



How do we design for safe interaction, not social isolation?

Being able to share space together, to affirm our humanity as well as our safety is critical to the protection and wellbeing of older adults.

Early on in the COVID-19 pandemic, it became clear that the virus was disproportionately affecting older adults. In the US, [as of June 10th](#), people 65 years or older represented 45% of COVID-19 hospitalizations, 53% of intensive care unit admissions and 80% of all deaths from COVID-19. [Statistics](#) show that 45% of deaths are from people living in nursing homes or assisted living centers.

For seniors, mitigating the risks of COVID-19 has much to do with [where they live](#). A small share, 3%, live in nursing homes with round-the-clock care; people living in this institutional model have been particularly affected by COVID-19 because of their greater susceptibility to the illness and contagion risks in shared spaces. The vast majority of older people (age 65 and over) live in independent homes in the community. Of these older adults, 73% live in single family homes and the remainder in apartments, mobile homes, and other housing types. The type of housing, its location, household configuration, and the extent of interactions with people from outside the household, such as with [those who come into the home](#) to provide support or care, are all important to understanding and mitigating risk.

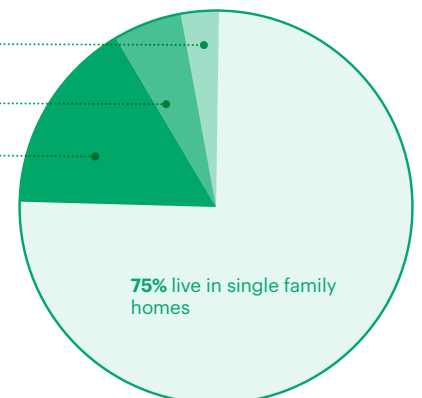
Yet in addition to managing contagion risk, older adults also need to balance another threat to their health – social isolation. [Research](#) has linked social isolation and loneliness to higher risks for a variety of physical and mental conditions: high blood pressure, heart disease, obesity, an immune system, anxiety, depression, cognitive decline, and even death. Before the pandemic, studies reported that nearly a quarter of older people were considered to be socially isolated.

Indeed, the desire for connection leads many older adults to live in independent housing that offers supportive services such as meals or transportation as well as a ready community of neighbors. There are nearly 700,000 units of this type of housing in the US, much of it affordable to those with low incomes, ranging from small to large scale facilities and offering town homes or apartment models, some on full campuses. In these senior housing models, communal spaces and the thresholds between public and private spaces are critical to managing contagion risk of COVID-19: these are the spaces through which residents, family, and caregivers pass, and through which groceries, packages, and other goods come in and out of the buildings and individual apartments. Yet it is also vital that older adults living in this type of housing continue to be able to connect with one another.

As the current strategy to prevent the spread of COVID-19, social distancing, further exacerbates these risks, we need to seek solutions in this model of housing that ensure seniors do not have to choose between safety and quality of life. Being able to share space together, to affirm our humanity, as well as our safety is critical to the protection and wellbeing of older adults. How can we better assess the risks posed in these different types of housing to allow older adults to gain control over their spaces? How do we design for safe interaction, not social isolation?

Shares of Older Individuals by Housing Type

- 3% live in group quarters (majority nursing home)
- 6% live in mobile homes or other
- 16% live in apartments



About This Document

The following design strategies are meant to guide senior housing developers and operators as they adapt existing buildings to balance infection control and social interaction.

MASS Design Group was founded ten years ago in response to an epidemic disease — extremely drug resistant tuberculosis — whose airborne transmission was exacerbated by spatial conditions of hospital wards and waiting areas. Over the past decade we have partnered with organizations working on the front-lines of the world's major health challenges, from responding to acute epidemics of Ebola in Liberia and cholera in Haiti, to addressing the chronic injustices of structural health inequities in the US and around the world.

The senior population is rapidly expanding and providing high quality, accessible housing with supportive services will be a national imperative. We have chosen to focus on affordable, rental housing for seniors in this guide because older renters, many with a fixed income and limited savings, are the most vulnerable to the social, environmental, economic and health challenges. We also believe that many mission driven non-profit senior housing providers will lead the way to provide high quality experiences for residents, and all senior housing can learn from their efforts.

