

# Campus Connector

Proposal prepared for A Moonshot for Kids Competition  
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Anna Vallee, Ed.M.  
Founder

[ans9849@mail.harvard.edu](mailto:ans9849@mail.harvard.edu)

Lavanya Mohan, Ed.M.  
Co-founder

[lam169@mail.harvard.edu](mailto:lam169@mail.harvard.edu)

## Executive Summary

It seems like there's an app for everything these days. We use technology to help us find an apartment, a restaurant, and even a romantic partner. But when it comes to searching for information about colleges, there is no equivalent solution. That's why we're proposing Campus Connector as our Moonshot for Kids idea. Campus Connector will be an innovative web and mobile application that will ensure every student receives high-quality college and career advising by ninth grade. Users will start by creating a profile and answering a few short questions. Afterwards, an algorithm will match users to campuses based on their unique preferences and characteristics, similar to popular dating apps. Once a user has received her list or matches, she can explore campus ratings by other students and further segment her selections.

The app will emphasize a fun and user-friendly design. We will reduce the informational clutter in the layout by focusing on the seven primary metrics that students rated as "very important" when selecting a college: academic reputation, cost of attendance, employment after graduation, social and extracurricular activities, notable alumni, location, and size. Using data on test scores and GPA, the platform will also suggest "safety" and "stretch" schools to target, even showing students how they compare to the admitted student body.

In addition, Campus Connector will be the first college search and advising app to integrate a social element. Users will have the ability to upload photos of campuses and submit ratings based on their visits. In later years, we would like to explore the idea of sharing "College Stories," one-to-two-minute videos in which attending students explain what they love the most about their campus or wish they had known before attending. The end product is a tool that has the search and rating features of Yelp combined with the algorithmic matching of a dating app.

The low marginal cost of the product creates an extremely scalable solution and addresses many challenges associated with human-based interventions, such as individual counseling. And while there are currently tools that filter colleges based on criteria such as location or cost of attendance, none cater to the holistic needs or lifestyles of young adults. The existing solutions seem to be designed more for policy wonks than for teens.

We propose an initial development timeline of four years. Year one will be devoted to compiling datasets, solidifying the UX design, and finalizing the underlying algorithm. Beta testing and rollout in the initial state of Massachusetts will begin in year two. Year two also includes a "Dream Schools" campus visit tour. In order to get initial use of the platform, we will sponsor college visits to all 181 institutions<sup>2</sup> of postsecondary education in Massachusetts. On college tours, students will be required to take pictures and post ratings about their college tour experience.

<sup>1</sup> Eagan, M. K., Stolzenberg, E. B., Zimmerman, H. B., Aragon, M. C., Whang Sayson, H., & Rios-Aguilar, C. "The American Freshman: National Norms Fall 2016" *Higher Education Research Institute*, UCLA. May 2017. Retrieved from <https://heri.ucla.edu/publications-tfs/>.

<sup>2</sup> U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2017.

Although this is a large upfront investment, this activity will populate the institutions with enough social information to attract more students and provide real insight into the college campus for students who are unable to attend college tours. The activity will also respond to new evidence about the increasing importance of college campus visits in decision-making<sup>3</sup>. After beta testing, modifications, and the statewide rollout, we will launch the final version of Campus Connector nationwide in year 4. We don't need a billion dollars to make this idea a reality. An investment of USD 5 million is sufficient to complete our goals.

## The Problem

The college selection process is an incredibly important part of ensuring post-secondary success and financial stability. The institution that a young adult applies to and attends will impact her future student debt, earnings, and career trajectory.<sup>4</sup> For some, it is the best guarantee for upward mobility; research has found that children from low- and high-income families who attend the same college can expect similar earnings<sup>5</sup>.

Despite the serious consequences of this decision, students remain misinformed about their college choices. Researchers have shown that high school students are prone to making suboptimal decisions based on assumed, rather than real, guidelines<sup>6</sup>. Resources and access to information also vary, raising concerns about inequalities. At best, students have access to imperfect assessments of college quality through guidance counselors, parents, or purchased guides. At worst -for first generation or low-income students who represent approximately 19% of incoming college Freshmen - there may be no one to offer recommendations or suggestions.

