

Crashpad

Secure, student-exclusive subletting marketplace

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Team 52

Executive Summary

The student housing market faces a critical gap: university students struggle to find safe, affordable temporary housing for internships and study abroad opportunities, while also facing challenges in finding reliable subletters for their own primary leases. Current market solutions are inadequate due to poor security, fragmented listings, and lack of student-focused features.

Crashpad addresses these challenges through a secure, student-exclusive marketplace platform. The platform ensures security and trust through verified student-only access using .edu email and SheerID verification, which reduces spam and scam posts and guarantees students are subleasing from other students. Crashpad provides students with personalized housing recommendations based on their preferences, standardized listing formats, advanced filtering options, and a clean, modern user interface.

Beyond sublets, Crashpad offers a temporary storage locating service, a student-to-student item marketplace, augmented-reality three-dimensional room visualization, advanced vector search capabilities, and secure in-app transactions.

Stakeholders include university students (both subletters and lessors), their families, and leasing companies. The Total Addressable Market (TAM) comprises over 19 million¹ university students nationwide. Due to its dual nature as a buyer/seller platform, Crashpad's customer segment consists of both university students looking for sublets and university student subletters. Crashpad differentiates itself through its student-only security, advanced search and AR features, post standardization, and complementary services.

Primary costs include cloud storage (\$300 annually), SheerID verification (\$750 first year), Stripe payment processing (estimated \$10,875.30), augmented reality 3D scan storage (3,750GB at \$945.00), and marketing expenses (10% of revenue). A detailed breakdown is available in the Profit and Loss Statement in the Appendix.

Crashpad generates revenue through a 5% transaction fee on Marketplace purchases while avoiding legal risks by not facilitating rent payments for sublets. To maintain strong network effects, the platform offers free listings, ensuring high engagement and a robust inventory of housing options. Additionally, Crashpad plans to explore advertising partnerships with brands relevant to college students, including sponsored listings, university and corporate collaborations, and targeted display ads. These diversified revenue streams allow Crashpad to grow sustainably while enhancing the student housing experience.

Need and Value Proposition

University students struggle to find safe, affordable temporary housing for internships, research positions, and study abroad experiences, particularly in high-cost cities where short-term leases are scarce. Additionally, many students conduct research at universities, do study abroad, or have non-local jobs over the summer while still needed to cover costs of their ongoing leases. This creates a two-sided market: students needing temporary housing and those seeking subletters. While platforms like Airbnb and Facebook Groups exist, they lack student-specific features, identity verification systems, and structured search capabilities that align with academic timelines such as short-term summer or semester-long leases, making them inadequate for addressing these needs fully and securely.

Crashpad's value proposition addresses these challenges. Crashpad provides trust and security that other solutions do not offer. Crashpad is only open to students after a dual identity

¹ <https://nces.ed.gov/fastfacts/display.asp?id=372>

verification system including .edu email confirmation and SheerID student identification. This way, students seeking housing know they are renting from other students, and vice versa. This prevents fake or scam non-student users on the platform. Additionally, Crashpad is student-only so the inventory will better fit student needs, such as lease timelines for summer or semesters abroad. The platform also prioritizes user experience by offering personalized housing recommendations through a recommendation algorithm, advanced filtering options, and an intuitive, modern interface with standardized listing formats. Example preferences include price range, number of roommates, amenities, and housing location or distance from a specific place.

Crashpad will solve additional student housing needs with a temporary storage marketplace where out-of-state or international students can find local students willing to store their belongings over summer breaks or study abroad semesters for a small fee. Crashpad also offers a marketplace feature for students to buy and sell furniture, textbooks, tickets and other items to peer students. Crashpad offers secure in-app transactions through an integration with the Stripe API. To support the marketplace, Crashpad will also offer an AR visualization feature where sellers can easily take a 360° scan of their apartments using their phone and buyers can preview the space in a 3D virtual property tour.

Stakeholders

Crashpad stakeholders can be divided into two sides of the subletting ecosystem: the subletters and lessors. Subletters involve university students who are looking to rent temporary housing. Their families, who may provide financial support during this process and also care about their family member's housing dynamics, also play a role as indirect stakeholders. Sublessors include university students who hold leases and rent out their primary housing temporarily. Indirect stakeholders in this category include landlords, university housing administrators, and apartment complex managers who serve as owners or landlords of these properties. These indirect stakeholders may assist by sharing sublet details and providing liability agreements to ensure smooth transactions and in some cases may have rights to approve sublets.

Market Opportunity

There is a Total Addressable Market (TAM) of over 19 million university students² in the United States. Among them, 10.1 million students live in off-campus housing, comprising 8.6 million undergraduates³ and 1.5 million graduate students⁴. These students represent primary targets for Crashpad, as they are more likely to have housing available for subletting.

A significant use case within this market is students seeking or offering summer leases. In 2023, approximately 60% of the 19 million university students participated in summer internships. Although limited data exists on how many of these internships occurred away from students' universities, the potential market for temporary summer housing is estimated at roughly 11.5 million students. The remaining 40% of students are also potential candidates for temporary summer housing, albeit to a lesser extent.