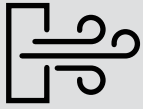
This document draws upon COVID-19 infection control guidelines we co-developed with healthcare practitioners; our experience designing affordable housing; as well as conversations with industry experts, researchers, and community development corporations. *Whereas other guides focus on how to keep people distanced from each other; this guide is aimed at achieving infection control principles while offering solutions that allow people to safely come together.*

This guide and its design principles were developed through research and focused conversations with leaders in affordable housing development, operation, and design. We are grateful to Jennifer Molinsky of the Joint Center for Housing Studies; Emi Kiyota, founder of IBASHO, for their partnership and to Alma Balonon-Rosen, Massachusetts Housing Partnership; Susan Gittelman, B'nai B'rith; Carrie Niemy, Enterprise Community Partners; Jane Rohde, JSR Associates; and Enterprise Rose Fellows Peter Aeschbacher, Sam Beall, Nick Guertin, Yuko Okabe, Kelsey Oesmann, and Jason Wheeler for their experience, consultation and review. As more research emerges regarding the virus, federal and state guidelines are updated and released, and additional case studies are completed, this document will be updated.

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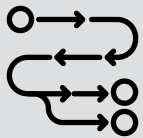
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Creating safe space for interaction in housing can be challenging. Here are some principles that are applicable across many situations.



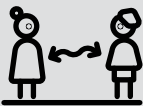
Make spaces breathe better.

As COVID-19 can be transmitted through airborne particles, proper quantities of fresh air must be delivered to residents. HVAC systems play a large part in creating well ventilated spaces and should undergo frequent maintenance. Operable openings can supplement air dilution. Special care should be taken in high risk scenarios where population density is high or residents may be ill. UV disinfection lights and air filters can also be used, and fans can help create negative air pressure environments.



Sequence flows through a space.

Strong way-finding will help visitors and service providers navigate semi-public and semi-private spaces and limit unnecessary mixing. A clear threshold of sanitary protocols for both people and goods will additionally reinforce the inside of the building as a clean zone.



Reduce pressure on high traffic places.

Social distancing measures must be implemented with sensitivity to mobility difficulties common amongst older adults. Common areas of risk are elevators, hallways, and shared amenities. Consider how residents can pass each other while maintaining a 6ft distance, increasing queue spacing and adding seating for extended waits, and distributing amenities throughout the building or home.



Encourage people to get outdoors.

Risk of infection transmission is lower outdoors where there is access to fresh air. Increase the quantity and accessibility of outdoor spaces where possible, and include a diversity of spaces through scale and program. Exercise can also be encouraged with looped walking paths and frequent points of interest along them.



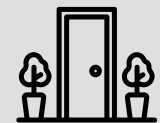
Group residents into "villages."

Small adjacent clusters can form a happy medium between complete isolation and complete exposure to the rest of the building. Small groups of neighbors (8-10 units) can not only be a peer support group, they can also share common amenities without relying on higher risk multi-purpose rooms or shared dining spaces.



Increase cleaning protocols for high-touch surfaces.

Clear cleaning protocols will not only improve the safety of a space, they will also increase trust and comfort levels. Make high-touch surfaces obvious with brightly colored non-porous materials such as paint, tape, or signage. Provide cleansing methods such as an open sink or hand sanitizer adjacent to high-touch surfaces.



Expand the threshold of the unit.

As more goods and services are brought to the doorstep, the unit or house entry must adapt to spatial and behavioral needs. Signage identifying the residence should be clear to reduce delivery mistakes. Designating a space off the floor for packages and deliveries will help keep narrow circulation paths free of tripping hazards.



Embed technology.

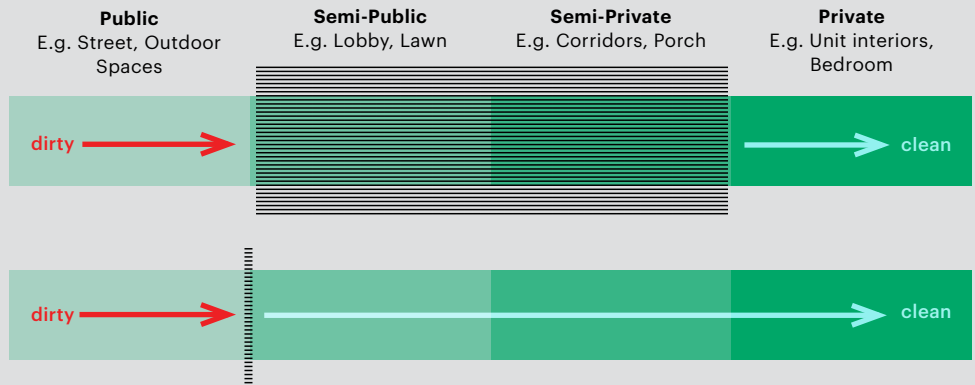
Communications technology not only allows for critical information to be shared immediately, it can also safely foster necessary services such as wellness checks and reduce isolation. Having a standardized technology baseline creates equitable access to communication and information.