The results of this resource disparity and information gap show up not only in the admissions decisions, but in the applications themselves. Low-income students are less likely to apply to selective colleges<sup>7</sup> when compared with high-income students with similar profiles (grades, test scores, etc.). Given this self-selection, it is unsurprising that that low-income students are less likely to attend college than their peers with similar academic achievements<sup>8</sup>. In other words, academic merit does not seem to determine who applies, is selected, or attends college. This is

3 Stolzenberg, E. B., Eagan, M. K., Aragon, M. C., Cesar-Davis, N. M., Jacobo, S., Couch, V., & Rios-Aguilar, C. "The American Freshman: National Norms Fall 2017." *Higher Education Research Institute*, UCLA. Retrieved from <https://heri.ucla.edu/publications-tfs/>.

4 *National Association of Student Financial Aid Administrators*. "The Value of Higher Education: Research and Resources." Retrieved from [https://www.nasfaa.org/value\\_of\\_higher\\_ed](https://www.nasfaa.org/value_of_higher_ed).

5 Chetty, R., Hendren, N., Jones, M., & Porter, S (2017). Mobility Report Cards: The Role of Colleges in Intergenerational Mobility. *NBER Working Paper No. 23618*. Retrieved from [http://www.equality-of-opportunity.org/papers/coll\\_mrc\\_paper.pdf](http://www.equality-of-opportunity.org/papers/coll_mrc_paper.pdf).

6 Pallais, A. (2013) Small Differences that Matter: Mistakes in Applying to College. *Journal of Economic Perspectives*, 33(2): 493-520.

7 Hoxby, C. & Avery, C. (2014) The Missing "One-Offs: The Hidden Supply of High-Achieving, Low-Income Students, *Brookings Papers on Economic Activity*, 2014. Retrieved from [http://www.brookings.edu/~media/Projects/BPEA/Spring%202013/2013a\\_hoxby.pdf](http://www.brookings.edu/~media/Projects/BPEA/Spring%202013/2013a_hoxby.pdf).

8 Ellwood, D. and Kane, T. (2000). Who is Getting a College Education: Family Background and the Growing Gaps in Enrollment. *Securing the Future*. New York: Russell Sage Foundation.

troubling considering that low-income students may disproportionately benefit from even just one year of college<sup>9</sup>.

Economic inequalities aside, the existing market inefficiencies mean that students of all backgrounds may miss the opportunity to apply to a school that could offer them more financial aid, a more supportive community, or a chance at a better starting salary post graduation.

## The Opportunity

While some interventions aid in the college selection process, no single solution has been sufficient to close the described market inefficiency in higher education. Individual counseling, usually happening at the school level, is costly and labor-intensive, and thus unscalable. Furthermore, students do not seem to value that resource; on average, less than 12% of incoming Freshman rated high school counselor's advice as "very important" when deciding where to go to college<sup>10</sup>. This could be for a variety of reasons; some students may not have consistent access to a college counselor, or the quality of those services may vary greatly depending on individual skill and caseload. Outside of individual counseling, existing online or print resources such as the U.S. News and World Report and the College Board are not user-friendly enough to allow for specialized searches based on student characteristics. For example, since U.S. News and World Report is not able to give pointed information to students based on his or her profile; consumers of these guides have to manually sort through the data for facts they find relevant, which can be an overwhelming activity. In addition, there is nothing in these guides that reveal what daily life on campus is like for students.

Finally, there are specialized databases, such as College Scorecard ([collegescorecard.ed.gov](http://collegescorecard.ed.gov)), that allow students to search for colleges based on filters. However, no tool is used widely enough or includes all relevant data to have a meaningful impact on the college application process. This could be for many reasons: there are no enforcement or incentive mechanisms that entice students to use the tools, the UX/UI design is not appealing, or the marketing techniques have not created enough awareness.

