# Culdesac

Bella Steiner, Sarah Graf, Sarah Weng



**Submission for:**

Targeting Healthy Behaviors for Quality Social Connection

## Problem

How we live is changing. The world population continues to grow and urbanize, and many people are choosing to live in smaller spaces. In 2015, the Washington Post reported that 49% of occupied housing in New York City was in large apartment buildings (20+ units); Los Angeles was next in size with 28%.

Yet, apartment dwelling is a lonely endeavor. In a "Life at Home" study, researchers identified that 29% of people "felt more at home in other places than the space that they lived in every day", with this number increasing to 35% among city dwellers.

We have the opportunity to rethink how we design homes to facilitate quality social connection and combat loneliness, contributing to overall health and wellbeing.

## Solution

With **Culdesac,** we are redesigning the urban mid-rise apartment building experience by:

1. Facilitating regular organic interactions between neighbors
2. Creating living spaces that adjust to residents' lifestyles and life cycle needs
3. Promoting intergenerationality

By using people-centered design and technology to promote these goals, this living experience is uniquely different from anything that exists today. It's a future where apartment dwellers are not strangers.

## Factors to Success

Our idea draws inspiration from existing community-based housing models including coliving, Common.com, cooperative housing, hostels, and even nursing homes. Many of these models rely on community-minded folks to self-select into a specialized housing experience. This self-selection excludes the large proportion of urbanites who may be silently lonely, not recognizing that they can benefit from more quality social connection.

*Make community-based living more attractive*

The first factor to success is creating a living environment that attracts people regardless of their disposition towards community-based living. To do so, we must enable individuals to feel fully at home in a shared environment. In the "Life at Home" study, we find that people define home as a place where they have five things: privacy, security, comfort, ownership, and belonging.

Our solution incorporates technology and design that consistently holds these five principles at baseline. We recognize that an increased focus on community-based living requires us to equally prioritize privacy and ownership during times residents choose to be alone. To facilitate privacy, we use advanced noise-canceling technology to fully soundproof units. To achieve high standards of comfort, we feature high-quality, continuously maintained appliances and amenities. We also employ automated systems to detect, clean, and sanitize common areas of debris and odors, making shared spaces feel less communal. The technology discussed below also assists the building superintendent with reducing management costs and maximizing efficiency.

Community-based living is not all roses. While the benefits are plentiful, we've learned from research that tensions between tenants can rise high. Free-riding, for example, is one salient side-effect of cooperative living. To mitigate this, we hold technology responsible for many of the tasks typically delegated among residents. Floors in shared spaces are cleaned by automated vacuum and mopping units (e.g. Roombas); trash chutes are strategically located in each kitchen, leading directly to outside trash bins. The remainder of maintenance responsibilities lie on the maintenance staff, funded through HOA (homeowners' association) fees.

We now dive deeper into each of the three components.

*Facilitating regular organic interactions between neighbors*

- In the 1930s, Frank Lloyd Wright said "the hearth is the psychological center of the home". Today, however, modern architects see a shift from the hearth to the kitchen. Cooking and eating are daily opportunities to build community, yet many busy families lack time or energy to cook. Young professionals routinely dine out and kitchens are underutilized

relative to the area they take up in living spaces. Our mid-rise building features a range of high-end communal kitchens on each floor to encourage community around cooking and eating. The kitchen spaces are designed to facilitate human interaction, bringing people into common spaces to socialize while performing a routine task. Our technology platform, formally called Bulletin, allows residents to seamlessly reserve a kitchen as a chef or reserve seats at shared dinners. Each kitchen is always stocked with common ingredients, snacks, etc., funded by the HOA. Ultimately, we imagine creating a system where people cook and eat together to share in culture and be together.

- Culdesac broadly promotes a culture of sharing among residents so that people naturally borrow from each other before looking elsewhere. Shareable items like cars, bikes, camping gear, and sports equipment will exist in a centralized storage area where residents check out equipment seamlessly via the use of a beacon. A beacon is a low-energy wireless transmitter that uses Bluetooth to transmit data back and forth to nearby smart devices. This technology is being used in 2019 for proximity-based marketing purposes. For instance, when a person stops to look at a mannequin in a store, the beacon chip attached to the mannequin sends a link to the shopper directing them to the outfit they are looking at. At Culdesac, beacon technology is widely used not only to push relevant and timely information to residents, but also to collect data on everything from shared item usage to kitchen activity to deploying cleaning machines. Data analytics on use patterns sourced from these beacons and digested by the virtual platform, Bulletin, then informs building management, helping them prioritize maintenance and target replacement efforts. The same analytics platform that sits on Bulletin also uses artificial intelligence to connect people with similar hobbies, such as like-minded cyclists who tend to train at similar times and intervals. The more data that Bulletin collects, the better its predictions are of residents' compatibility for anything from tutoring, babysitting, carpooling, etc.