While senior housing varies widely, all homes encompass the private and public. The space between public and private is often conceived of as a two dimensional line when it is in reality a series of thresholds that will change based on the resident’s living and care situation. The following prompts will help residents, property managers, and visitors determine where each threshold lies and key factors to be aware of to maintain infection control.

The Importance of Thresholds

Prior to COVID-19, most housing types had weakly defined thresholds for the transition to public and private. The threshold between “clean” and “dirty” can, in the context of COVID-19, become an undefined no man’s land.

With the introduction of protocols for cleaning, donning and doffing, and other principles in infection control, this threshold can occur at different points along the spectrum expanding areas that are deemed “clean” or “dirty” to allow for increased social interaction and autonomy.



Definitions and Key Characteristics

<p>In the public domain, risk of infection is higher. The individual has minimal control over the cleanliness and relies on the local government, authorities or policy makers to establish infection control norms.</p>	<p>In a semi-public realm there is typically a shared agreement for behavioral norms but the quantity of people and proximity to the “public” zone make it difficult for an individual to enforce or have control over norms.</p>	<p>Semi-private zones are defined by their scale as they typically limit the number of individuals. Typically users of the space are known, giving individuals greater control and knowledge of potential risks.</p>	<p>Private zones are those where individuals have the greatest amount of infection control and where risks are lowest. This can vary based on how many people the residence is shared with, the relationship between residents to them, and the level of exposure of each individual.</p>
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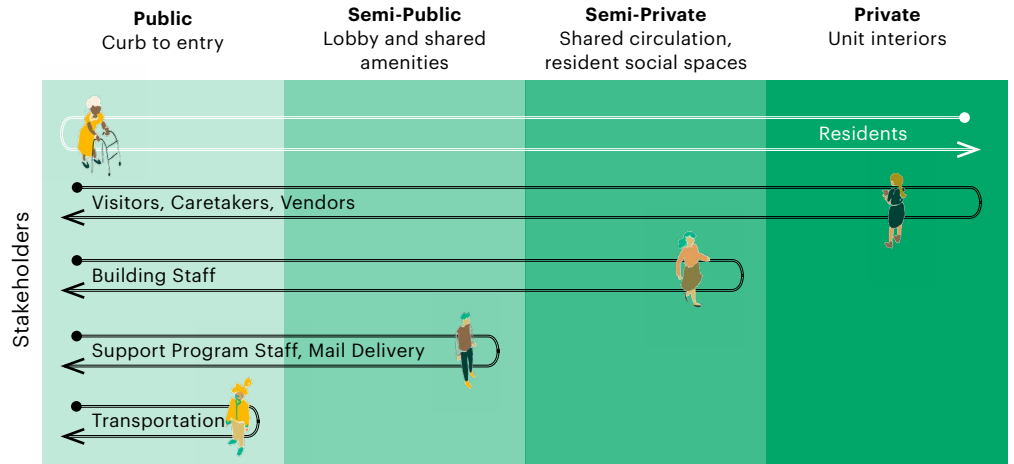
Questions to help guide residents and housing operators in determining where their public, semi-public, semi-private, and private thresholds are.

- Do I have control over my personal safety?*
- Do I have control over my interaction with others?*
- With whom do I share control over this space?*
- How large is that group of people?*

Case Study: Senior Affordable Housing






Senior affordable housing comes in many forms. As a case study to apply lessons learned and guidelines for infection control we have selected a multi-family affordable housing project for older adults. This example building is multi-storied with a double loaded corridor located in the eastern United States. The study assumes that some basic services are provided to residents but most care is delivered through home health aides or other vendors. We will break down each zone of the public to private spectrum and identify specific applications of each of the principles.