During the academic year, 300,000 U.S. students study abroad⁵, creating a demand for subletting their U.S. university housing for a semester. Additionally, 1.1 million of the 19 million

² <https://nces.ed.gov/fastfacts/display.asp?id=372>

³ <https://www.nmhc.org/globalassets/research--insight/research-reports/student-housing/student-housing-research-report-final.pdf>

⁴ <https://www.nmhc.org/globalassets/research--insight/research-reports/student-housing/student-housing-research-report-final.pdf>

⁵ <https://www.nafsa.org/sites/default/files/media/document/State-by-State-22-23-study-abroad-statistics.pdf>

total students are international students studying at U.S. universities. This group represents another key market segment, as they may seek temporary housing or need to sublet their housing while returning home for the summer.

As such, Crashpad aims to address an annual market of approximately 19 million students across major university campuses, with market growth potential. Recent trends support growth potential in the university student market. Undergraduate enrollment rose by 2.5% (+359,000 students) in Spring 2024⁶, while graduate enrollment saw a 3% increase.

Survey findings from Penn and other university students provide valuable market research insights supporting Crashpad's development. The current usage of informal methods to find sublets, including word of mouth, Facebook posts, and messaging apps such as WeChat and GroupMe (Figure 1). However, students reported facing persistent challenges with where to search for housing, trust and creditworthiness issues, time investment, aligning rental dates, and unresponsiveness from potential subletters (Figure 2).

For students subletting their spaces, trust and reliability remain top concerns. 78% of respondents expressed concerns around payment reliability, property cleanliness or damage, and the general safety of having a subletter (Figure 3). Many students also expressed appreciation for a students-only platform. One interviewed student explained, "I find it scary to post my address details on public forums where complete strangers could potentially see some revealing information." Moreover, roughly 95% of respondents indicated a willingness to pay a small fee for a simplified, organized subletting experience that would alleviate stress, provide peace of mind, and save them a greater amount through lease coverage in the long term (Figure 4). As one respondent said in an interview, "It is better to get some rent money to cover my ongoing lease than to have an empty apartment for the summer." Additionally, roughly 87% expressed willingness to pay a fee to ease the process of finding a place to sublet, citing reduced stress, saved time and energy, and the convenience of a consolidated platform (Figure 5).

For students buying or selling furniture, Facebook Marketplace and word of mouth are the most common channels that students use. Students reported challenges with these platforms such as being scammed on Facebook Marketplace and limited reach of word of mouth approaches. Many students cited the practical reality of selling or buying only with other local students to ease issues such as transportation (Figure 6).

For those looking for temporary storage for furniture or clothing during summers or study abroad, students cited price, security and convenience as their most important factors when looking for storage options (Figure 7). Some students reported using dedicated services such as College Butler for temporary storage, but a few reported issues with the service, including high costs or items delivered to the wrong location. 97% of interviewed students reported that they would be comfortable with another student storing their items, citing doing this before with friends and increased trust with other students as reasons - even for a small fee (Figure 8).

Target Customer Segment

Crashpad's customer segment includes university students looking for sublets or subletters. This includes students looking for a subletter to fill their vacant space over the summer or study abroad when their lease continues and students looking for temporary housing on a college campus. Crashpad's other customer segments are students looking for temporary storage for furniture and students looking to buy from or sell items to other students.

⁶ <https://nscresearchcenter.org/current-term-enrollment-estimates/>

Competition

Despite strong student demand for locating flexible, short-term housing, existing options fall short. Airbnb offers a monthly rental system, but is not secure or specifically designed for students, as anyone can use the platform. Crashpad differentiates itself by providing a student-specific platform focused on safety, allowing a layer of trust and security for students permitting someone else to live in their housing. Unlike Airbnb, Crashpad enhances the subletting experience with personalized recommendations, vector search, AR-powered room visualization, and solutions for student housing needs like summer storage and peer-to-peer furniture reselling. By catering exclusively to students, Crashpad also ensures listings align with academic timelines, including summer, study abroad, and short-term leases.

Some universities have dedicated housing websites, but they often do not cater specifically to sublets. For example, Stanford offers SUPost.com, which is not a housing-specific platform so it offers no consistent posting structure (Figure 9). Crashpad's differentiation is a focus on sublets and temporary housing, offering access to all schools with advanced filtering, a consistent post format, and security features. At Penn, Penn Mobile has introduced a sublet feature exclusive to Penn students but is still in beta (Figure 10). Since it is Penn-only, its housing options are heavily geographically limited and it does not address the market needs for temporary housing in other cities. Crashpad is not Penn-only, as by requiring any .edu email, allows for subletting between students from various universities. This is particularly useful for students moving to other cities for summer internships or study abroad.

Campus housing groups on Facebook lack standardized posts or search options for sublets, are cluttered with spam, and have few to no security features (Figure 11). Crashpad's differentiation is a student-specific platform with improved filtering, standardized post structures, and enhanced security.

Facebook Marketplace is commonly used for item resale. Crashpad's differentiation lies in its student-only access layer, which adds a level of safety to avoid scams and spam posts commonly found on Facebook. Unlike Facebook Marketplace, which caters to a general audience, Crashpad is tailored specifically for students—particularly those who are relocating to a new area for a semester, internship, or new school year. These users are more likely to need furniture in their new location or have furniture to sell before their move, making Crashpad the ideal platform for addressing these unique needs with a secure and convenient solution.

College Butler and similar services exist for temporary summer storage. However, these options are expensive, costing \$15/month per box of items⁷. Interviewed students also cited issues with these services such as damages and lost boxes. Crashpad instead enables peer-to-peer temporary storage options, where students can cheaply store items with other local students.

Intellectual Property

Crashpad's intellectual property includes its name, platform expertise, proprietary recommendation algorithm, and the AR room visualization tool, which could be patented. While it may eventually secure patents, trademarks and domain ownership, Crashpad currently relies on trade secrets and know-how instead of pursuing intellectual property rights.

