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Unverifiable Information and Investment Decisions: Evidence from Crowdfunding

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December 14, 2015

Abstract

We analyze the effect of unverifiable information on individuals' investment decisions within a large crowdfunding market. Using detailed data on crowdfunders' investments and location, we demonstrate that unverifiable disclosures increase the amount of capital raised, affect the mix of crowdfunders backing a project, and increase the geographic dispersion of participants. Using both propensity score matching and entropy balancing to address selection issues, we find that providing project updates and comments attract approximately 100 additional non-local experienced crowdfunders. Our analysis suggests that unverifiable disclosures convey information to experienced crowdfunders, mitigate home bias, and have economic consequences for the allocation of capital in crowdfunding markets.

Keywords: Crowdfunding, investment decisions, unverifiable disclosures

JEL classification: M41, G24, L15, R12, D03

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We analyze the effect of unverifiable information on individuals' investment decisions within a large crowdfunding market. Using detailed data on crowdfunders' investments and location, we demonstrate that unverifiable disclosures increase the amount of capital raised, affect the mix of crowdfunders backing a project, and increase the geographic dispersion of participants. Using both propensity score matching and entropy balancing to address selection issues, we find that providing project updates and comments attract approximately 100 additional non-local experienced crowdfunders. Our analysis suggests that unverifiable disclosures convey information to experienced crowdfunders, mitigate home bias, and have economic consequences for the allocation of capital in crowdfunding markets.

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1 Introduction

An important topic in finance and accounting is how information affects individuals' investment decisions and the effect of those decisions on the allocation of capital in the economy. Arms-length investors have an information disadvantage relative to insiders (e.g., entrepreneurs, managers) about potential investments (Akerlof (1970)). This information asymmetry creates incentives for insiders to disclose their private information, thereby reducing the information asymmetry and improving the allocation of capital (Grossman (1981); Milgrom (1981); Diamond and Verrecchia (1991)). Understanding the effect of disclosure on information asymmetry, individuals' investment decisions, and the allocation of capital in the economy is of inherent interest to both regulators and academics.

Identifying the effect of disclosure on information asymmetry and individuals' investment decisions for publicly traded companies is challenging for at least two reasons. First, publicly traded companies are required to issue numerous mandatory disclosures. Regulators, accounting standards, auditors, and information intermediaries facilitate both increased credibility of the disclosed information and a commitment to disclose information (Healy and Palepu (2001); Beyer, Cohen, Lys, and Walther (2010)). In the absence of an exogenous change in mandatory reporting, empirically identifying the effect of mandatory disclosures on information asymmetry is difficult.

Second, although disclosure is predicted to affect investors, the identities of all but the largest investors in public companies are generally unknown, as are their specific trading decisions. Prior research thus generally focuses on the effect of disclosures on investors' aggregate investment decisions, as manifested by changes in stock price and trading volume (e.g., Lang and Lundholm (2000); Healy and Palepu (2001)). However, investors exhibit significant heterogeneity, with these differences likely affecting their response to various disclosures. Thus understanding how individual investors respond to information can provide important insights into the aggregate price and volume responses previously documented. However, the combination of a regulated reporting environment and unobserved investment

decisions by most individual investors present empirical challenges to identifying the effect of disclosure on investment behavior.[1]

In this paper we analyze the relatively new crowdfunding market Kickstarter.com which has a number of appealing characteristics for studying investment decisions. First, crowdfunding markets are characterized by significant information asymmetry, with no mandatory disclosure requirements, verification, or enforcement processes. Within the Kickstarter market, entrepreneurs (termed project creators) create a webpage that describes the product that they want to produce and their required funding. Through this webpage creators communicate with the crowdfunding community by posting updates and comments. After reviewing this generally unverifiable information, potential crowdfunders decide whether to "back" a project by pledging funds to the creator. Although these pledges differ from traditional equity and debt investments, they reflect the projects that crowdfunders wish to see eventually completed (an investment). In exchange for their pledges crowdfunders receive specific "rewards" from the creator (e.g., finished product) only after the project is successfully completed. Delivery of these rewards is uncertain and non-enforceable.[2] Launched in April 2009, Kickstarter has raised over $1 billion for more than 91,000 projects as of August 2015, evidence that despite significant information asymmetry and the lack of enforcement or verifiable disclosures, Kickstarter has enabled the allocation of capital to many entrepreneurial endeavors.[3]

A second appealing feature specific to Kickstarter is its "all or nothing" funding model where projects which do not receive sufficient pledges do not collect any funds. Entrepreneurs generally have 30 to 60 days to reach their funding goal. Thus, reducing information asymme-

[1] Institutional investors managing more then $100 million must disclose their investment positions quarterly (but not individual trades) in US publicly traded stocks via filing 13F, and individual investors owning 5% or more of outstanding shares in any company must register with the SEC. While some brokerage-level data and country-level track the identities and trades of investors, these data do not address the empirical challenge of identifying the effect of disclosure on changes in information asymmetry.

[2] "Kickstarter doesn't evaluate a project's claims, resolve disputes, or offer refunds." (www.kickstarter.com/Trust)

[3] Other smaller rewards-based crowdfunding platforms include Indiegogo, RocketHub, and FundAnything.

try and attracting additional crowdfunders via disclosures from the large and geographically diverse Kickstarter market can have significant payoffs. A third appealing feature is that we observe *all* pledges made by *all* crowdfunders within the Kickstarter universe, allowing us to contrast the investment decisions of different types of crowdfunders. Fourth, we observe all pledges to both funded and failed projects which allows us to empirically address selection issues regarding which projects are funded. Finally, 24% of crowdfunders on Kickstarter list their geographic location, so unlike traditional capital markets, we can analyze the effect of geographic proximity on investment behavior.[4]

The disclosures we analyze are primarily unverifiable statements and descriptions of the proposed project. Credible voluntary disclosures are generally considered more effective at reducing information asymmetry, but unverifiable or "cheap-talk" disclosures can also convey information, particularly when disclosure is costly or in repeated games (Crawford and Sobel (1982); Gigler (1994); Stocken (2000)). However, the disclosures we analyze are not part of a repeated game and their cost is arguably negligible, suggesting that these disclosures should have limited information content. Previous empirical research demonstrates that unverifiable disclosures influence financial market prices in peer-to-peer debt markets (Herzenstein, Sonenshein, and Dholakia (2011); Michels (2012)) and individuals' beliefs more generally (Nisbett, Zukier, and Lemley (1981); Gilbert, Tafarodi, and Malone (1993)). In this paper we examine whether unverifiable disclosures influence individual's financing decisions and the allocation of capital in crowdfunding markets.

We find that projects with videos, more pictures, and FAQs are more likely to be funded. Furthermore, we find that these disclosures are also associated with the type of crowdfunders backing a project. We identify the 4,786,505 crowdfunders who made pledges to projects in our sample and calculate the percentage of onetime (i.e., back only one project) and experienced (i.e., back at least 6 projects in the same category) crowdfunders for each project.

[4] Although we only have location data for 24% of all backers, we have no reason to expect individuals from certain geographic areas are more or less likely to share their location. Project and crowdfunder locations are discussed in Section 3.

These two types of crowdfunders differ in their familiarity with the Kickstarter process, ability to evaluate project disclosures, and their relationship with the project creator, with onetime crowdfunders likely having a personal connection to the project creator (Agrawal, Catalini, and Goldfarb (2011)). We find that posting FAQs and pictures is positively associated with experienced backer support and negatively associated with onetime backer support, suggesting that onetime crowdfunders are more likely to support projects with minimal disclosures whereas experienced crowdfunders gravitate to projects which provide more detailed descriptions. These tests suggest that reliance on unverifiable information varies with crowdfunder type.

The disclosures we examine, which reflect the amount of unverifiable information provided by the project creator, also capture the inherent quality of the project. To disentangle the effect of disclosure from project quality we identify a sample of projects with relatively similar quality in order to decrease the likelihood that disclosure choices are driven by differences in project quality. Specifically, we eliminate unfunded projects and projects that receive more than 150% of their funding goal.[5] Excluding projects from the two extremes allows us to examine how differences in disclosure are associated with funding success, crowdfunder investment decisions, and capital allocation for a sample of projects with roughly similar project quality.[6]

Within this restricted sample we first examine associations between disclosure characteristics and the amount of capital raised. Kickstarter guidelines suggest that a project's funding goal should be the minimum amount creators need to fulfill all promised rewards.[7] In our restricted sample, all projects reached their goal. However, project creators keep all funds pledged in excess of the funding goal and often post unofficial "stretch goals" to

[5] Untabulated results are similar using projects which realize between 100% and 200% of their funding goal. As discussed in Section 4.3, less than 2% of our projects receive between 50% and 99% of their funding goal, limiting our ability to identify a sample of unfunded projects with reasonable quality.

[6] An alternative source of variation is project development. For all technology and design projects, Kickstarter requires that creators have a prototype prior to launching a campaign, limiting the extent of this variation.

[7] www.Kickstarter.com/help/handbook/funding

encourage additional pledges after the funding goal is met. We find that posting FAQs and more pictures are associated with greater funding success. In contrast, conditional on being funded, including a video has no association with funding success, likely because the majority of funded projects include a video. These tests suggest that after holding project quality relatively constant, projects which provide additional unverifiable information via pictures and FAQs also raise more capital.