- Technology-enabled shared spaces organically allow people to ask for company when it is desired. Globally, one in four say they are working from home more than ever before and remote workers we surveyed desired greater community. Therefore, our mid-rise apartment buildings include Bulletin-enabled "status boards" in all shared spaces like the kitchen, gym, conference rooms, or general communal spaces. Residents can elect to reveal their location and preference for company in any shared space, inviting others to join them.

***Creating living spaces that adjust to residents' lifestyles and life cycle needs***

- In our research, people often move as they experience new life milestones, whether that is upgrading for future children, downsizing as children move away, or transitioning to caretake for parents and in-laws. Each phase of life requires a different layout and different space requirements, which our test users said was a top reason for moving around within the same urban area.

Our apartments are therefore **modular**, allowing reconfiguration both within each unit and with other units on the same floor. All rooms exist as a mobile and self-contained space, similar to pods or trailers. Per the ownership model, residents can acquire new rooms or sell off existing rooms to other residents. Bulletin facilitates in matching people within the building looking to buy and sell shares (i.e. rooms), and prioritizes these sales over ones to outside parties. Such transitions sometimes require rearranging modular rooms on floors to combine previously non-adjacent spaces, but this design optimizes space and matches each resident to their ideal living space.

*Promoting intergenerationality*

- In our research, we found that a greater mix of age in a community often leads to a more rewarding life. In fact, when young and older populations commingle, it has been shown to be mutually beneficial. It can provide a sort of attention to kids and teens that they don't often enjoy, and in turn give a sense of purpose to older adults that has the potential to extend life. Various aspects of Culdesac's design foster interaction and relationship building between the young and the old.
- As described above, one of Bulletin's primary functions is to match people for a variety of reasons. Its algorithm optimizes the amount and quality of interactions between older and younger generations. To illustrate, Bulletin advises Jack, a gentleman in his 70s, to meet Sam, a 23-year-old recent college graduate who lives seven units away. The data shows a pattern of Jack and Sam generally taking vacations at different times of the year. The two end up relying on each other - Jack takes care of Sam's six cactuses when he's away, and Sam feeds Jack's sourdough starter when he leaves for extended periods.

## Solution Analysis

Our apartments attract a wide range of buyers, but particularly those that are looking for an affordable and feature-rich alternative to expensive urban spaces that exist today.

Interviews with friends and family revealed:

- People are open to and intrigued by living in a place with shared cooking space. Both those that cook often and those that cook rarely see appeal. Avid cooks are drawn by better kitchen amenities than what they could afford independently. Rare chefs are excited to join in shared meals and leverage others' cooking skills.
- The idea of sacrificing a private in-unit kitchen becomes conceivable when presented with the convenience and efficiency of a shared economy. People perceive a lot of waste among their belongings, especially in their kitchen; saving money and reducing waste is an extremely attractive proposition.

*Feasibility*

Our design is feasible for five key reasons:

1) Designing for units without kitchens majorly offsets the cost of maintaining high-tech, decked out shared kitchens. Historically, kitchens represent ~8% of apartment space. Our units are an average size of 1,000 sq ft and following this trend, an in-unit kitchen would take up roughly 80 sq ft. We have 10 units per floor with nine floors, making it a total of 7,200 sq ft of kitchen space in the building. To construct a high-end kitchen [costs roughly $300 per square foot](). That's a savings of $2.16 million on in-unit kitchen costs and 7,200 square feet to use for additional shared spaces!

2) Our sharing economy for things that are expensive and inefficient to own individually also decreases the need for space, creating leeway to use the space for community-oriented features. For instance, because our residents share cars, our proportion of those who choose to own a car is low. Having designed for this, our garage is relatively small and we used the space that otherwise would have gone to the garage for a "family room" in the building's basement to facilitate families spending time together. We hold chess tournaments there for seniors to compete against teens, promoting further intergenerational interaction.

3) Fully modular units reduces construction costs by maximizing economies of scale.