⁷<https://www.college-butler.com/colleges-universities/university-of-pennsylvania-college-student-storage-shipping-moving-philadelphia-pa-signup/>

Cost Analysis

As a virtual marketplace platform, Crashpad's costs primarily stem from cloud storage, verification services, API integrations, and marketing expenses (Figure 12). To estimate variable operating costs, Crashpad assumes a student body of 15,000 per medium-sized university⁸, with the number of universities served starting at five and increasing each year.

Crashpad's platform runs on Supabase, which provides hosting, authentication, and a database on AWS. Currently, the platform operates under Supabase's free tier. However, once Crashpad exceeds 50,000 monthly active users (MAUs), 1GB of storage, or increased bandwidth needs, it will incur a \$25/month fee (\$300/year) to continue using Supabase. Additionally, Crashpad owns the domain name "thecrashpad.xyz," purchased for \$2.17 per year.

To ensure a student-exclusive platform, Crashpad uses Google OAuth and SheerID for identity verification. While Google OAuth is free, SheerID charges \$0.01 per one-time verification, which users only need to complete upon signing up. If Crashpad operates in five universities with approximately 15,000 students each in the first year, verification costs will total \$750 to verify 75,000 users.

Crashpad uses Stripe to handle secure transactions for its Marketplace feature. Stripe charges 2.9% + \$0.30 per transaction. Assuming that 10% of users transact once in the first year, Crashpad is expected to process \$375,000 in transaction volume, resulting in \$10,875.30 in transaction fees.

Crashpad enables users to upload 3D scans of rooms to enhance their listings, incurring additional storage costs. Each full apartment scan averages 50MB, with users uploading one scan each. This results in a storage requirement of 3,750GB in the first year to be kept in the database. Supabase charges \$0.252 per GB annually, leading to a total storage cost of \$945.00 in the first year.

Crashpad will also incur costs of marketing campaigns and materials. While this is challenging to estimate, the average marketing spend for the student housing industry is 5-10%⁹, so Crashpad estimates allocating 10% of revenue for marketing costs.

A full breakdown of estimated costs is located in the Profit and Loss Statement in the Appendix (Figure 12).

Revenue Model

Crashpad generates revenue by charging a 5% transaction fee on purchases made through the Marketplace feature (Figure 12). To mitigate legal and liability risks associated with housing leases, Crashpad does not facilitate rent payments or financial transactions for sublets. Instead, the platform provides value by connecting students seeking temporary housing with verified subletters. Additionally, Crashpad does not charge listing fees for sublets or marketplace items. Implementing such fees could discourage user participation, reducing the number of available listings and weakening the platform's network effects. By maintaining free listings, Crashpad ensures a high volume of posts.

To further diversify its revenue streams, Crashpad is exploring advertising opportunities for the future, particularly with brands and services relevant to college students. Potential models include sponsored listings for premium placement of housing or marketplace posts, partnerships with universities and corporations to feature sponsored content from student housing providers

⁸ <https://www.collegedata.com/resources/the-facts-on-fit/college-size-small-medium-or-large>

⁹ <https://businessplan-templates.com/blogs/running-costs/student-housing-development>

and internship programs, and targeted display ads from brands offering moving services, storage solutions, or student-focused financial products such as renter's insurance and credit cards. Because they are not yet included in the platform, these streams are not yet included in the Crashpad Profit and Loss Statement (Figure 12). By integrating non-intrusive, high-relevance advertising, Crashpad can generate additional revenue in the future while maintaining a seamless user experience.