We next analyze the association between the types of crowdfunders a project attracts and the project's funding success. Holding constant the total number of project backers, we find that the percentage of onetime crowdfunders is negatively associated with the amount of capital raised whereas the percentage of experienced crowdfunders is positively associated with the amount of capital raised. Although we do not have data on the size of crowdfunders' pledges, these analyses suggest that experienced crowdfunders on average make larger pledges and that, all else equal, are preferable to onetime crowdfunders.

In addition to the distinction between onetime and repeat crowdfunders, the geographic dispersion of crowdfunders can also have significant consequences for funding success. According to Quantcast, as of August 2015 the Kickstarter website reaches over 1.3 million U.S. people monthly. However, evidence of home bias on Kickstarter suggests that the number of individuals likely to view any particular project is dependent on where the project is located (Madsen and McMullin (2015)). Because funding is a direct function of the number of backers and average pledge size, reaching a larger audience is an important determinant of funding success. We therefore next analyze associations between the geographic mix of a project's backers and its funding success.

Out of the 4.7 million crowdfunders in our sample, 1,161,261 (24.3%) provide a self-disclosed location. For each project we calculate the percentage of experienced backers located outside the project's state as well as the total number of states containing at least one backer and examine associations between the geographic dispersion of a project's backers and its funding success. Our analysis suggests that funding success is positively associated

with the percentage of non-local experienced crowdfunders, and that these non-local backers have a larger effect on funding success than local backers. Furthermore, projects which attract backers from a greater number of states are also associated with greater funding success. Together, these results suggest that projects which reach a more geographically disperse crowd raise more capital.

Building on the funding benefits of attracting non-local experienced backers, in our final analysis we examine whether project disclosures influence the geographic dispersion of its backers. Our outcomes of interest are the number of non-local repeat backers and the number of states containing at least one backer. Although our focus on funded projects reduces variation in project quality, the decision to disclose is not random and could correlate with project quality. We therefore estimate the effect of disclosure on backer dispersion using both propensity score matching and entropy balancing. Specifically, we compare funded projects whose creators post "update" pages and respond to comments with funded projects with no updates/comments. After matching projects on their propensity to provide these additional disclosures, we estimate that projects which post updates and comments attract an additional 102.2 non-local repeat backers from 11.8 additional states. Robustness tests using entropy balancing produce comparable estimates. The consistency of these estimates suggests that within this sample of funded projects, providing more unverifiable disclosure increases the geographic dispersion of a project's backers.

Together, our results suggest that unverifiable information influences crowdfunders' investment decisions and the allocation of capital in crowdfunding markets. This paper offers several contributions. First, we contribute to research on the determinants of individuals' investment decisions. Several million individuals have participated in crowdfunding over the last five years, drawing the attention of regulators and interest in understanding decision-making in this new market. Related research in household finance finds that geography, culture, sophistication, loyalty, product market choices, familiarity, and attention-grabbing events influence individuals' investment decisions (Campbell (2006); Grinblatt and Kelo-

harju (2000); Huberman (2001); Grinblatt and Keloharju (2001); Barber and Odean (2008); Cohen (2009); Keloharju, Knüpfer, and Linnainmaa (2012)). A related home bias literature documents a preference by individuals for local investments (French and Poterba (1991)); Coval and Moskowitz (1999); Ivkovic and Weisbenner (2005)) and that these preferences are present in online purchases (Hortaçsu, Martínez-Jerez, and Douglas (2009); Blum and Goldfarb (2006)) and loan- and rewards-based crowdfunding (Burtch, Ghose, and Wattal (2014); Lin and Viswanathan (2014); Madsen and McMullin (2015)). We provide evidence that unverifiable disclosures influence individuals' investment decisions, mitigate home bias, and alter the allocation of capital in crowdfunding markets.

We also contribute to research on the economic consequences of the reporting environment. Previous research finds that improving financial statement comparability and more generally the financial reporting environment improves international capital mobility and decreases home bias by mutual funds and institutional investors (Young and Guenther (2003); Bradshaw, Bushee, and Miller (2004); Aggarwal, Klapper, and Wysocki (2005); Covrig, Defond, and Hung (2007); DeFond, Hu, Hung, and Li (2011)). Related research by Bushee and Noe (2000) suggests that firms can influence the composition of institutional investors through their disclosure policies. In contrast to these studies, which examine the effect of disclosure in a regulated reporting environment with at least some level of enforcement, we examine the effect of voluntary, unverifiable disclosures on individuals' investment decisions and the allocation of capital within an unregulated, primarily domestic crowdfunding market.

2 Crowdfunding and Hypothesis development

According to the *Oxford Dictionary*, crowdfunding is "the practice of funding a project or venture by raising monetary contributions from a large number of people, typically via the internet." Mollick (2014) and Burtch, Ghose, and Wattal (2012) provide overviews of the different types of crowdfunding (e.g., donation, reward, lending, and equity), various platforms currently used, and dynamics of both successful and failed crowdfunding campaigns.

Agrawal, Catalini, and Goldfarb (2014) and Ahlers, Cumming, Gunther, and Schweizer (2012) survey in more detail the growing area of equity crowdfunding.[8] Potential backers demand information about the project being funded and the entrepreneur's capabilities, analogous to demands for information in financial markets by outside stakeholders (Jensen and Meckling (1976); Bushman and Smith (2001)). Disclosures via webpages are the primary source of this information, and are generally unverifiable statements of intent and background. We examine the effect of these unverifiable disclosures on projects' funding success and the investment decisions of a large group of geographically diverse crowdfunders.

If unverifiable disclosures in a crowdfunding setting are perceived as informative and used by potential backers, then providing additional disclosures will increase crowdfunders' participation and the project's probability of being successfully funded. Our first hypothesis is thus:

> H1: The likelihood of being funded is increasing in the amount of voluntary, unverifiable information disclosed by the project creator.

Crowdfunders have various degrees of experience on Kickstarter. Onetime crowdfunders, if friends or family of the project creator as suggested by Agrawal, Catalini, and Goldfarb (2011), are more likely to base their pledges on private information about the backer. In contrast experienced repeat backers are more likely consumers of project disclosures. Due to differences in crowdfunders' relationship with the project creator and their own prior experience on Kickstarter, different types of crowdfunders (i.e., onetime, experienced) may respond

[8] More specific research on crowdfunding includes analysis of intra-campaign timing of pledges (Kuppuswamy and Bayus (2014); Burtch, Ghose, and Wattal (2013)), reciprocity of entrepreneurs in backing other entrepreneurs' projects (Zvilichovsky, Inbar, and Barzilay (2013)), privacy preferences (Burtch, Ghose, and Wattal (2015)), fulfillment of promised project rewards (Mollick (2014)), role of gender (Mollick (2013)), herding behavior around reputable investors (Kim and Viswanathan (2013)), and incentives for entrepreneurs to use crowdfunding, including limited access to capital and credit (Kim and Hann (2014)).

differently to the types of disclosures made my project creators. Our second hypothesis is thus:

H2: The mix of crowdfunders backing a project is associated with the amount and type of unverifiable information disclosed by the project creator.

If disclosures reduce information asymmetry between creators and crowdfunders and encourage additional and potentially larger pledges, then disclosures will also increase total dollars pledged. Project creators have incentives to raise as much capital as possible during their brief funding period. Thus creators' primary objective during the funding period is to increase the average pledge size and/or number of backers. While each pledge helps the project creator reach his funding goal, some backer types may be more desirable than others. Attracting onetime crowdfunders, particularly during the early funding period, could be an important signal of the strength of a project creator's personal network. Yet a project creator's personal network is likely small relative to the population of approximately 200,000 active crowdfunders on Kickstarter. Thus, attracting experienced repeat crowdfunders is also likely an important determinant of funding success. Furthermore, because crowdfunders exhibit preferences for same-state projects and there are always more repeat crowdfunders outside a project's state than within, reaching a more geographically disperse crowd will also likely increase the amount of capital raised. Thus while the association between the percent of onetime backers and funding success could be positive or negative, the association between the percent of experienced and non-local experienced backers and funding success is likely positive. Our next two hypotheses are thus:

H3: Total dollars pledged (scaled by funding goal) is increasing in the amount of voluntary, unverifiable information disclosed by the project creator.

H4: Total dollars pledged (scaled by funding goal) is associated with the percent of onetime backers and positively associated with the percent of experienced repeat and non-local experienced repeat backers.

If crowdfunders' preference for local projects is influenced by perceived information asymmetry between themselves and non-local project creators, then providing additional disclosures, even unverifiable, which decrease this asymmetry will result in greater participation by non-local backers. This leads to our fifth and final hypothesis:

H5: The geographic dispersion of a project's backers is increasing in the amount of voluntary, unverifiable information disclosed by the project creator.

3 Data

To provide a basic overview of a Kickstarter project's main disclosures, we first discuss project-level descriptive statistics including disclosures on project main pages, characteristics of project creators, the types of crowdfunders projects attract, and methods creators use to communicate with these backers.

Our initial sample is the universe of projects posted on Kickstarter.com from its launch date in April 2009. After eliminating projects with funding periods ending after June 20, 2014, projects with a goal less than $5,000 or more than $2,000,000, suspended/canceled projects, and foreign-based projects and projects with missing location data, we identify 60,787 projects for our analysis.[9] Table 1 Panel A details our sample selection criteria. Table 1 Panel B tabulates projects by both size and across the 15 general categories on Kickstarter. Each of these general categories includes subcategories for a total of 144 cat-

[9] Our data collection ended June 20, 2014. No project with a goal in excess of $2,000,000 was successfully funded during our sample period.

egories. Univariate statistics suggest that the probability of being funded is monotonically decreasing in the size of the funding goal: 46.84% of small projects (goal between $5,000 and $7,999) are successfully funded, whereas only 41.66% of medium projects ($\$8,000 - \$16,499$) are funded and 27.44% of large projects ($> \$16,500$) are funded.[10] The most popular categories (by number of projects launched) are "Film and Video" and "Music" with 16,568 and 10,736 projects, respectively. Categories with the highest univariate success rate are "Dance" and "Theater" (68.05% and 53.74%, respectively), whereas the "Technology," and "Games" categories have the highest average funding goals ($50,433 and $42,713, respectively).