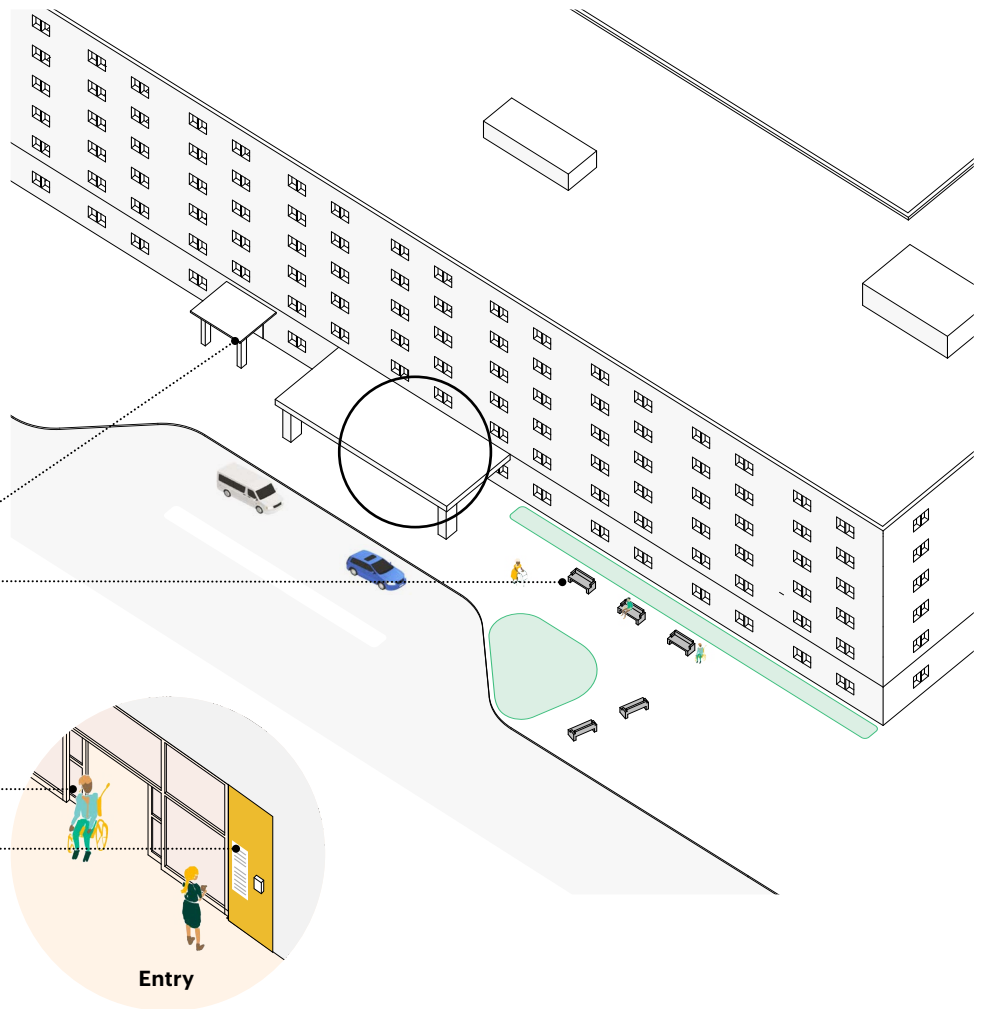
These diagrams depict the thresholds of public and private or “clean” and “dirty” that exist in housing that need to be reexamined to improve infection control and social interaction for residents.