Appendix

Figure 1: Methods to Find Subletter

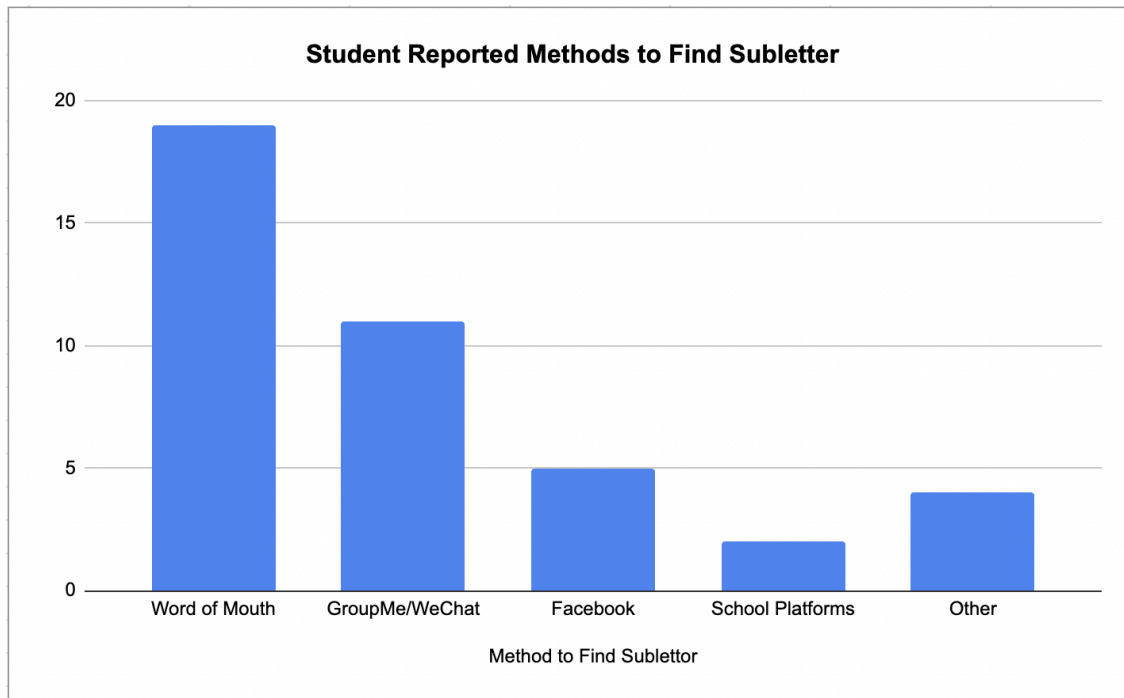


Figure 2: Challenges with Finding a Subletter

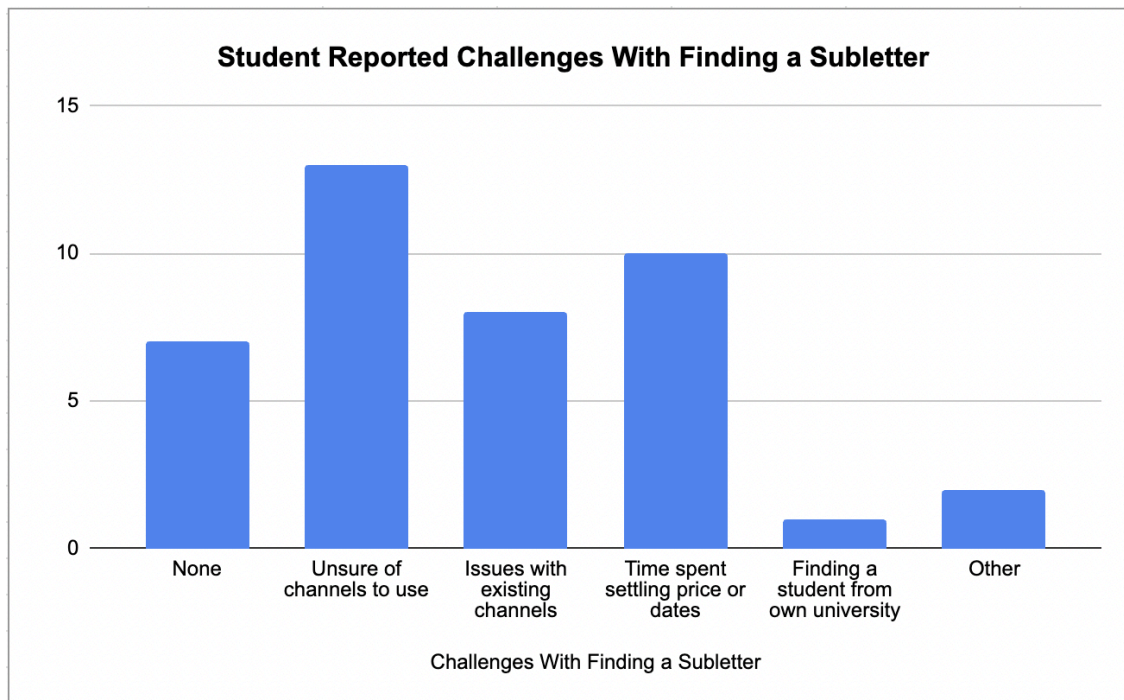


Figure 3: Concerns with Subletting

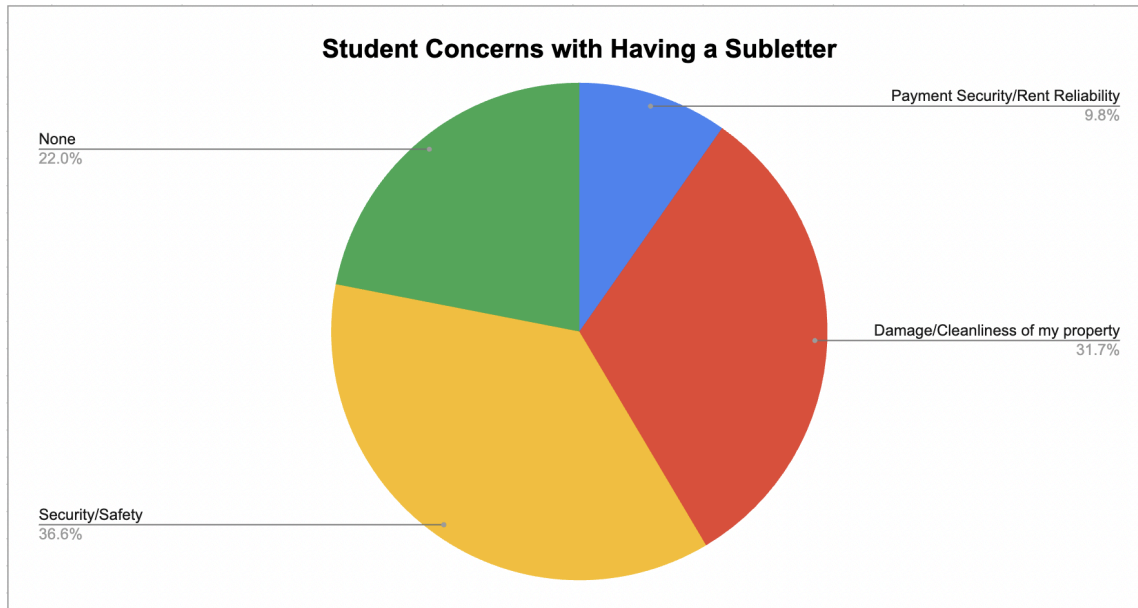


Figure 4: Willingness to Pay for Ease of Finding a Subletter

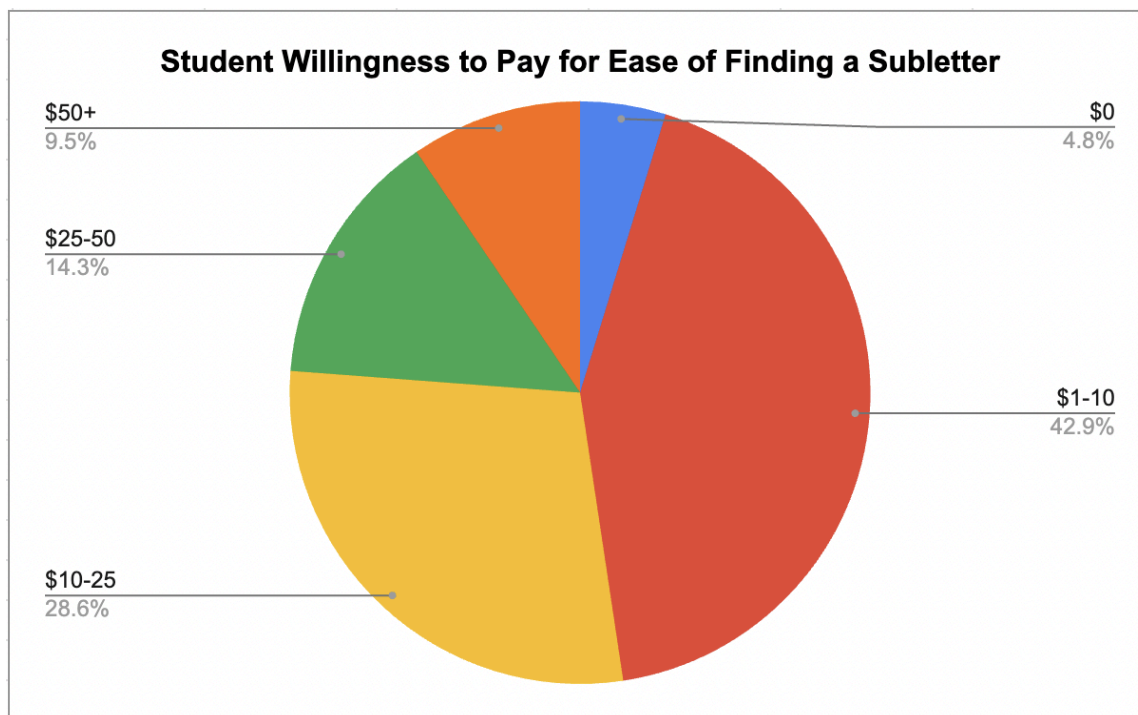


Figure 5: Willingness to Pay for Ease of Finding a Place to Sublet

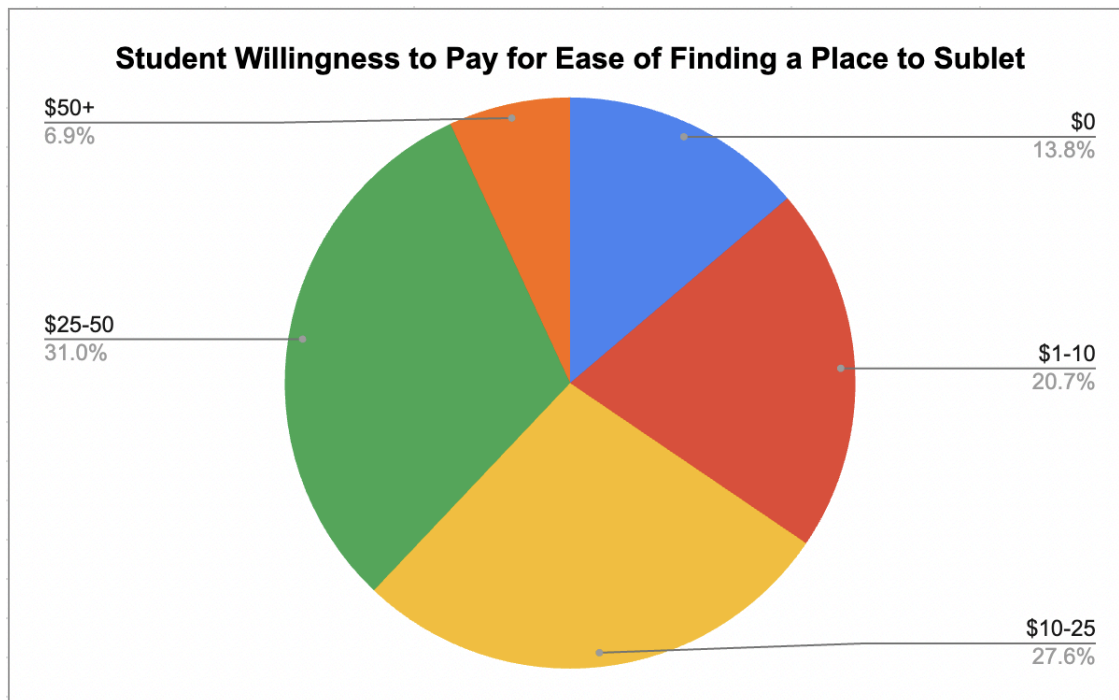


Figure 6: Challenges of Existing Furniture Resale Methods

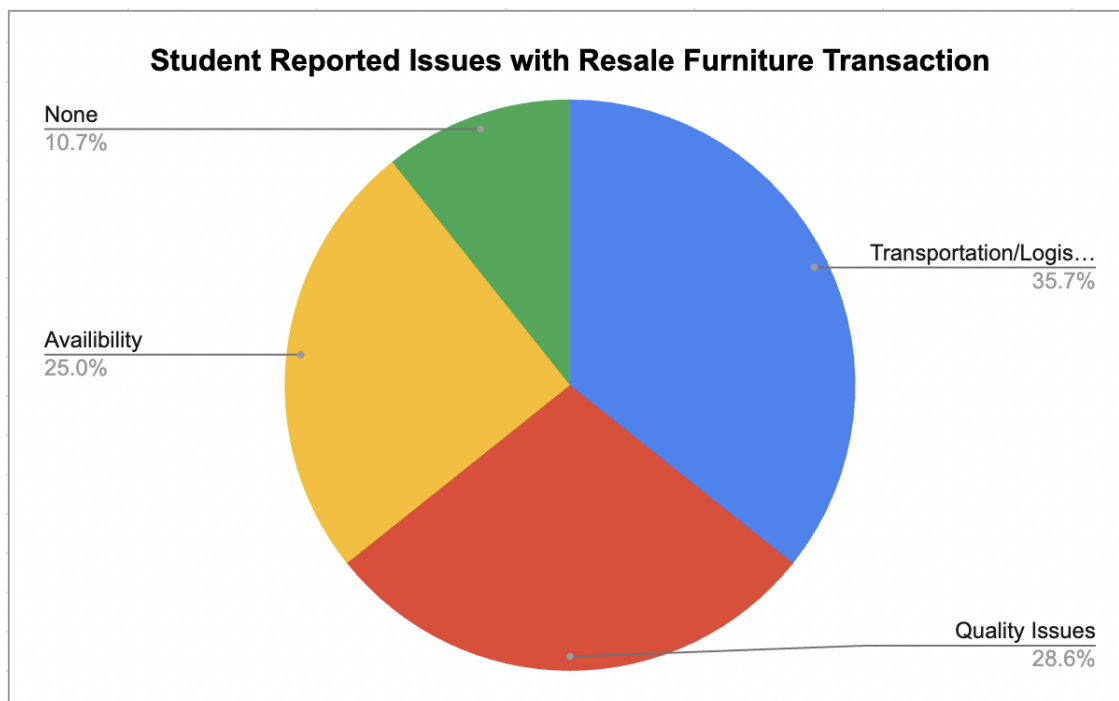


Figure 7: Student Important Factors for Temporary Storage Options

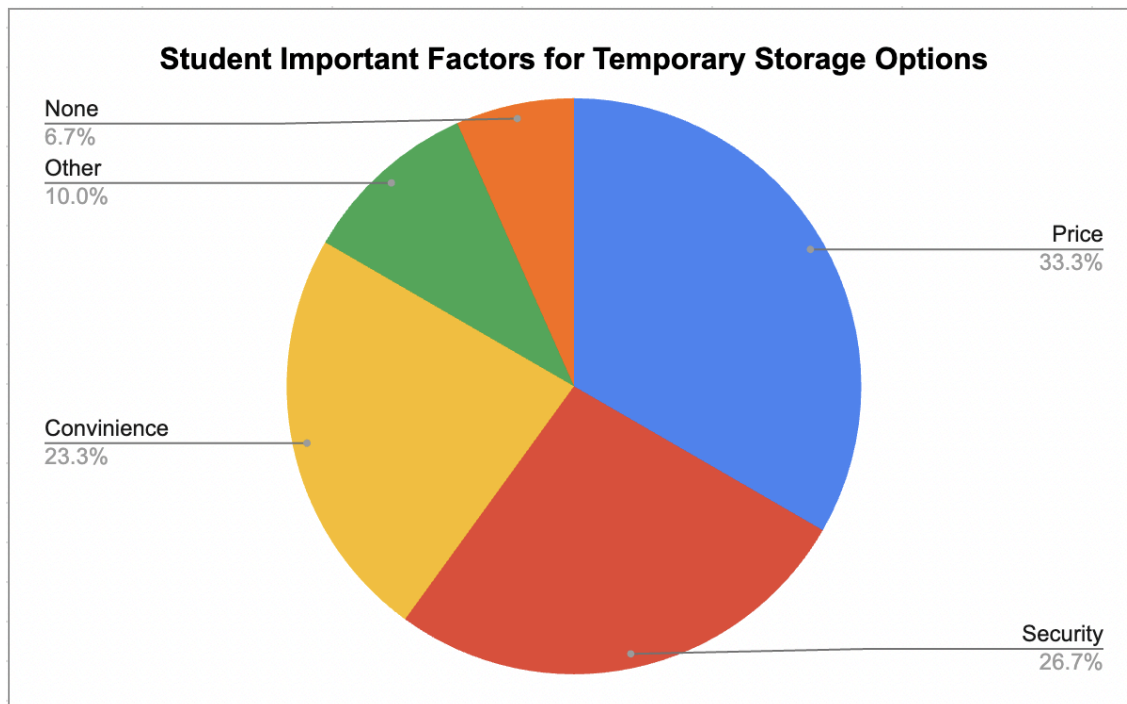


Figure 8: Student Reported Comfort with Student-to-Student Summer Storage

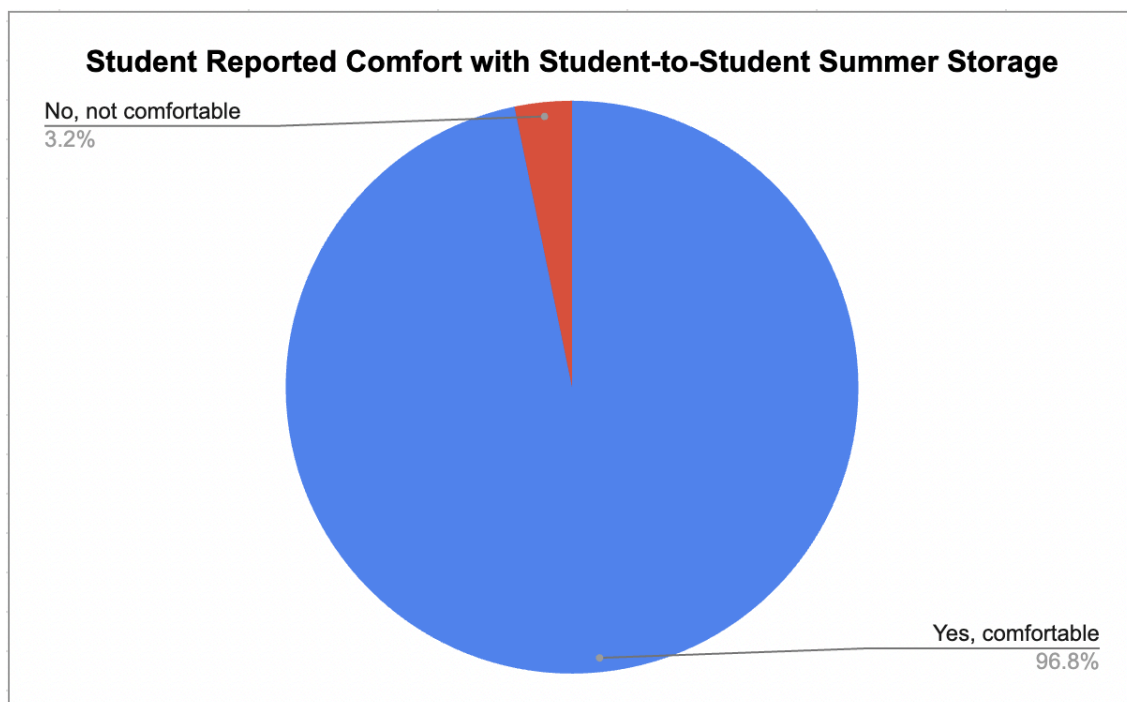