The initial disclosure made by project creators is the project's main webpage, which primarily consists of text, images, and video. Figure 1 displays a portion of a sample main page. The purpose of the main page is to inform the Kickstarter market of the product that creators will produce if funded, offer answers to frequently asked questions, and discuss risks and challenges the project creator foresees. According to Kickstarter's *Creator Handbook*, this project page should "inspire excitement for [the creator's] idea, and also make potential backers confident in [the creator's] ability to see it through." The main page itemizes the project's different reward levels and pledge amounts. Also listed is the project's location, independent of whether the project has a geographic focus. From the project's "main page" we extract several project-specific data items. The first section of Table 1 Panel C summarizes and Appendix A defines these project-specific characteristics. The average project in our sample has a goal of $26,152 but receives only $13,681 in pledges (and is thus unsuccessfully funded) from 167 backers, and has 10 reward tiers and 4.6 pictures. 54% of our projects have a funding period of 30 days or less, 61% have at least one reward tier with a limited quantity of rewards available, 22% include a "Frequently Asked Questions" section, and 2% are selected by Kickstarter staff and are "featured" on the website. Although some of these project characteristics can be confirmed (i.e., featured on a website), the *content* of the information provided is generally unverifiable. Furthermore, because the cost of providing

[10] We equally divide all projects into these three groups.

such disclosures is likely small (e.g., pictures, video), their ex ante effect on information asymmetry and crowdfunder participation is uncertain.

The two main types of participants in this market are project creators and crowdfunders. We collect data on both types of participants. For project creators, we identify whether the individual previously launched a different Kickstarter project, whether the creator linked her Facebook account, and the number of friends the creator had on Facebook if her account was linked. As summarized in the second section of Table 1 Panel C, 12% of project creators have previously launched a Kickstarter campaign and 41% do not link a Facebook account. Creators who link Facebook have on average 891 friends.

We identify which crowdfunders backed a project from each project's "backers page."[11] As of June 2014, 4,786,505 users had backed at least one of the 60,787 projects in our sample. We extract data for each of these users from their "profile page," including the date they created a profile on Kickstarter, list of all projects they have backed, and a self-identified location for 787,431 crowdfunders which reside in the United States.[12] After merging this profile data with each project's list of backers, we identify characteristics and geographical distribution of backers supporting each project. As summarized in the third section of Table 1 Panel C, the average project attracts crowdfunders from 22.4 distinct US cities and 6.7 states, has 46 onetime backers (i.e., an individual who never backs any other project) and 42.7 repeat backers who back at least 6 projects in the same category. Figure 2 Panels A through C plot the locations of domestic projects, domestic crowdfunders who back only one project in our sample, and experienced crowdfunders who back at least six projects in our sample. Although projects and crowdfunders concentrate in large cities, all three plots highlight substantial geographic variation within the US.

In addition to project, creator, and backer characteristics, we also measure communication between creators and crowdfunders. Both creators and crowdfunders can post comments

[11] As of August 2015 these pages are no longer available on Kickstarter.
[12] We also identify 373,830 crowdfunders with a self-disclosed location outside of the United States.

about the project. As summarized in the final section of Table 1 Panel C, creators post a comment on 26% of our sample projects during their funding period, with an average number of 2.12 comments. Creators can also post additional "update" pages subsequent to posting their project's main page. These update pages typically communicate additional information about the project, clarify prior disclosure, or provide descriptions of additional goals. 63% of projects have at least one update posted during the funding period, with an average of 3.49 updates.

4 Disclosure and Crowdfunding

4.1 Funding Success

We begin our analysis examining the association between the likelihood a project is funded and characteristics of the project, the disclosure, and the creator. A project creator's objective is to receive funding for an entrepreneurial idea. Both the inherent quality of that idea and the disclosure choices used to convey the idea affect the amount of funding raised. Transparent disclosures, such as including a video, discussing risks and challenges, and including an FAQ section convey a well developed idea, which attracts more crowdfunders and increases the probability of reaching the project's funding goal. Thus our primary outcome of interest in this initial analysis is whether a project was successfully funded.[13]

The regression we estimate is of the following form:

$$\text{Funded} \quad = \quad \alpha + \beta_1 \text{Characteristics} + \delta \text{Category FE} + \gamma \text{Year-Month FE} + \epsilon_{i,t} \qquad (1)$$

where *Funded* is an indicator if the project was funded and *Characteristics* include project, disclosure, and creator characteristics. The project characteristics we consider include *Goal*,

[13] The probability of being funded is obviously not independent of the funding goal. We assume that goals are the minimum amount needed for a creator to complete the project, and control for the size of the goal in our empirical specifications.

the amount of money the creator is seeking to raise (standardized to have a mean of zero and standard deviation of 1), $Duration30\,Dummy$, an indicator set to one if the project has a funding period of 30 days or less, $Reward\,Tiers$ and $Reward\,Tiers^2$, the number of reward tiers offered by the creator for pledges of various sizes (also standardized), and $Limit\,Dummy$, an indicator set to one if any of the reward tiers has a limited quantity available. The disclosure characteristics we analyze include $FAQ\,Dummy$, an indicator if the project includes an FAQ section, $Video\,Dummy$, an indicator if the project's main page includes a video, $Pictures$ and $Pictures^2$, the number of images on the project's main page (also standardized), and $Featured\,Dummy$, an indicator if the project was featured on the Kickstarter main page. Finally, we consider two creator characteristics: $Experienced\,Dummy$, an indicator set to one if the project creator has previously launched a Kickstarter campaign, and $No\,Facebook\,Dummy$ if the project creator failed to link a Facebook account. We include fixed effects for each of the 144 categories on Kickstarter as well as year-month fixed effects. Standard errors are two-way clustered by year-month and category.

Table 2 tabulates coefficient estimates for our baseline model. Column 1 includes all projects after dropping 11 singletons (i.e., categories with only one observation in the sample) to avoid biasing the regression standard errors (Correia (2015)). We also estimate this regression on various subsamples. We do this to examine how characteristics impact the likelihood of funding differently across types of projects. Columns 2 and 3 investigate the subset of tangible and non-tangible projects (projects in the design, technology, or games categories and their complement) and columns 4 through 6 investigate partitions by size (small, medium, large projects). The effects of project, disclosure, and creator characteristics are generally similar across these various samples. We focus on the analysis of all projects in column 1 and note when the effects differ for any of the subsamples.

Consistent with the univariate analysis in Table 1 and analysis by Mollick (2013), projects with larger goals are less likely to be successfully funded. Projects with shorter funding

periods are more likely to be funded, unless the project is in a tangible category and then shorter funding periods have no impact. Shorter funding periods demonstrate confidence by the creator and induce greater focus on quickly attracting attention and backers. Creator's have flexibility in the number of rewards they offer. The positive coefficient on $RewardTiers$ and negative coefficient on $RewardTiers^2$ suggests that offering more reward tiers has a positive but decreasing effect on the probability of being funded, possibly through greater variation in the suggested contribution amounts. Limited reward tiers are frequently used for highly discounted rewards to encourage early participation. However, by providing limited quantities of a discounted reward, these limits reduce incentives for crowdfunders to back a project after the limit has been reached. Empirically, we find that providing a limited quantity of a reward tier reduces the probability that tangible and small projects will be funded, but increases this probability for projects with large funding goals.

Turning to the disclosure choices of creators, our evidence suggests that providing more information is associated with a greater likelihood of being successfully funded. Specifically, including an FAQ section, posting a video, and including pictures all increase the probability of being funded (with pictures exhibiting a positive but decreasing benefit). Being featured on the Kickstarter website has the largest effect on the funding outcome. Less than 2% of projects are featured on the website, and our analysis suggests that this promotion increases the probability of being funded by 114%.[14] Experienced creators are more likely to reach their funding goal, and failing to link a Facebook account reduces the likelihood of success for non-tangible and small projects.

4.2 Crowdfunder Mix

We next analyze how project characteristics and disclosure choices are associated with the mix of backers supporting a project. There are two general types of crowdfunders on

[14] The average value of the dependent variable is 0.386. Thus, dividing the coefficient into this average yields the increased probability (0.441/0.386 = 1.14).

Kickstarter—onetime crowdfunders and repeat crowdfunders. As suggested by Agrawal, Catalini, and Goldfarb (2011), onetime crowdfunders likely have a personal connection with the project creator. Due to their limited participation on Kickstarter, onetime crowdfunders likely back a project based on private information about the project creator or due to mass publicity of the project. They show up in our sample only once and are the most common type of crowdfunder on Kickstarter: within the universe of crowdfunders, the median number of projects backed is one.

Repeat crowdfunders, who back at least 6 projects in the same category during our sample period, are more likely to back a project based on their evaluation of the project's webpage and current funding status. The average repeat crowdfunder is active on Kickstarter for 766 days and backs 16.6 projects. These crowdfunders are present in every US state and represent a sizable crowd: on average over 200,000 repeat crowdfunders are active on Kickstarter at the start of each project's campaign.

