales."

[67] Redfin Press Center, "Redfin Upgrades Online Brokerage Service."

[68] Arrington, "Redfin To Change the Rules of Real Estate Sales."

[69] Arrington, "Redfin To Change the Rules of Real Estate Sales."

[70] Michael Arrington, "Redfin Continues To Shrink The Real Estate Market," TechCrunch, January 31, 2008, https://techcrunch.com/2008/01/31/redfin-continues-to-shrink-the-real-estate-market/, accessed November 2017.

[71] Arrington, "Redfin Continues To Shrink The Real Estate Market."

[72] Timothy B. Lee, "Redfin set out to change real estate. Then real estate changed Redfin." Vox, August 10, 2015, https://www.vox.com/2015/8/10/9110233/redfin-glenn-kelman-profile, accessed November 2017.

[73] Redfin Corporation, Press Center, "Redfin Upgrades Online Brokerage Service."

[74] Glenn Kelman, "Introducing Redfin 3.0: Redfin Becomes a No-Brainer," Redfin (Blog), February 17, 2012, https://www.redfin.com/blog/2012/02/introducing_redfin_30_redfin_becomes_a_no-brainer_introducing_redfin_30_redfin_becomes_a_no-brainer.html#.VbhZ2CpVhBc, accessed November 2017.

[75] Lee, "Redfin set out to change real estate. Then real estate changed Redfin."

[76] Redfin Corporation, "Our Shot at the Mass Market," Medium, November 6, 2008, https://redfin.engineering/our-shot-at-the-mass-market-30dc08c09710, accessed November 2017.

[77] Redfin Corporation, Press Center, "Redfin Upgrades Online Brokerage Service."

This document is authorized for use only by Nkengie Charles in STRATEGIC PROBLEM SOLVING at Babson College, 2019.

[78] Redfin Corporation, Press Center, "Redfin Upgrades Online Brokerage Service."

[79] Redfin Corporation, "Our Shot at the Mass Market."

[80] Redfin Corporation, Press Center, "Redfin Upgrades Online Brokerage Service."

[81] Redfin Corporation, Press Center, "Redfin Upgrades Online Brokerage Service."

[82] Kelman, "Introducing Redfin 3.0: Redfin Becomes a No-Brainer."

[83] Kelman, "Introducing Redfin 3.0: Redfin Becomes a No-Brainer."

[84] Kelman, "Introducing Redfin 3.0: Redfin Becomes a No-Brainer."

[85] John Cook, "What's your real estate agent really thinking? Redfin unveils Agent Insights," GeekWire, March 17, 2011, https://www.geekwire.com/2011/real-estate-agent-thinking-redfin-unveils-agent-insights/, accessed November 2017.

[86] John Cook, "Redfin pulls the plug on Scouting Reports after just five days," GeekWire, October 4, 2011, https://www.geekwire.com/2011/redfin-pulls-plug-scouting-report-days/, accessed November 2017.

[87] Cook, "Redfin pulls the plug on Scouting Reports after just five days."

[88] John Cook, "Redfin rolls out Builder Services to help condo developers and home builders sell properties faster," GeekWire, November 13, 2013, https://www.geekwire.com/2013/redfin-rolls-builder-services-condo-developers-home-builders-sell-properties-faster/, accessed November 2017.

[89] Blair Hanley Frank, "Redfin launches new 3D Walkthrough to help buyers explore houses on the market," GeekWire, August 21, 2014, https://www.geekwire.com/2014/redfin-launches-new-3d-walkthrough-help-buyers-explore-houses-market/, accessed November 2017.

[90] Bridget Frey, "Redfin 'Last Call' Service Informs You When a Home is About to Sell," Redfin, February 9, 2015, https://www.redfin.com/blog/2015/02/redfin-last-call-service-informs-you-when-to-make-an-offer-soo.html#.VUDM6iFVhBe, accessed November 2017.

[91] Dan Primack, "Redfin is now a $500 million company," *Fortune,* November 14, 2013, http://fortune.com/2013/11/14/redfin-is-now-a-500-million-company/, accessed November 2017.

[92] Frederic Lardinois, "Redfin Raises $70.9M To Expand Into New Markets," TechCrunch, December 18, 2014, https://techcrunch.com/2014/12/18/redfin-raises-70-9m-to-expand-into-new-markets/, accessed November 2017.

[93] Lardinois, "Redfin Raises $70.9M To Expand Into New Markets."

[94] Lardinois, "Redfin Raises $70.9M To Expand Into New Markets."

[95] Brad Inman, "What's next for Redfin?" Inman, December 29, 2015, https://www.inman.com/2015/12/29/whats-next-redfin/, accessed November 2017.

[96] Rob Hahn, "The Impact of Redfin Post-IPO: Part 1 – Brokerages," The Notorious R.O.B., July 10, 2017, http://www.notorious-rob.com/2017/07/the-impact-of-redfin-post-ipo-part-1-brokerages/, accessed November 2017.

[97] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 58.

[98] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 33.

[99] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 27.

[100] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 27.

[101] Redfin Corporation, September 30, 2017 Form 10-Q, p. 27.

[102] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 47.

[103] Glenn Kelman, "Diary of an IPO," Redfin (Blog), January 16, 2018, https://www.redfin.com/blog/2018/01/diary-of-an-ipo.html, accessed January 2018.

[104] Kelman, "Diary of an IPO."

[105] Kelman, "Diary of an IPO."

This document is authorized for use only by Nkengie Charles in STRATEGIC PROBLEM SOLVING at Babson College, 2019.

[106] Kelman, "Diary of an IPO."

[107] Kelman, "Diary of an IPO."

[108] Kelman, "Diary of an IPO."

[109] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 16.

[110] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 28.

[111] Redfin Corporation, July 27, 2017 Form 424(b)4, pp. 19-20.

[112] Redfin Corporation, July 27, 2017 Form 424(b)4, pp. 30-32.

[113] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 20.

[114] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 17.

[115] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 21.

[116] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 21.

[117] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 26.

[118] Kelman, "Diary of an IPO."

[119] Katie Roof, "Redfin soars 45% after IPO; CEO calls it 'Amazon of real estate,'" TechCrunch, July 28, 2017, https://techcrunch.com/2017/07/28/real-estate-site-redfin-soars-45-after-ipo/, accessed November 2017.

[120] Redfin Corporation, November 9, 2017, Form 10-Q, p. 18.

[121] Kelman, "Diary of an IPO."

[122] Redfin Corporation, September 30, 2017 Form 10-Q, p. 19.

[123] Redfin Corporation, September 30, 2017 Form 10-Q, p. 2.

[124] Redfin Corporation, September 30, 2017 Form 10-Q, p. 2.

[125] Redfin Corporation, September 30, 2017 Form 10-Q, p. 34.

[126] Redfin Corporation, September 30, 2017 Form 10-Q, p. 19.

[127] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 1.

[128] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 59.

[129] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 59.

[130] Trainer, "Redfin's Valuation Requires Viewing It As Tech Firm, Not Brokerage."

[131] Redfin Corporation, July 27, 2017 Form 424(b)4, p. 59.

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