Figure 9: Stanford SUPost.com

SUPost

Sell your stuff

Search

Stanford, California

post

SUpost » Stanford, California

Wed, Sep 11, 2024 12:25 PM - Updated

post to classifieds

@stanford.edu required

post a job

post housing

post a car

open for all emails

overview

housing 13 mins

for sale 24 mins

jobs 1 day

personals 2 days

campus job 1 day

community 2 days

services 1 day

housing (13 minutes)

apts/housing

housing wanted

rooms/shared

sublets/temporary

for sale (24 minutes)

art+shop

electronics

barter

free

bikes

furniture

books

games

cars

household

cds/dvds

tickets

clothes+acc

wanted

computers

general

jobs off-campus (1 day)

post a job

personals

Spacious room availab...

13 minutes

SAMSUNG Jet 60 Fit Co...

24 minutes

Section couch

about 1 hour

nord bike

about 1 hour

recently posted

Spacious room available in Mission-Excelsior Neighborhood in SF - \$1,400 @stanford.edu about 13 minutes

SAMSUNG Jet 60 Fit Cordless Stick Vacuum - \$145 @stanford.edu about 24 minutes

Unfurnished 1B/1B in Stanford Colonnade Complex - \$2,200 @stanford.edu about 1 hour

Section couch - \$500 @stanford.edu about 1 hour

nord bike - \$220 @stanford.edu about 1 hour

Trek 5200 OCLV Carbon frame Road bicycle - \$290 @stanford.edu about 1 hour

Ergonomic Office Chair - \$147 @stanford.edu about 1 hour

Multifunction Foldable Kitchen Serving Tray (Bamboo) - \$17 @stanford.edu about 1 hour

Professional Water Filter - \$75 @stanford.edu about 1 hour

Compact Hair Dryer for Travelling (IONIC TECHNOLOGY) - \$19 @stanford.edu about 1 hour

Hand Blender - 5-in-1 Immersion Blender - \$55 @stanford.edu about 1 hour

Schwinn women bike 5'3-5'8 in great condition - \$250 @stanford.edu about 1 hour

Vacuum Cleaner 3-in-1 - \$98 @stanford.edu about 1 hour

Monitor Stand - \$39 @stanford.edu about 1 hour

Monitor - \$145 @stanford.edu about 2 hours

Price down: Almost brand new Keurig coffee machine - \$60 @stanford.edu about 2 hours

featured job posts


Beautiful Woodside retreat

Separate entry studio for lease - \$1900

Fast-growing Women's health company needing part-time social media/ video talent @stanford.edu

Events for Stanford

Figure 10: Penn Mobile Sublet Beta Feature




3914 Pine Street Unit 2

\$875 (Negotiable)

3 bd | 2 ba

Jul 10 - Aug 25

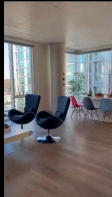


4049 Sansom - Spring

\$1,215

5 bd | 2 ba

Jan 1 - May 15




The Chestnut (2bed/...