Onetime and repeat crowdfunders thus represent two extremes of crowdfunder types. Because anyone can be a crowdfunder, the number of *potential* onetime crowdfunders for a project is a function of population, personal networks, and advertising. However, reaching these individuals and persuading them to support a crowdfunding project is difficult. In contrast, repeat crowdfunders already exhibit a willingness to back projects. Given the differences in these crowdfunder types and prominent role each plays in the crowdfunding process, we examine associations between project disclosures and the types of crowdfunders backing projects.

We identify the 4,786,505 crowdfunders who made pledges to projects in our sample and calculate the percentage of onetime and experienced crowdfunders for each project. We estimate regressions of the following form:

$$\text{Crowdfunder Mix} \quad = \quad \alpha + \beta_1 \text{Characteristics} + \delta \text{Fixed Effects} + \epsilon_{i,t} \tag{2}$$

where Crowdfunder Mix is either the percent of onetime or repeat crowdfunders and we include the same set of project, creator, and disclosure characteristics from Table 2. Because the dependent variables are scaled by the total number of backers, we eliminate all projects with fewer than five total backers to avoid scaling issues. Category and year-month fixed effects are included in all specifications, and standard errors are clustered by both category and year-month.

Results are tabulated in Table 3. We find that posting FAQs and pictures is positively associated with experienced backer support and negatively associated with onetime backer support, suggesting that onetime crowdfunders, who are more likely friends and family, are more likely to support projects with minimal pictures and FAQs whereas experienced crowdfunders gravitate to projects which provide more detailed descriptions. Interestingly, posting a video is negatively associated with repeat backer support, suggesting that experienced backers are more willing to examine projects without videos than one-time backers. These tests suggest that reliance on unverifiable information varies with crowdfunder type.

4.3 Disclosure and Project Quality

The previous analysis finds that projects which provide more information are more likely to be funded, and that these disclosures influence the type of crowdfunders backing a project. However, these same disclosure variables also capture the quality of the project, and higher quality projects are inherently more likely to be funded. To disentangle the effect of disclosure from project quality, we restrict analysis in this section to only projects which are funded. Funded projects, by definition, are high enough quality to attract a sufficient number of pledges. Funded projects also differ in significant ways from unfunded projects. Figure 3 plots the histogram of the total dollars pledged divided by funding goal (Percent Funded), truncated at 150%. All projects with a percent funded less than 1 are by definition not funded. As depicted, the vast majority of unfunded projects receive few if any pledges. Only 2% of our sample projects receive at least 50% of their funding goal but go unfunded.

This significant difference in funding outcome suggests that project quality, rather than any particular disclosure, primarily determines whether a project will be funded. Furthermore, there is a long right-tail to the distribution: 7% of projects raise more than 150% of their funding goal. Some projects are thus wildly successful, and their success is likely primarily driven by the concept or idea rather than the form of disclosure. We therefore focus on the sample of funded projects with between 100 and 150% funding success and analyze the effect of disclosure on the amount of capital raised by these projects with roughly similar project quality.

We estimate a modified version of equation 1 on the sample of funded projects with similar project quality. The outcome of interest is the project's percent funded (total dollar value of pledges divided by project goal). The regression thus takes the following form:

$$\text{Pct Funded} = \alpha + \beta_1 \text{Characteristics} + \delta \text{Category FE} + \gamma \text{Year-Month FE} + \epsilon_{i,t} \quad (3)$$

where we include a similar set of project, creator, and disclosure characteristics. Because the dependent variable is scaled by funding goal for these specifications we drop this control variable.

Table 4 tabulates coefficient estimates from equation 3. 18,538 projects (30.5%) meet our criteria of projects funded between 100 and 150%. In column 1, the baseline model, we find that projects with shorter funding periods, more reward tiers, and a limit on at least one reward tier are associated with greater funding success. Of the three disclosure variables we investigate, two are positive and statistically significant. Including an FAQ section and providing more pictures are both associated with greater funding success, whereas including a video has no effect on this sample of successfully funded projects. Being featured by Kickstarter staff has the largest economic impact, increasing percent funded by 2.8 percentage

points. Interestingly, not linking a Facebook page is also associated with greater funding success, perhaps through reliance on the Kickstarter crowd rather than personal networks.

We next examine associations between crowdfunder types and the amount of capital raised. This analysis provides important evidence on the extent to which certain types of crowdfunders are beneficial. We view this evidence as an important precursor to determining the desirability of attracting certain types of crowdfunders. We augment equation 3 and include in separate regressions the percent of onetime and repeat backers relative to total backers. These variables capture whether increasing the number of a particular type of crowdfunder, while holding constant the total number of backers, is associated with greater or lower funding success. Current research finds that crowdfunders exhibit home bias and tend to back projects in their same-state (Madsen and McMullin (2015)). Creators which attract backers from outside their state are by definition able to reach a broader audience and thus potentially increase the amount of capital they can raise. We thus also include in separate regressions the percent of non-local repeat backers and the log number of states containing at least one backer, which capture the geographic dispersion of a project's backers.

Results of the augmented version of equation 3 are tabulated in Table 4 columns 2 through 5. The coefficient estimates suggest that a one-standard-deviation increase in the percent of onetime backers is associated with a decrease in the project's funding of 1.7 percentage points, whereas a comparable increase in the percent of repeat and non-local repeat backers is associated with increases of 1.9 and 2.1 percentage points. With an average goal size of \$15,690 for these funded projects, getting relatively more repeat backers while holding constant the total number of backers amounts to an additional \$267–\$330. A 50% increase in the number of states containing at least one backer is associated with a 1.2 percentage point increase in funding.

Together, the results in this section suggest that voluntary, unverifiable disclosures increase the likelihood of funding and total capital raised. Furthermore, the type of backer attracted to a project is associated with the amount of capital raised. Because we are hold-

ing constant the number of backers, these analyses suggest that repeat crowdfunders and non-local crowdfunders make larger pledges, generating more capital for the project creator. According to Yancey Strickler, co-founded of Kickstarter, repeat backers contributed 63% of the total funds to-date on Kickstarter, demonstrating the importance of attracting their support to successfully fund a project.[15] Although individual-level pledges are not observable on Kickstarter, this analysis on the associations between crowdfunder mix and funding outcomes provides important evidence on the benefits associated with attracting non-local repeat crowdfunders. In the next section we turn to the effect of disclosures on attracting non-local repeat crowdfunders and overcoming local geographic preferences.

4.4 Crowdfunder Dispersion

Crowdfunding provides the ability to collect many small donations from a large group of individuals. Thus the larger the crowd a project can reach, the more capital an entrepreneur can raise and the better the project's chances of success. Project creators who link their Facebook account have on average 891 friends, with only 1% having more than 4,706. Crowdfunding websites such as Kickstarter offer an appealing method of collecting donations from a project creator's personal network, yet the size of these personal networks is dwarfed by the potential crowdfunders already on Kickstarter. During our sample period, on average over 200,000 active repeat crowdfunders are making pledges when a campaign is launched, and our evidence suggests that these repeat crowdfunders, particularly non-local crowdfunders, make larger pledges than onetime crowdfunders. Due to the magnitude of their contributions, familiarity with the Kickstarter process, consumption of project disclosures, and documented preference for same-state projects, we analyze the impact of providing additional disclosures on the number of non-local repeat crowdfunders and the geographic diversity of all backers making pledges to a project.

[15] Source: Crowds2.0 Conference held at NYU. See https://www.youtube.com/watch?t=846&v=ns1ECImPMNg.

We consider two forms of additional disclosure: posting project updates and creator comments. Subsequent to launching a project's main webpage creators can post "update" pages containing additional information such as the project's status, adaptations to the project, and responses to known concerns. Providing additional disclosure through these updates demonstrates a commitment to the project and provides more information for potential crowdfunders. Creators and backers also have the ability to post comments to the project page. Whereas comments by backers can have various motivations, from conveying support to questioning the creator's design choices, comments by creators are generally focused on providing additional information, expressing gratitude, and resolving backer concerns. Creator comments are thus an additional signal to potential crowdfunders of a creator's commitment to the project, accessibility, and transparency, yet their content is generally unverifiable.

We again restrict our sample to projects which are 100-150% funded. Although this sample selection removes major differences in project quality, providing updates and posting comments within this funded sample is not random, and could still be correlated with project quality or entrepreneurial ability. To identify the effect of disclosure on crowdfunder participation, we use propensity score matching to address selection bias concerning which project creators post updates and comments. After matching projects on their estimated propensity to provide additional disclosures, differences in project outcomes are more likely attributable to the disclosures rather than differences in project quality or creator characteristics.

To examine the effect of additional disclosures (updates and comments) on participation by crowdfunders, we create a treatment indicator equal to one if a project creator posts five or more updates and at least two comments. These cutoffs approximately correspond to the 75th percentile for each variable. We further retain projects with no updates and no comments as a control sample. The requirement that creators post at least five updates and two comments demonstrates a significant volume of additional voluntary, generally unverifiable information and results in a stark contrast in the amount of information provided relative to

the control group.[16] After matching on the probability of issuing these additional disclosures, and verifying insignificant differences in other observable project and creator characteristics, our tests provide evidence of the effect of a significant increase in disclosure on the project's number of backers and the geographic diversity of those backers.