Strategies for the Public Realm

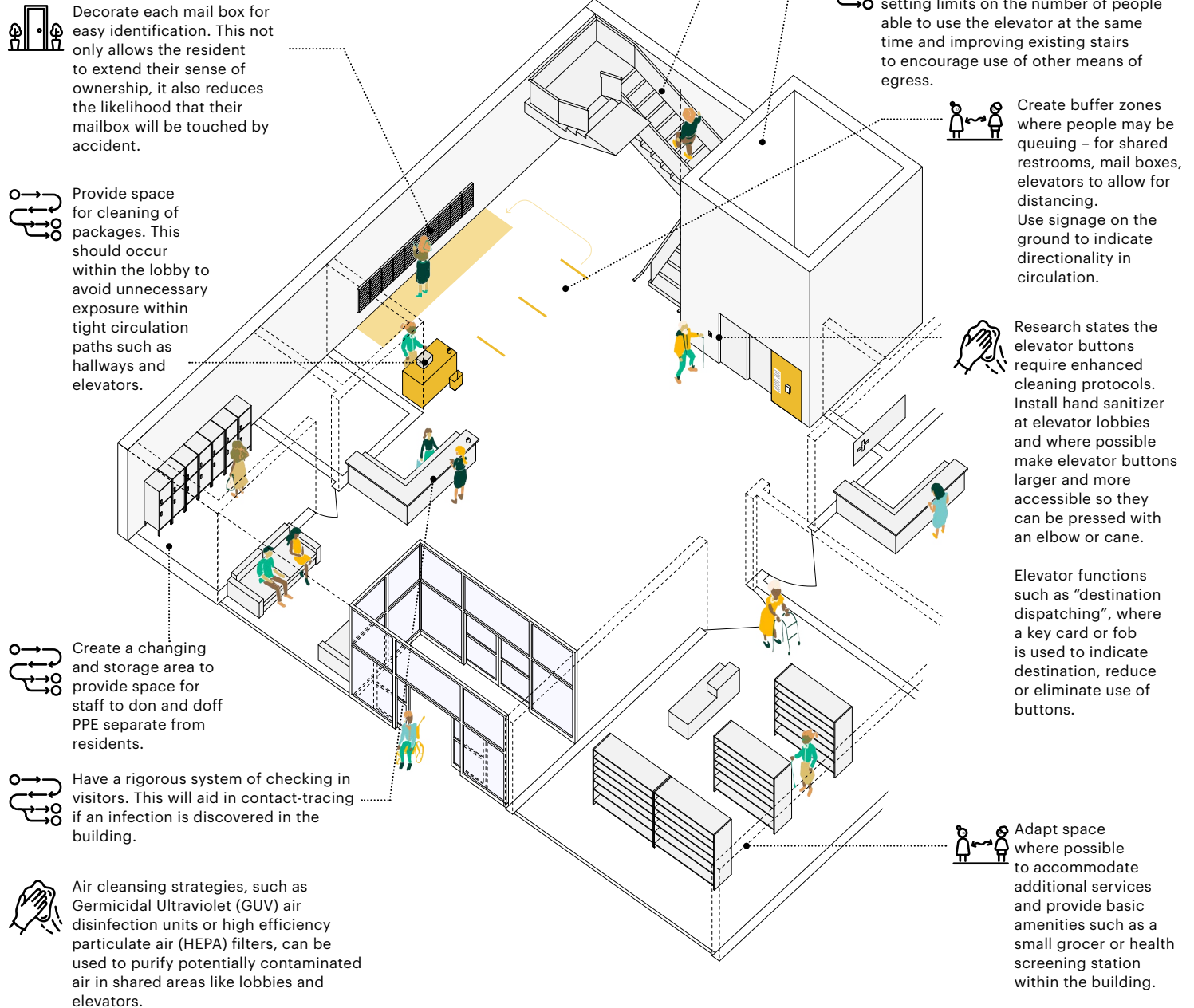
For most multi-family housing for older adults, the primary access to the outside is via car, whether this is caretakers visiting, deliveries being made, or residents taking trips elsewhere. The buffer zone between the entry of the building and the curb is an opportunity to not only establish clear way-finding to help those unfamiliar with the building, programs usually housed inside can be redirected here.

-  Create designated entries with clear and distinct areas for staff, vendors, residents, and packages entering the building. Build capacity for spatial literacy of clean and dirty areas.
-  Take advantage of outdoor space to create waiting areas. This is not only safer for limiting disease transmission, but it may also be one of a resident’s few chances to be outdoors.
-  Introduce touch-less entry doors to reduce surface transmission. Alternatively, install foot-pedal operated door openers to reduce surface contact.
-  Provide clear signage for visitors of different types, indicating building protocols. If there is a designated entry, indicate it here.
-  Establish a ritual of washing hands on building entry by placing hand sanitizer and/or a hand washing sink at the entrance. Making this highly visible will help residents build trust with each other and encourage adherence through social norms.



Strategies for the Semi-Public Realm


The ground floor lobby is typically where shared services and amenities are located. While it is dedicated to residents, there is a higher exposure risk as members of the public will frequently enter the space. Building management should make cleaning protocols visible and enforceable wherever possible. Flows of movement should also be demarcated clearly to ensure safe distribution of traffic.





Strategies for the Semi-Private Realm


Within multi-family housing for older adults, the semi-private realm is typically made up of circulation and resident-only amenities. These are often minimally sized due to an emphasis on maximizing the unit count for efficiency. As a result, social distancing measures require spatial adaptations to be implemented in many cases.


Please note: the recommendations on this page use the example of a floor with double loaded corridor. While not ideal for many reasons, including infection control measures, this typology was chosen as the example due to its proliferation in affordable housing developments today.

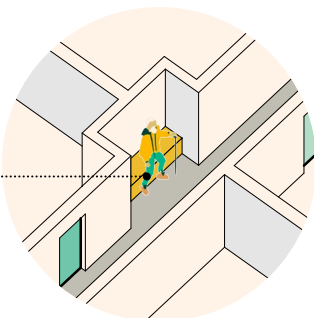
 Providing access to the outdoors on each floor helps residents access nature, fresh air and sunlight without having to take the elevator or stairs. Shared balconies for 8 - 10 units or establishing protocols on times of use can help mitigate overcrowding.