4) The robust HOA and technology driven management system (i.e. Bulletin) optimize building management, making for low labor costs via a reduced need for staff.

5) Demand is reliable based on there already being interest in reimagining urban spaces. We know there is less space and more people are flocking to urban areas in search of opportunities.

## Application to Other Tracks

Our solution is a living space designed to curb loneliness for the modern, technology-enabled human. Improvements in mental health from reduced loneliness can lead to better physical health outcomes and generally greater satisfaction.

**WELL Certification.** The building and implementation of our solution is completed to meet the highest standards of human health. We seek to develop this facility to meet the guidelines outlined by the International WELL Building Institute (IWBI). IWBI's WELL Building Standard is the leading global rating system for wellness with respect to physical infrastructure. We believe a partnership with IWBI enables us to integrate human wellness into every aspect of the building design.

**More Movement**. It has been shown that having a workout buddy leads to [greater success in exercise programs](). Bulletin's AI pairs people that the data shows would make good exercise workout buddies.

**Better Food.** A major shared resource at Culdesac is food. Participating residents share access to CSAs (community supported agriculture shares) and food wholesalers that deliver high-quality food through the HOA membership. Bulletin's usage data helps to optimize the type of food available and minimize food waste.

**Better Sleep.** We believe that in order to empower residents to live in community, they deserve a high-quality private space. The individual units are designed to limit background noise that can interfere with sleep. In addition, Bulletin enables optimization of lighting and temperature for improved sleep at night.

**More Time Outdoors.** "The Backyard" is Culdesac's rooftop park *(see example photo on website)*. It is modeled after the [Salesforce Park]() in San Francisco with trees, a childrens' play area, and a small arena for resident events.

## Equity Considerations

We purposely designed Culdesac without targeting a specific demographic. We believe that people from all races, genders, ages, financial resources, sexual orientations, disability status, etc. will find our living arrangements desirable. This coupled with the plethora of systemic building elements designed to bring residents together ensures quality interactions between highly diverse groups of people. Additionally, due to the modular nature of unit construction and no in-unit kitchens, the price of ownership is truly customizable and therefore accessible to many, addressing equity of financial means.

## Conclusion

Anyone that has lived in an apartment building has experienced the isolation that comes with the conventional layout. Rather than bringing residents together to build community, apartment living keeps them apart. We see this as an unintended consequence of desiring personal space and privacy and it has made us deviate so far from our universal need for connectedness. To disrupt this cycle, Culdesac flips the paradigm of apartment living. Instead of just being a place where individuals live, it's a place where communities play together - just like a cul de sac.

# Evolution of
# Culdesac

## Phase 3: Partnerships & Initial Construction

Hire IT engineering team to design Bulletin, administer the database, and integrate with all connected parts of building we're planning for

Form partnerships with companies we will need to support our sharing economy. Examples include Zip Car, outdoor sporting equipment companies, Instacart, local CSAs, etc.

Adapt beacon technology to Culdesac's needs. For instance, we need it to unlock a bike lock when a resident comes in close proximity. 2019 beacon technology does not handle all scenarios we will need.

Initiate construction

## Phase 1: Research & Legal Planning

Begin process of appealing to government to set up appropriate zoning laws for modular housing and rooftop environments

Research insurance implications of shared kitchen spaces and modular apartment design

Provide evidence and justification for insurance companies to partner on novel housing model

Culdesac ready for move-in!

**2022**

**2028**

**2020**

**2025**

Partner with Salesforce and related architects to assist with designing blueprints of rooftop park

Hire engineering team to begin solving modular room construction

Source initial data set to feed Bulletin's AI platform (either source externally or set up system to collect it from existing cohort). This will inform the algorithm for initial functionality until we collect sufficient data from our residents
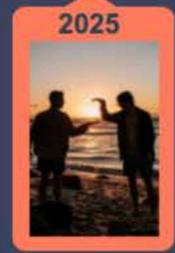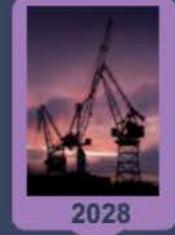
## Phase 2: Logistical Planning

Hire building management and maintenance staff

Get all legal, logistical, and partnership ducks in a row

Begin actively marketing Culdesac to potential residents

Complete building construction

## Phase 4: Final Build

2030

* Note, each action item listed is the initiation of that item. Its planning and execution continues throughout all subsequent phases until we go live in 2030.