We estimate the propensity for project creators to post updates and comments using the following non-linear regression:

$$\text{Treatment} \quad = \quad \alpha + \beta_1 \text{Characteristics} + \epsilon_{i,t}. \tag{4}$$

where $Treatment$ is an indicator set to one if the creator posts at least five updates and two comments. We include several project characteristics intended to capture variation in project quality and determinants of providing these additional disclosures. Because we match observations on the predicted propensity score, we slightly modify our model to ensure that all covariates are balanced across treatment and control observations and that the propensity score is well behaved. In our model we thus include the log project goal, an indicator if the project has a funding duration of 30 days or less, the standardized number of reward tiers, an indicator if the project had a limited quantity on any reward tier, our three disclosures measures (i.e., FAQ, video, and pictures) which also capture variation in project quality, and indicators if the project was featured, if the project creator has launched a previous Kickstarter campaign, and if the project is in a tangible category (i.e., design, games, technology).[17]

We tabulate estimates of the propensity score model in Table 5. Projects with larger goals, more reward tiers, a limit on a reward tier, and in a tangible category are more likely to post updates and comments, whereas projects with a shorter funding period are less likely to

[16] In robustness tests we find similarly significant results, albeit smaller magnitudes, when defining treatment as posting at least one update and one comment.

[17] Due to a relatively small sample we cannot include category or time fixed effects and simultaneously achieve covariate balance across treatment and control samples.

engage in these activities. Providing other forms of disclosure (e.g., video, pictures, and FAQ) increases the probability of posting updates and comments. Projects which are featured are also more likely to post updates and comments. Experience in previous crowdfunding campaigns is insignificantly associated with the likelihood of posting these items.

The outcomes we examine are the number of non-local repeat backers and the number of states containing at least one backer. To estimate the effect of posting updates and comments on crowdfunder participation we use stratification matching. Specifically, we stratify the estimated propensity score from equation 3 into blocks such that there are insignificant differences in the propensity score for treatment and control observations within each block. We further verify that each of the covariates from equation 3 is also balanced within each block, such that there are insignificant differences for each variable between treatment and control observations. Within each block we then calculate the average difference in our outcome variables between treatment and control samples, and calculate a weighted-average over all the blocks, with weights based on the number of observations in each block. Standard errors are bootstrapped with 1,000 repetitions.

Table 6 tabulates results from matching on propensity scores. Panel A tabulates differences in the number of non-local repeat backers and Panel B the number of states containing at least one backer. We estimate the effect of providing additional disclosures for the entire sample, as well as subsamples of projects in a tangible category, projects in a non-tangible category, projects with no location-specific words on their main page, projects by experienced creators, and projects by novice creators. In columns 2 and 3 we tabulate the number of treatment and control observations, respectively, and in columns 4 and 5 the average number of backers/states in the treatment and control samples, respectively.

Across all samples, we find consistent evidence that posting updates and comments results in a significant increase in the number of non-local repeat backers and number of states containing at least one backer. Focusing on the analysis of the entire sample, the average treatment effect for the treated (ATT) is 102.2 additional backers and 11.8 additional states.

The results suggest that providing additional disclosure results in a significant increase in the number of backers and the geographic diversity of those backers.

In Table 7 we take an alternative approach to address differences in project quality between our treatment and control samples. Rather than match on a propensity score, we employ entropy balancing to ensure covariate balance between our two samples. Results in Table 7 produce estimated treatment effects that are qualitatively similar to the entire sample results in Table 6. Specifically, providing additional comments and updates is associated with an additional 100.3 non-local repeat backers and 10.8 states. The consistency of the propensity score matched and entropy balanced approaches suggests demonstrate a significant reduction in the degree of home bias and improvement in access to capital for project creators who provide such unverifiable, voluntary information.

5 Conclusion

In this paper we examine the effect of disclosure on various outcomes of the crowdfunding process. Our results indicate the providing additional unverifiable information is positively associated with successfully funded projects, and that these results are consistent across multiple categories and size groups. To better understand the economic impact of disclosure providing additional disclosure, we restrict our analysis to funded projects with similar inherent quality and provide evidence that additional disclosures increase the amount of capital raised.

We also provide evidence that holding constant the total number of backers a project attracts, a relative increase in the percent of onetime backers (who are likely friends and family) reduces the amount of capital raised, whereas a relative increase in the percent of repeat backers increases the amount of capital raised by approximately 2 percentage points. Projects which reach a more geographically diverse crowd are similarly able to raise more capital. Attracting repeat crowdfunders has important consequences on projects' funding outcomes.

In our final analysis we examine whether additional disclosures, although unverifiable in nature, facilitate an increase in the number of non-local repeat backers. Building on previous research that repeat crowdfunders have preferences for same-state projects, we provide evidence that posting project updates and creator comments mitigates this home bias and increases the number of non-local crowdfunders making pledges to a project. Our analysis suggest that these disclosures are an important mechanism for resolving asymmetry between backers and creators and improving access to capital in crowdfunding markets.

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Appendix A: Variable Specifications

Project Variables	**Description**
Goal	Project's funding goal in dollars.
Pledge	Total dollars pledged to the project.
Funded Dummy	Indicator variable if the project was successfully funded (pledge $\geq$ goal).
Pct Funded	Amount pledged divided by project goal.
Backers	Number of individuals pledging to support a project.
Duration30 Dummy	Indicator variable if funding period $\leq$ 30 days.
Reward Tiers	Number of reward tiers listed on the project's main page.
Pictures	Number of pictures embedded on the project's main page.
Limit Dummy	Indicator variable if at least one of the project's reward tiers had a limited quantity.
FAQ Dummy	Indicator variable if the project's main page had a FAQ section.
Featured Dummy	Indicator variable if the project was featured by Kickstarter staff on the Kickstarter website.
Video Dummy	Indicator variable if the project's main page had a video.
Experienced Dummy	Indicator variable if the project's creator had previously launched a Kickstarter project.
No Facebook Dummy	Indicator variable if the project's creator did not link a Facebook account.
Facebook Friends	Number of the creator's Facebook friends listed on the project's main page.
# Backers' Cities	Number of cities containing at least one backer.
# Backers' States	Number of states containing at least one backer.
One-Time Backers	Number of one-time backers making pledges to a project.
Repeat Backers	Number of backers who have backed at least 6 total projects making pledges to a project.
Creator Comment Dummy	Indicator variable if the creator posted a comment during the funding period.
Creator Comments	Number of comments posted by creator during the funding period.
Update Dummy	Indicator variable if creator posted an update during the funding period.
Funding Period Updates	Number of update pages posted by creator during the funding period.

Figure 1: Project Main Page

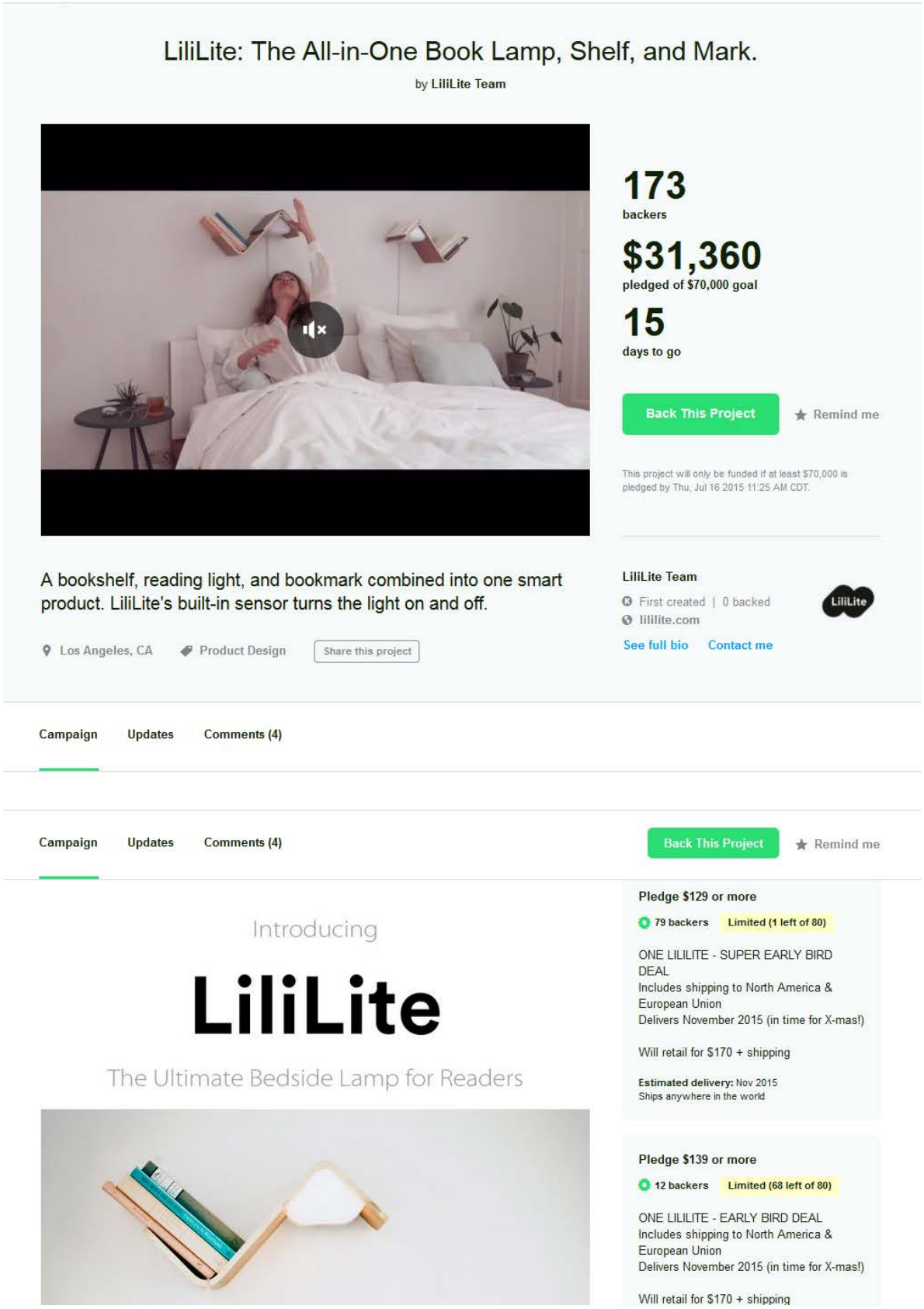
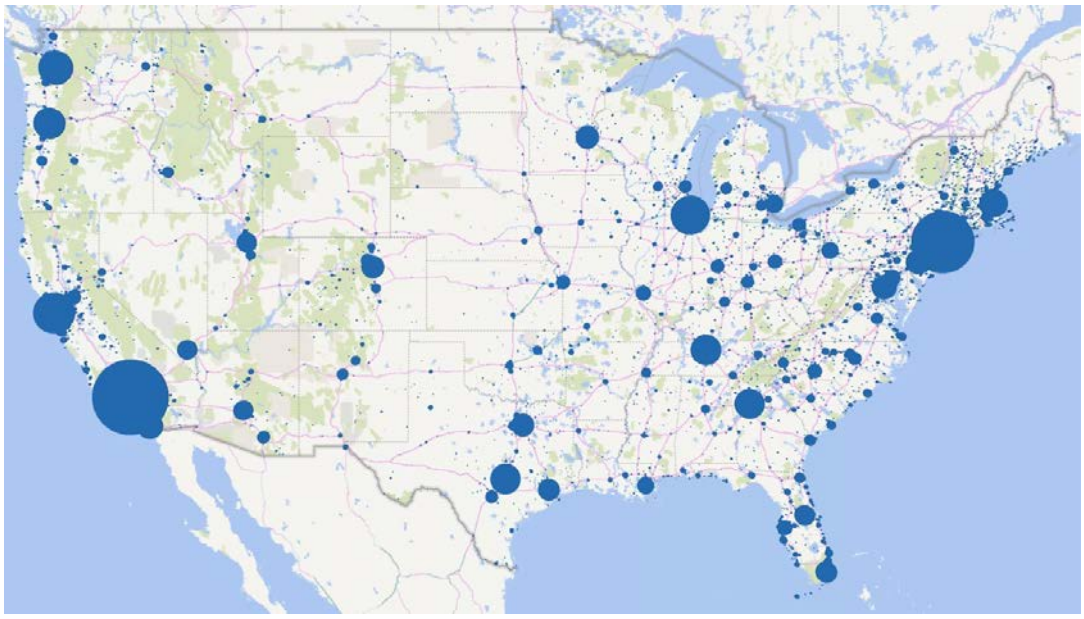