\$2,150 (Negotiable)

2 bd | 2 ba

Dec 20 - May 23



Locust Spring Sublet!

\$1,000 (Negotiable)

1 bd | 1 ba

Jan 1 - Aug 1

Figure 11: University City Off Campus Housing Facebook Group



University City Off C...





\$1,650 / MONTH

1 bed · 1 bath · Apartment

Philadelphia, PA

Message

 1

 Like

 Comment

 Send



I am urgently looking for a sublet for the fall quarter (Sept - Dec). My budget is <\$750. Please let me know if you have anywhere.

 1



Anonymous member

Dec 2 · 



Hey Everyone, I am looking for a place to move in on Jan 01; looking for a room with ample sunlight and under 700 with utilities.
And also close to Drexel, 15 - 20 min walk to Drexel is fine.
Please let me know if there is anything available in the comments, i will contact you then.
Thanks.

6 comments

 Like

 Comment

 Send

 Share

Figure 12: Crashpad Consolidated and Detailed Profit and Loss Statements

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Transaction Revenue	\$18,750	\$93,750	\$375,000	\$937,500	\$1,875,000
Total Revenue	\$18,750	\$93,750	\$375,000	\$937,500	\$1,875,000
Operating Expenses					
Identity Verification	\$750	\$3,750	\$15,000	\$37,500	\$75,000
Storage	\$945	\$4,725	\$18,900	\$47,250	\$94,500
Transaction Fees	\$10,875	\$54,375	\$217,500	\$543,750	\$1,087,500
Cloud Infrastructure & Miscellaneous	\$302	\$322	\$322	\$322	\$322
Marketing	\$1,875	\$9,375	\$37,500	\$93,750	\$187,500
Total Operating Expenses	\$14,747	\$72,547	\$289,222	\$722,572	\$1,444,822
Gross Profit (Loss)	\$4,003	\$21,203	\$85,778	\$214,928	\$430,178

	Year 1	Year 2	Year 3	Year 4	Year 5	Notes
Revenue						
<u>Transactions</u>						
Users	75,000	375,000	1,500,000	3,750,000	7,500,000	// approx ~15k student body per medium sized university
University Platforms Offered	5	25	100	250	500	// # of university student bodies served
% Growth		500%	400%	250%	200%	
Transactions (as % of Users)	10%	10%	10%	10%	10%	// expecting 10% of users to transact once
Total Transactions	7,500	37,500	150,000	375,000	750,000	
Avg. Transaction Value	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	

Transaction Volume	\$375,000.00	\$1,875,000.00	\$7,500,000.00	\$18,750,000.00	\$37,500,000.00
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// what
Crashpad
charges

% Take Rate	5%	5%	5%	5%	5%
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Total Transaction Revenue	\$18,750.00	\$93,750.00	\$375,000.00	\$937,500.00	\$1,875,000.00
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Advertisement

Sponsored Listings

Marketplace Services Ads

University and Corporate
Sponsorships

Total Advertisement Revenue

Total Revenue	\$18,750.00	\$93,750.00	\$375,000.00	\$937,500.00	\$1,875,000.00
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Operating Expenses

Identity Verification

Users	75,000	375,000	1,500,000	3,750,000	7,500,000
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// SheerID
is \$0.01 per
one-time
verification

SheerID Cost per User	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
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Total Identity Verification Costs	\$750.00	\$3,750.00	\$15,000.00	\$37,500.00	\$75,000.00
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Storage

Avg. Scan Size (MB)	50	50	50	50	50
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Uploads per User	1	1	1	1	1
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Room Scans Size (GB)	3,750	18,750	75,000	187,500	375,000
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// Supabase
Storage is
\$0.021 per
GB/month

Annual Supabase Storage per GB	\$0.252	\$0.252	\$0.252	\$0.252	\$0.252
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Total Storage Costs	\$945.00	\$4,725.00	\$18,900.00	\$47,250.00	\$94,500.00
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Transaction Fees

Transaction Volume	\$375,000.00	\$1,875,000.00	\$7,500,000.00	\$18,750,000.00	\$37,500,000.00	
Total Transaction Fees	\$10,875.30	\$54,375.30	\$217,500.30	\$543,750.30	\$1,087,500.30	// Stripe Fee is 2.9% + \$0.30 per transaction
<u>Cloud Infrastructure & Miscellaneous</u>						
Supabase Hosting & Database	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00	// Supabase costs \$25 per month
Domain Registration	\$2.17	\$21.99	\$21.99	\$21.99	\$21.99	// GoDaddy \$2.17 for domain and year 1, \$21.99 annual renewal
Total Cloud Infrastructure & Miscellaneous Costs	\$302.17	\$321.99	\$321.99	\$321.99	\$321.99	
<u>Marketing</u>						
Advertising Expenses	\$1,875.00	\$9,375.00	\$37,500.00	\$93,750.00	\$187,500.00	// 10% of revenue, based on student housing industry average
Total Marketing Costs	\$1,875.00	\$9,375.00	\$37,500.00	\$93,750.00	\$187,500.00	
Total Operating Expenses	\$14,747.47	\$72,547.29	\$289,222.29	\$722,572.29	\$1,444,822.29	
Gross Profit (Loss)	\$4,002.53	\$21,202.71	\$85,777.71	\$214,927.71	\$430,177.71	