 Widen hallways where possible. This strategy originates from hospital design by eliminating double loaded corridors and instead thickening the circulation space to operate as an interior public realm.


 Make hallways one way if circulation allows. Corridors that have elevator cores at each end can become unidirectional. This is a simple method of maintaining distance between residents.


 Bring amenities closer to residential units. This not only allows residents to stay closer to home, it reduces the risk of lengthy queues where residents may need to stand for periods of time.


 If the hallway is less than 6ft wide, introduce pause points so residents can have room to safely pass one another in long corridors or circulatory paths. This doubles as a rest point as long double loaded corridors are difficult to navigate for older adults.

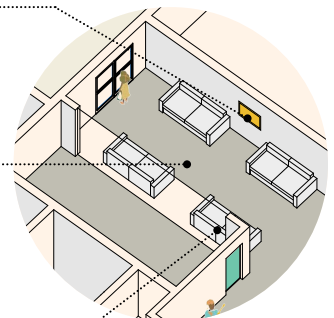


Hallway Pause Point


 Televised community events to bring programming and familiar activities into the unit or more localized common spaces. This allows residents to be connected to the community without compromising safety.


 Insert common spaces at each floor to allow people to gather and participate in community programming (shared kitchen, living, laundry). Used outside the peak of an outbreak, these spaces can help reduce social isolation, while still reducing degree of exposure and allowing for easy contact tracing where necessary.


 Use furniture that can be appropriately spaced for social distancing, with upholstery that is easily sanitized.