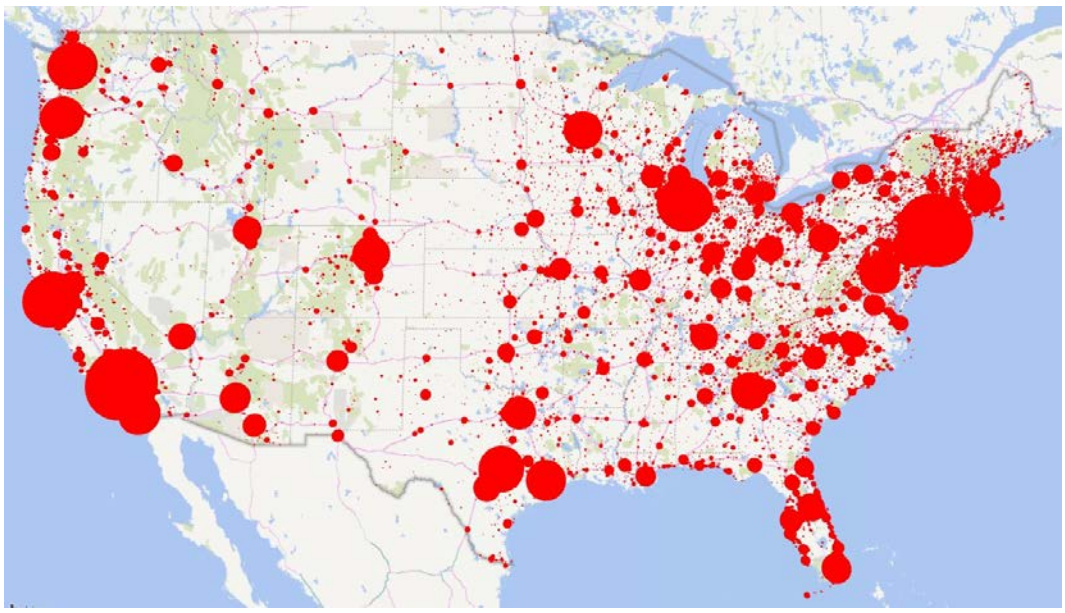
Figure 2: Project and Crowdfunder Locations

This figure plots the locations of projects in Panel A, one-time crowdfunders in Panel B, and experienced crowdfunders who back six or more projects in Panel C.

Panel A: Project and Crowdfunder Locations



Panel B: Novice Crowdfunder Locations



Panel C: Experienced Crowdfunder Locations

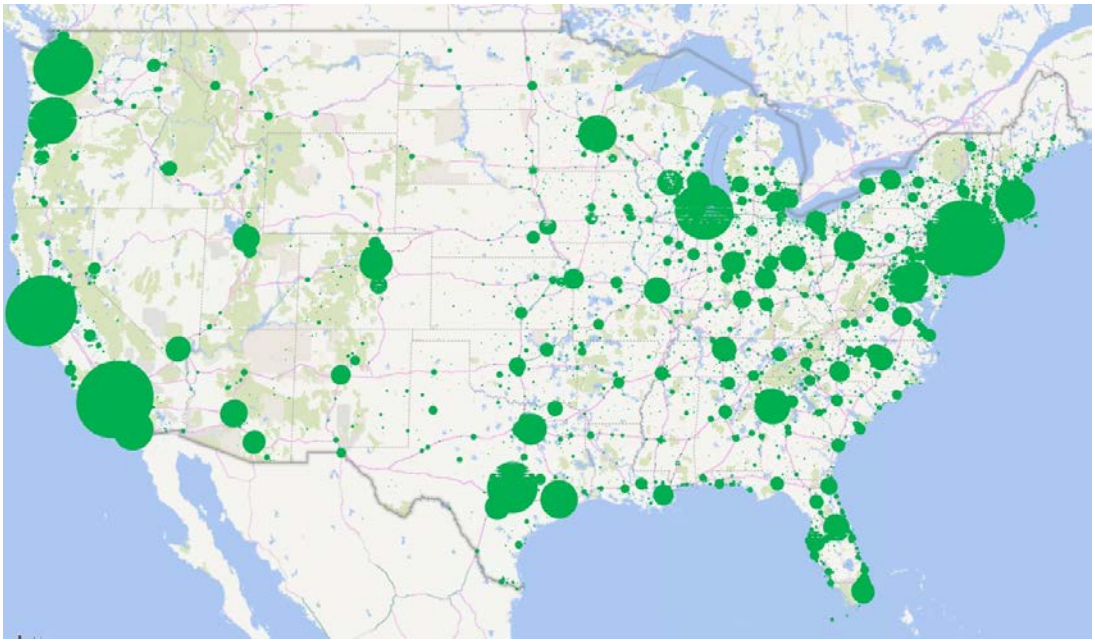


Figure 3: Percent Funded

This figure tabulates the histogram of percent of funds pledged (total funds pledged divided by project goal). We truncate the distribution at 150%.