Due to the drawbacks of current offerings, there is a clear opening in the market for an additional tool for students seeking information about college. In order to compete with existing solutions, this new product or service should emphasize *affordability, scalability, and accessibility*. This tool should also be marketed in a way that ensures widespread adoption. Finally, the design of the tool should be *personalized* and focus on the seven primary metrics that students rated as "very

<sup>9</sup> Card, D. (1995) Using Geographic Variation in College Proximity to Estimate the Return to Schooling. *Aspects of Labour Market Behavior: Essays in Honour of John Vanderkamp*, ed. by L. N. Christofedes, E. K. Grant, and R. Swidinsky, pp. 201-222. University of Toronto Press, Toronto.

<sup>10</sup> Eagan, M. K., Stolzenberg, E. B., Zimmerman, H. B., Aragon, M. C., Whang Sayson, H., & Rios-Aguilar, C. The American Freshman: National Norms Fall 2016. Higher Education Research Institute, UCLA. May 2017.

important” when selecting a college: academic reputation, cost of attendance, employment after graduation, social and extracurricular activities, notable alumni, location, and size.

### **The Solution: Campus Connector**

Campus Connector will be an innovative web and mobile app that matches students to college campuses based on the criteria that they care about the most. By answering just a few short questions, students will get matched to campuses using an algorithm, similar to popular dating apps. Once a student has received her list or matches, she can explore campus ratings by other students and further segment her selections. The low marginal cost of the product creates an extremely scalable solution to the problem of disparate access to information about postsecondary education.

#### *The Experience*

Students will start using Campus Connector by creating a user account. The app will link with Facebook, Gmail, and other platforms in order to expedite the process. Afterwards, students will get to choose an avatar and username. Finally, students will be asked a series of short, personalized questions before being shown their matches.

1. Would you like to stay close to home, or are you open to other locations?
  - a. Follow up question if close to home: what is your zip code?
2. How much financial aid do you anticipate needing? A lot, a little, none?
3. I'd prefer: a smaller school (5,000 or fewer students) / a medium-sized school (5,000-15,000 students) / a big campus (15,000 or more students)
4. Are there any social or extracurricular activities that you're interested in? (Check all that apply)
5. What is your current GPA?
6. What is your current or anticipated SAT/ACT score?

Students will have the ability to opt out of all of these questions if they are not relevant to them. For example, younger students may not have taken the SAT/ACT. After a student answers the questions, she will be shown her school matches and be able to browse the schools. School profiles will prominently feature the seven metrics that students care about the most with other information in dropdown menus.

For students who submit information that could be used in admissions, such as SAT/ACT and GPA, students will be shown their “safety” and “stretch” schools, along with where they fall in the distribution of these measures. Messaging will also stress the importance of other factors in admissions decisions. For students who opt out of some of the questions, an alternative message will be presented to them. For example, students who choose not to list their GPA and SAT/ACT score will be shown the range of GPA and test scores for an institution that meets other search criteria so that they can set goals.

If students would like to sort the institutions further, they will have the option to take a longer quiz after they receive their initial results. This quiz will filter universities on additional characteristics like major, specialization, or special communities (e.g. Historically Black Colleges and Universities, veterans, students with special needs, etc.).

Students can also browse and participate in the rating feature of the app or upload pictures of the campus from college visits. Once a student finds her dream school, she can save the list to her profile, email it, or print it to use at home or at school. After creating her profile, she will also receive positive messages and advice about the application process through push notifications.

### *The Technology*

The key to the app technology is the underlying dataset and sorting algorithm. Most information on location, academic reputation, cost of attendance, social and extracurricular activities, location, and size can be obtained through IPEDS data. This data is the most exhaustive list of postsecondary institutions and includes information on community colleges. In addition, Peterson's Undergraduate database - a private database available for purchase and licensing - can serve as a backup database to fill in data gaps, validate information, or provide a contingency if we cannot use IPEDS data to create the product. The more challenging aspect of the database build will be incorporating information about employment after graduation and notable alumni. Long-term, we would like to look into using LinkedIn data to display the most common jobs after graduation and estimated earnings. Finally, we would like to incorporate more accurate measures of the causal effects of postsecondary institutions on student earnings and mobility. The work of Economist Raj Chetty to produce Mobility Report Cards has shed enormous insight onto which colleges that are moving the needle for economically disadvantaged students. His team currently publishes report cards for over 2,000 institutions on their website. We would like to look into using this data and presenting it in a user-friendly way. For example, we could assign badges to universities that provide better economic outcomes for low-income students, etc.