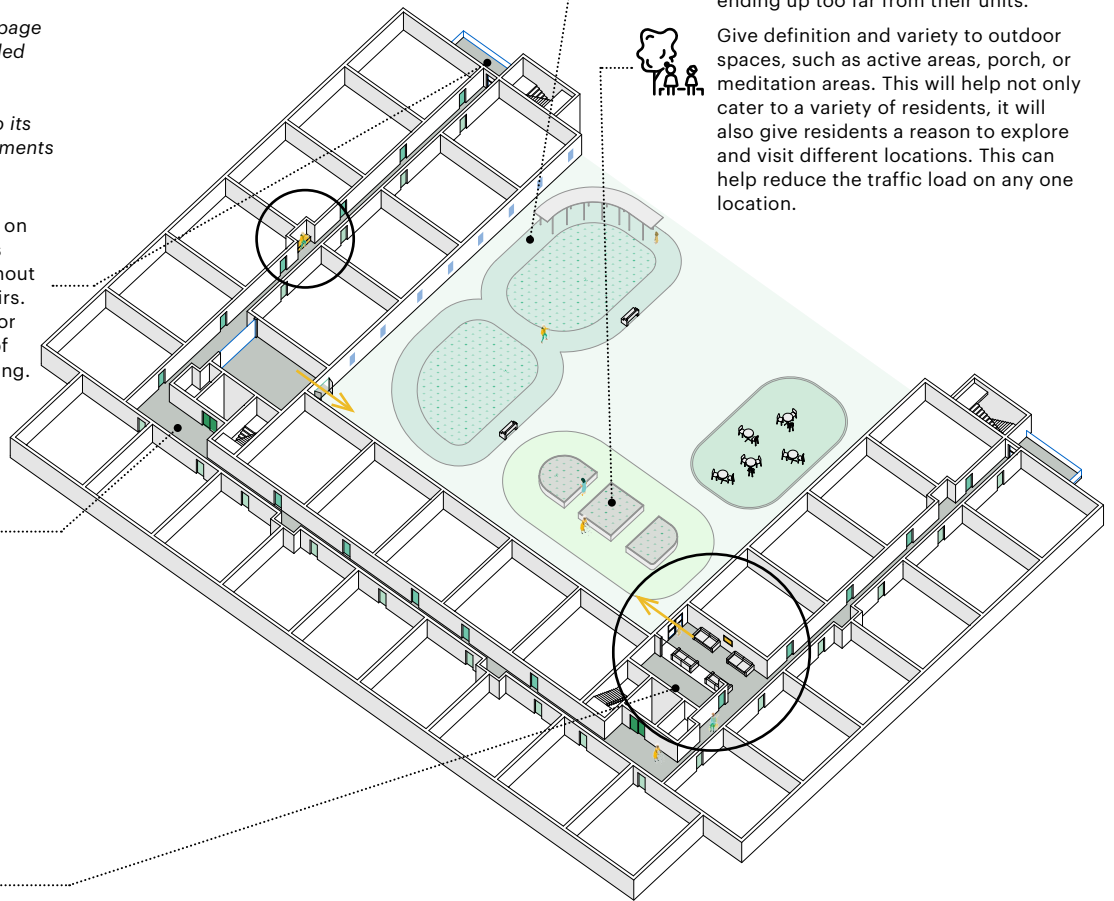


Social Space

 Implement systems for timed usage for outdoor space based on floor, age, or other factors. This will reduce risk of transmission, as well as allow residents to expect a degree of crowd management. Additionally, limited groups will aid in contact tracing.

 Claim additional outdoor space as programmed space. Opportunities for exercise are especially important, as residents have limited time outside. This can be in the form of exercise or play equipment, as well as walking paths. Walking loops make it easy for residents to use without getting lost or ending up too far from their units.

 Give definition and variety to outdoor spaces, such as active areas, porch, or meditation areas. This will help not only cater to a variety of residents, it will also give residents a reason to explore and visit different locations. This can help reduce the traffic load on any one location.



Strategies for the Private Realm

While the primary point of PPE donning and doffing would occur at the entry of the building, donning and doffing at the unit entry is still important between interactions with neighbors, such as when using shared amenities.

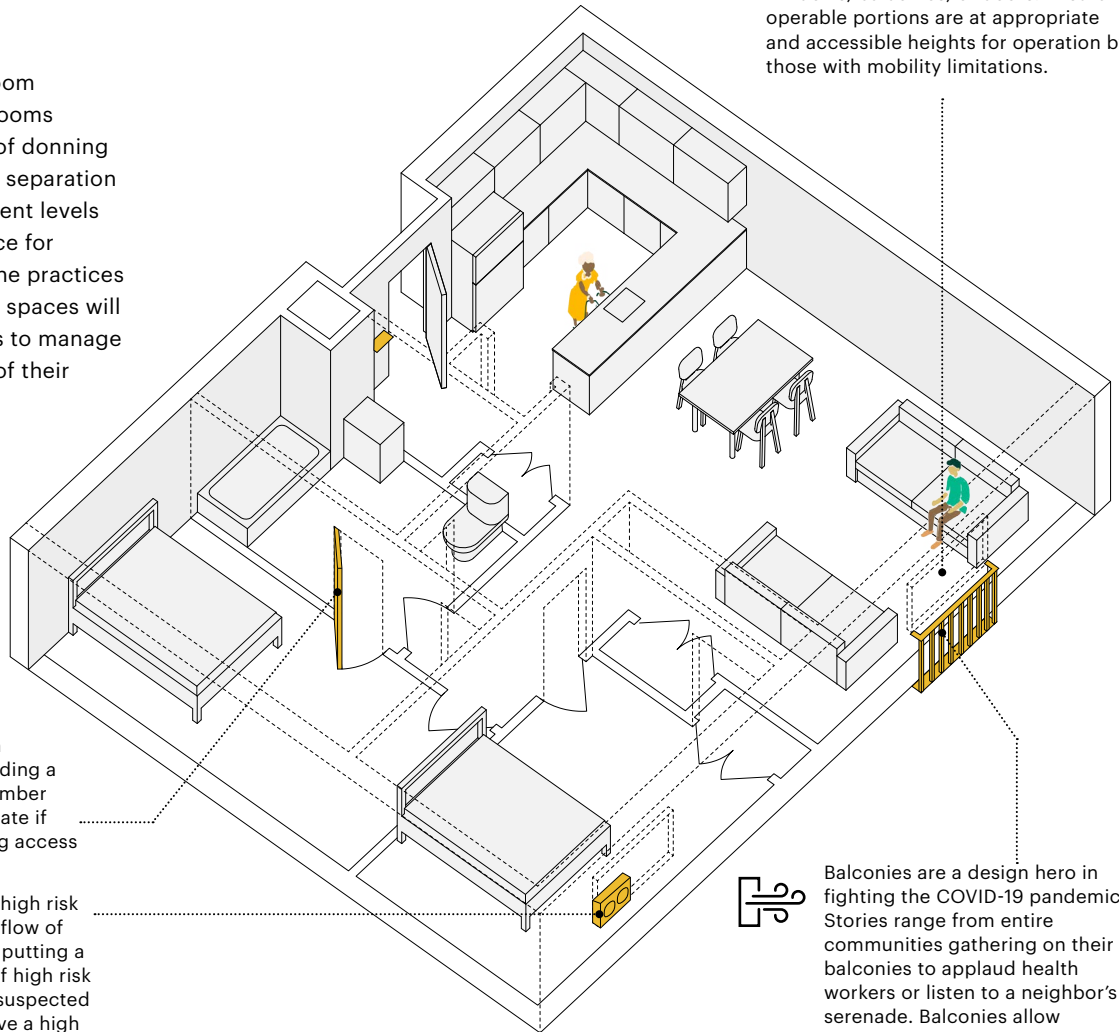
Neither standard 250 sf single room occupancies or 900 sf two-bedrooms currently allow for proper areas of donning or doffing at the unit entry or for separation of residents who may have different levels of personal risk. Developing space for proper storage of PPE and hygiene practices and delineation between interior spaces will give greater control for residents to manage their personal needs and needs of their spouse or roommates.