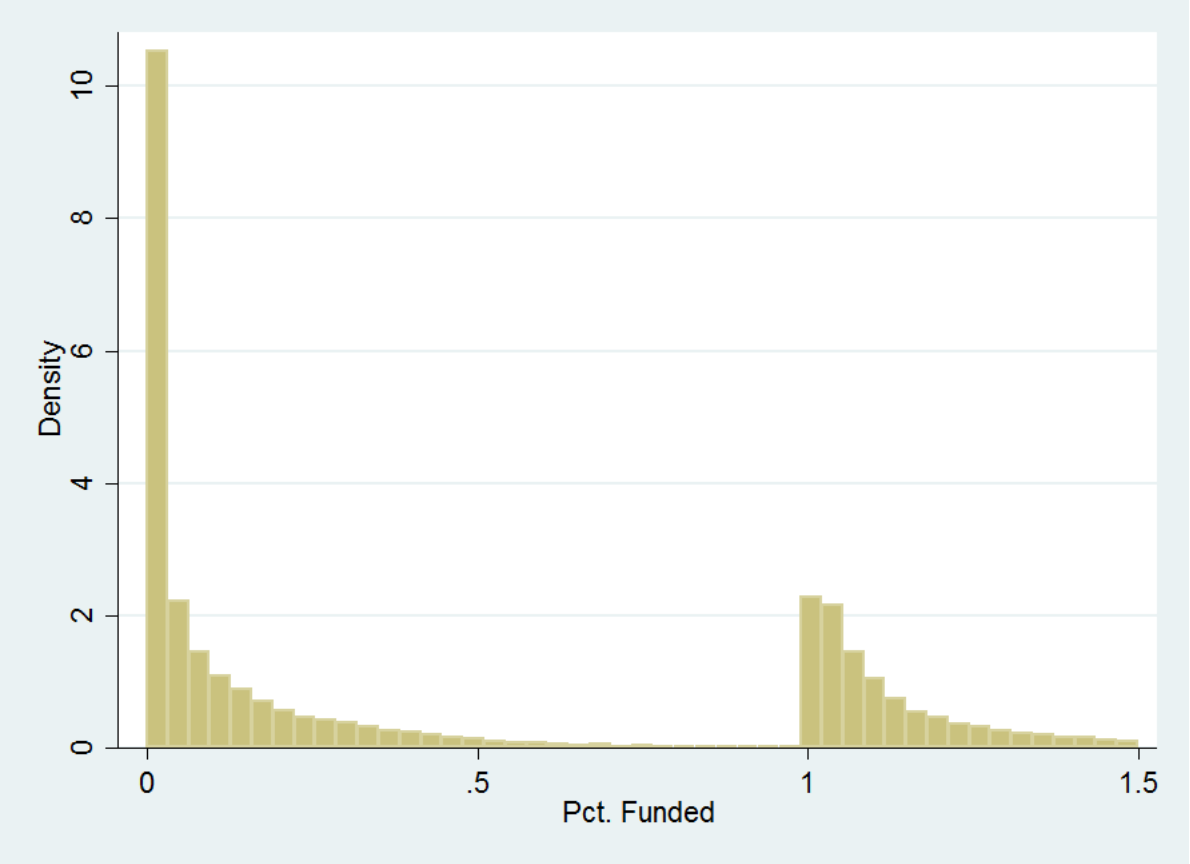


Table 1
Sample Selection and Summary Statistics

Panel A details our sample selection criteria. Our sample contains all non-suspended, non-canceled, domestic Kickstarter projects with funding goals between than $5,000 and $2,000,000 with funding period completed by June 20, 2014. Panel B tabulates projects by their funding goal and category. Panel C tabulates summary statistics for our key variables. Panel D summarizes backer-level activity, and Panel E tabulates projects and backers by their geographic location. All variables are described in Appendix A.

Panel A

Sample Composition Criteria	Projects
Projects with funding period ended by June 20, 2014	146,031
Less Projects with a goal < $5,000 or >$2,000,000	(67,262)
Less Suspended Projects	(119)
Less Canceled Projects	(8,419)
Less Foreign Projects	(8,534)
Less Missing Location	(910)
Final Sample	60,787

Panel B

	Projects	Pct Successful	Avg Goal ($)
All Projects	60,787	38.62%	$26,152
Small Projects ($5,000 - $7,999)	19,980	46.84%	5,764
Medium Projects ($8,000 - $16,499)	20,574	41.66%	11,194
Large Projects ($16,500 - $2,000,000)	20,263	27.44%	61,415
Categories			
Film and Video	16,568	36.63%	$35,548
Music	10,736	51.89%	13,818
Publishing	6,540	25.38%	15,611
Games	4,529	36.61%	42,713
Design	4,151	38.35%	30,680
Food	3,836	38.22%	21,718
Art	3331	36.99%	20,639
Fashion	2,633	29.59%	19,284
Technology	2,442	34.6%	50,433
Theater	1,939	53.74%	20,472
Comics	1,513	41.37%	16,092
Photography	1,412	29.32%	15,214
Dance	532	68.05%	14,087
Journalism	341	26.1%	18,877
Crafts	284	25%	14,350

Table 1 Panel C

	N	Mean	Median	SD	P1	P99
Goal ($)	60,787	26,152	10,000	72,680.62	5,000	250,000
Pledge ($)	60,787	13,681	2,609	96,156.63	0	156,027
Funded Dummy	60,787	0.39	0	0.49	0	1
Pct. Funded	60,787	0.71	0	1.98	0	6
Backers	60,787	167	33	1,105.13	0	2,148
Duration30 Dummy	60,787	0.54	1	0.50	0	1
Reward Tiers	60,787	10	9	6.05	1	31
Pictures	60,787	4.6	0	8.35	0	39
Limit Dummy	60,787	0.61	1	0.49	0	1
FAQ Dummy	60,787	0.22	0	0.42	0	1
Featured Dummy	60,787	0.02	0	0.13	0	1
Video Dummy	60,787	0.88	1	0.33	0	1
Experienced Dummy	60,787	0.12	0	0.32	0	1
No Facebook Dummy	60,787	0.41	0	0.49	0	1
Facebook Friends	35,613	891	553	1,007.30	0	4,706
# Backers' Cities	60,787	22.4	3	80.84	0	374
# Backers' States	60,787	6.7	2	10.73	0	48
One-Time Backers	60,787	46.0	12	306.06	0	430
Repeat Backers	60,787	42.7	2	388.05	0	797
Creator Comment Dummy	60,787	0.26	0	0.44	0	1
Creator Comments	60,787	2.12	0	7.87	0	59
Update Dummy	60,787	0.63	1	0.48	0	1
Funding Period Updates	60,787	3.49	2	4.86	0	25

Table 2
Baseline Specification

This table estimates associations between project characteristics and the outcome of Kickstarter projects. We examine domestic projects with a funding goal between $5,000 and $2,000,000. The dependent variable is an indicator variable set to one if the project was funded. Control variables are defined in Appendix A. Column 1 includes all projects, column 2 all projects in a design, game, or technology category (Tangible), column 3 all projects not in a tangible category, and columns 4-6 all projects with small, medium, and large funding goals, respectively (groups defined in Table 1). All models include category and year-month fixed effects. Standard errors are two-way clustered by year-month and category. T-statistics are in parentheses and *, **, *** indicate 10%, 5%, and 1% two-tailed statistical significance, respectively.

$$Funded_i \quad = \quad \alpha + \beta_1 Characteristics_i + \delta \text{Category FE} + \gamma \text{Year-Month FE} + \epsilon_{i,t}$$

Panel A

		All	Tangible	Not Tangible	Small	Medium	Large
Goal	-	-0.053***	-0.039***	-0.059***	-1.544***	-0.805***	-0.027***
		(-6.04)	(-3.52)	(-5.00)	(-5.53)	(-7.71)	(-5.61)
Duration30 Dummy	+	0.042***	0.007	0.051***	0.036***	0.023**	0.013*
		(5.73)	(0.68)	(7.24)	(4.10)	(2.49)	(1.92)
Reward Tiers	+	0.111***	0.090***	0.117***	0.178***	0.146***	0.096***
		(12.42)	(16.31)	(12.30)	(17.40)	(13.02)	(11.25)
Reward Tiers^2	-	-0.006***	-0.006***	-0.005***	-0.028***	-0.012***	-0.004***
		(-3.61)	(-8.89)	(-3.29)	(-6.31)	(-6.39)	(-3.73)
Limit Dummy	?	-0.003	-0.023***	0.002	-0.021**	-0.008	0.019**
		(-0.41)	(-3.33)	(0.26)	(-2.37)	(-0.97)	(2.08)
FAQ Dummy	+	0.169***	0.238***	0.140***	0.154***	0.172***	0.185***
		(10.19)	(13.95)	(9.51)	(9.06)	(8.38)	(10.17)
Video Dummy	+	0.153***	0.076***	0.164***	0.177***	0.162***	0.077***
		(14.57)	(5.00)	(14.41)	(15.86)	(12.30)	(5.84)
Pictures	+	0.065***	0.090***	0.052***	0.068***	0.091***	0.069***
		(6.94)	(9.89)	(4.63)	(6.81)	(6.43)	(6.87)
Pictures^2	-	-0.005***	-0.006***	-0.007***	-0.005***	-0.010***	-0.005***
		(-5.31)	(-7.82)	(-3.15)	(-4.25)	(-5.58)	(-3.44)
Featured Dummy	+	0.441***	0.438***	0.438***	0.381***	0.429***	0.524***
		(23.96)	(10.99)	(20.42)	(17.39)	(40.51)	(20.77)
Experienced Dummy	+	0.082***	0.167***	0.049***	0.039***	0.065***	0.097***
		(4.30)	(4.92)	(4.38)	(2.95)	(2.75)	(3.85)
No Facebook Dummy	-	-0.010*	0.010	-0.017***	-0.017***	-0.003	0.003
		(-1.71)	(0.69)	(-2.98)	(-2.92)	(-0.36)	(0.29)
Observations		60,776	11,121	49,654	19,926	20,551	20,246
Adj R-Squared		0.21	0.29	0.20	0.21	0.22	0.26
Category FE		Yes	Yes	Yes	Yes	Yes	Yes
Year-Month FE		Yes	Yes	Yes	Yes	Yes	Yes

Table 3
Determinants of Crowdfunder Mix

This table examines associations between project characteristics and the mix of project backers. We examine domestic projects with a funding goal between $5,000 and $2,000,000 and which attract at least 5 backers. The dependent variables are the number of one-time backers (column 1) and number of repeat backers (column 2), both scaled by the total number of project backers. Controls are defined in Appendix A. Standard errors are two-way clustered by year-month and category. T-statistics are in parentheses and *, **, *** indicate 10%, 5%, and 1% two-tailed statistical significance, respectively.

$$\text{Crowdfunder Mix} \quad = \quad \alpha + \beta_1 Characteristics_i + \epsilon_{i,t}$$