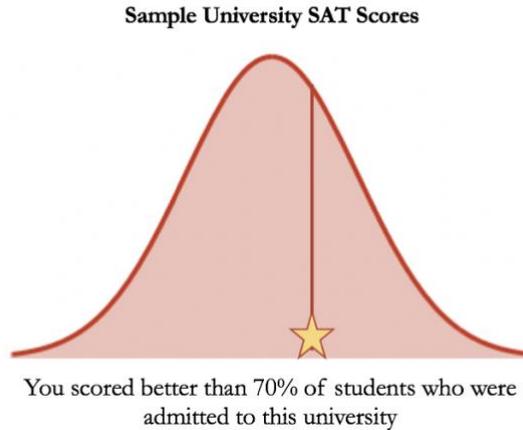
While we initially considered adding a prediction component to the search process that would predict the likelihood of admittance based on GPA and test scores, we have instead decided to display where a student falls in the distribution of test scores. While the prediction component would be feasible, we are not confident in the accuracy of predictions based on GPA and test scores alone. Research<sup>11</sup> and the recent spotlight on college admissions policies, especially at highly selective universities<sup>12,13</sup>, have demonstrated that there are many other factors that go into admissions decisions. We will instead show a student's position on the distribution of test scores or GPA using

11 Avery, C., Glickman, M., Hoxby, C., Metrick, A. (2013). A Revealed Preference Ranking of U.S. Colleges and Universities. *The Quarterly Journal of Economics*, Volume 128, Issue 1, Pages 425–467.

12 Taylor, K., Medina, J., Buckley, C., Stevenson, A. (2019, May 2). Admissions Scandal: When 'Hard Work' (Plus \$6.5 Million) Helps Get You Into Stanford. *New York Times*. Retrieved from <https://www.nytimes.com/2019/05/02/us/yusi-molly-zhao-china-stanford.html>.

13 Hartocollis, A. (2019, October 1). Harvard Does Not Discriminate Against Asian-Americans in Admissions, Judge Rules. *The New York Times*. Retrieved from <https://www.nytimes.com/2019/10/01/us/harvard-admissions-lawsuit.html>.

a simple normal distribution graph (see example below). As IPEDs data contains information about the 25th, 50th, and 75th percentile for each university, it will be a relatively easy graph to produce.



### Timeline & Implementation

We have outlined a four-year timeline until a full launch. Even though the Moonshot for Kids competition stresses an investment of USD 1 billion, we think we can accomplish our goals with a more modest budget. With major public or private R&D investments of \$5 million dollars over this time period, we are certain we can achieve these goals.

Year 1 Activities	Year 2 Activities
Recruit talent (CTO, developers, UX designer) Build customized databases Finalize sorting algorithm Create minimum viable product Refine UX design	Recruit marketing and client success staff Begin beta testing Launch “MA Dream Schools” campus tour Begin Massachusetts marketing campaigns Finish beta testing Refine product design
Year 3	Year 4
Refine product design Finish dream schools campus tour Launch national marketing campaigns	Formal launch

Notable activities include the MA “Dream Schools” campus tour sweepstakes. In year two, we will provide free college campus tours to selected middle and high school students in Massachusetts. The campus tours will cover all 181 college campuses in the state. In order to receive the free campus tours, students must review their campus visit and post a minimum of 1 photo from their visit. This will populate the initial school ratings, encourage adoption, and provide additional user feedback about the app. While a relatively costly investment early on, it will provide app users valuable information about the campus experience if they cannot visit themselves. This addresses

new findings that cite campus visits as an increasingly important factor in college application decisions.

**Word count: 2,370**