	(1) Pct One-time	(2) Pct Repeat
Duration30 Dummy	-0.008**	-0.003
	(-2.51)	(-1.19)
Reward Tiers	-0.008***	-0.004
	(-2.78)	(-1.26)
Reward Tiers^2	0.000*	0.000
	(1.79)	(0.69)
Limit Dummy	-0.013***	0.003*
	(-4.42)	(1.69)
FAQ Dummy	-0.038***	0.010*
	(-7.39)	(1.81)
Video Dummy	0.034***	-0.032***
	(5.44)	(-5.92)
Pictures	-0.021***	0.014***
	(-8.16)	(4.48)
Pictures^2	0.002***	-0.001***
	(5.34)	(-4.20)
Featured Dummy	-0.145***	0.027***
	(-21.80)	(3.32)
Experienced Dummy	-0.156***	0.063***
	(-24.90)	(5.83)
No Facebook Dummy	-0.012***	0.014***
	(-3.18)	(4.34)
Observations	46,291	46,291
Adj R-Squared	0.32	0.60
Category FE	Yes	Yes
Year-Month FE	Yes	Yes

Table 4
Crowdfunder Mix and Funding

This table estimates associations between a project's backer mix and the funding outcome. The dependent variable *Funded Pct* is the total funds pledged divided by the project's goal. We restrict analysis to projects with *Funded Pct* between 100% and 150%. The explanatory variables include the percent of total backers that are one-time backers (Pct One-Time Backers), percent of backers that have backed at least 6 projects in the same category (Pct Repeat Backers), the percent of repeat backers located outside the project's state (Pct Repeat Non-Local Backers), and the log number of distinct states containing a backer (Log(States)). All models include controls for project, disclosure, and creator characteristics (defined in Appendix A) and category and year-month fixed effects. Standard errors are two-way clustered by year-month and category. T-statistics are in parentheses and *, **, *** indicate 10%, 5%, and 1% two-tailed statistical significance, respectively.

$$\text{Funded Pct} \quad = \quad \alpha + \beta_1 \text{Crowdfunder Mix} + \zeta \text{Controls} + \delta \text{Category FE} + \gamma \text{Year-Month FE} + \epsilon_{i,t}$$

Table 3

	(1)	(2)	(3)	(4)	(5)
Pct One-Time Backers		-0.092***			
		(-8.08)			
Pct Repeat Backers			0.136***		
			(9.51)		
Pct Repeat Non-Local Backers				0.186***	
				(17.66)	
Log(States)					0.030***
					(16.77)
Duration30 Dummy	0.004**	0.003*	0.004**	0.004**	0.005***
	(2.64)	(1.93)	(2.53)	(2.40)	(3.39)
Reward Tiers	0.006***	0.004***	0.005***	0.004***	-0.000
	(4.45)	(3.17)	(4.12)	(3.71)	(-0.23)
Reward Tiers^2	-0.000	0.000	0.000	0.000	0.000*
	(-0.20)	(0.20)	(0.00)	(0.09)	(1.75)
Limit Dummy	0.003	0.002	0.002	0.002	0.000
	(1.52)	(0.95)	(1.13)	(0.93)	(0.03)
FAQ Dummy	0.020***	0.018***	0.019***	0.016***	0.012***
	(8.81)	(8.89)	(9.01)	(8.27)	(6.92)
Video Dummy	-0.000	0.000	0.001	0.002	-0.002
	(-0.04)	(0.09)	(0.16)	(0.41)	(-0.56)
Pictures	0.011***	0.009***	0.008***	0.006***	0.005**
	(5.01)	(4.33)	(3.97)	(2.98)	(2.34)
Pictures^2	-0.001***	-0.001**	-0.001*	-0.001	-0.000
	(-2.67)	(-2.18)	(-1.83)	(-1.14)	(-0.80)
Featured Dummy	0.028***	0.016***	0.022***	0.015***	0.005
	(5.37)	(3.26)	(4.10)	(3.03)	(0.95)
Experienced Dummy	0.004	-0.011***	-0.004	-0.007***	-0.004
	(1.13)	(-3.71)	(-1.35)	(-2.72)	(-1.54)
No Facebook Dummy	0.007***	0.006***	0.006***	0.006***	0.006***
	(4.29)	(3.75)	(3.68)	(3.47)	(3.65)
Observations	18,538	18,538	18,538	18,538	18,442
Adj R-Squared	0.06	0.08	0.07	0.08	0.10
Category FE	Yes	Yes	Yes	Yes	Yes
Year-Month FE	Yes	Yes	Yes	Yes	Yes

Table 5
Propensity Score

This table estimates the likelihood a project is in our "treated" sample. Treated projects post at least five updates and 2 creator comments, whereas control projects post zero updates and zero comments. We restrict the sample to projects which are funded between 100% and 150%. Controls are defined in Appendix A. T-statistics are in parentheses and *, **, *** indicate 10%, 5%, and 1% two-tailed statistical significance, respectively.

$$Treatment \quad = \quad \alpha + \beta_1 Characteristics_i + \epsilon_{i,t}$$

	Treatment
Constant	-6.219***
	(-15.41)
Log(Goal)	0.621***
	(14.62)
Duration30 Dummy	-0.359***
	(-7.26)
Reward Tiers	0.379***
	(10.28)
Limit Dummy	0.291***
	(5.44)
FAQ Dummy	0.852***
	(13.55)
Video Dummy	0.301***
	(2.79)
Pictures	0.465***
	(10.39)
Featured Dummy	1.421***
	(8.34)
Experienced Dummy	0.111
	(1.56)
Tangible	1.281***
	(12.38)
Observations	4,843
Pseudo R-Squared	0.45

Table 6
Voluntary Disclosure and Crowdfunder Geographic Dispersion

This table estimates the average treatment effect on the treated (ATT) of posting at least 5 updates and 2 comments (treatment), relative to projects with zero updates and zero creator comments, using stratification matching. We restrict the sample to projects which are funded between 100% and 150% and estimate propensity scores using the model in Table 5. Each sample is further subdivided into k blocks, where within each block there are insignificant differences between the propensity score and all control variables for the treated and control observations. The outcome effect of interest is the number of non-local repeat backers in Panel A and the number of distinct states containing at least one backer in Panel B. We tabulate the number of treatment and control observations (Treatment # and Control #), the average outcome variable for both treatment and control observations, ATT, the bootstrapped standard error, and two-tailed t-statistic. ATT is the weighted-average block-specific treatment effect, where the average difference is first computed for each block. We tabulate treatment effects for the full sample and subsamples of tangible projects, non-tangible projects, projects with no location-specific words, projects by experienced creators, and projects by novice creators.

Panel A: Y = Non-Local Repeat Backers

Sample:	Treatment #	Control #	Avg Y (T)	Avg Y (C)	ATT	SE	T-statistic
Entire Sample	3,074	1,740	126.1	5.6	102.2	9.4	10.9
Tangible	1,016	33	234.1	6.8	225.0	53.7	4.2
Non-Tangible	1,956	1,698	71.5	5.6	52.3	5.3	9.9
No Location Words	110	137	72.5	6.3	41.5	14.3	2.9
Experienced	572	168	168.7	9.2	133.1	21.2	6.3
Novice	2,496	1,538	114.2	5.2	94.2	8.5	11.1

Panel B: Y = States

Sample:	Treatment #	Control #	Avg Y (T)	Avg Y (C)	ATT	SE	T-statistic
Entire Sample	3,074	1,740	21.0	4.0	11.8	1.9	6.2
Tangible	1,016	33	30.3	4.0	23.9	2.2	10.8
Non-Tangible	1,956	1,698	16.0	4.0	7.2	1.3	5.6
No Location Words	110	137	17.1	4.1	5.8	3.1	1.9
Experienced	572	168	27.2	5.2	14.9	4.9	3.0
Novice	2,496	1,538	19.5	3.9	10.6	2.1	5.0

Table 7
Entropy Balancing

This table estimates the effect of disclosure on the geographic participation of crowdfunders using entropy balancing. The dependent variable is the number of non-local repeat backers in column 1 and the number of distinct states containing at least one backer in column 2. *Treatment* is an indicator if a project posts at least five updates and 2 creator comments. Control projects post zero updates and zero comments. Weights are selected to ensure covariate balance between treatment and control samples. We restrict the sample to projects which are funded between 100% and 150%. Controls are defined in Appendix A. T-statistics are in parentheses and *, **, *** indicate 10%, 5%, and 1% two-tailed statistical significance, respectively.

$$Outcome \quad = \quad \alpha + \beta_1 Treatment + \beta_2 Characteristics_i + \epsilon_{i,t}$$

	(1) Repeat Non-Local	(2) States
Constant	-701.3***	-54.7***
	(-11.58)	(-7.72)
Treatment	100.3***	10.8***
	(11.73)	(9.90)
Log(Goal)	68.3***	6.0***
	(11.08)	(9.04)
Duration30 Dummy	-18.9**	-2.4**
	(-2.27)	(-2.29)
Reward Tiers	9.9***	1.8***
	(2.61)	(3.54)
Limit Dummy	23.0**	1.8**
	(2.34)	(2.34)
FAQ Dummy	21.7**	4.0***
	(2.57)	(3.87)
Video Dummy	-19.9	-1.2
	(-1.49)	(-0.47)
Pictures	19.6***	0.0
	(6.13)	(0.01)
Featured Dummy	82.8***	6.1***
	(7.72)	(4.69)
Experienced Dummy	41.6***	6.8***
	(5.89)	(4.32)
Tangible	73.2***	6.5***
	(8.29)	(6.04)
Observations	4,843	4,843
Adj R-Squared	0.42	0.55