Embed technology and communication devices in the base design of the unit. This will allow residents to not only receive contact-free notifications, it provides the platform for contact-free social connection.



Contaminated air can be diluted by adding fresh outside air via open windows, balconies, or doors. Ensure operable portions are at appropriate and accessible heights for operation by those with mobility limitations.



Connect a shared bathroom directly to a bedroom by adding a door. This will allow one member of the household to self-isolate if necessary, while maintaining access to the bathroom.



Create negative pressure in high risk rooms to ensure directional flow of air. This can be achieved by putting a fan in a window. Examples of high risk locations include residents suspected of being ill or rooms that have a high degree of shared use.

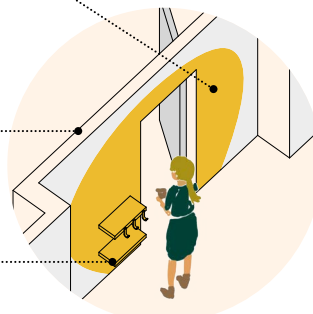


Identify the resident through the building. Beyond relying on the apartment number, a distinct design can help create a sense of personal identity and aid in effective way-finding for deliveries.



Recess the entryway to the unit to create space off of the corridor and the path of travel to accommodate additional supplies (medicine, groceries, laundry) being delivered to residents.

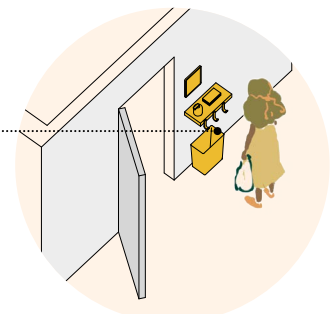
Accommodate these materials with additional shelves, hooks to keep them at an accessible height and off of the floor.



Unit Entry Exterior



Designate space in the unit to don or doff PPE, or clean supplies, packages, or groceries before they enter further into the home. Use the closest surface as a sanitizing station and have a trash receptacle for discarded packaging and PPE.



Unit Entry Interior



Balconies are a design hero in fighting the COVID-19 pandemic. Stories range from entire communities gathering on their balconies to applaud health workers or listen to a neighbor's serenade. Balconies allow people to open their homes for increased amounts of fresh air and to socialize and interact with others with safe distances.

Good design
for the most
vulnerable is
good design for
everyone.

For Future Developments

The lessons from COVID-19 provide a window into a new way of prioritizing and evaluating the design of affordable housing. Designing for the “new normal” changes the way we think about certain design elements in housing. Corridors for example, have been highlighted as one of the elements in hospital design where infections have spread. In housing, efficiency in design has led us to rely on the 6ft double and single loaded corridor as given in the design. However, 6ft corridors do not allow for social distancing and perhaps there is greater opportunity for dramatically changing the layout of senior housing entirely. Options include reducing the scale of buildings to “villages,” and eliminating or rethinking hallways to help provide access to services. The greenhouse movement, in assisted living design, provides a model for how this type of layout may support and provide safer social interaction and more meaningful relationships as a set number of residents share basic spaces such as a kitchen, living room, or outdoor space.

New housing developments would also benefit from solutions to provide services for residents without them having to leave the building. Bringing in additional amenities and developing creative partnerships with other businesses such as a health clinic, grocery store, pharmacy, salon, or a resale shop within the boundary of the site allow residents to gain independence over basic necessities without being exposed to potential risk of infection.

Previously, balconies, equal access to outdoor space, generous entryways, open stairways, and telecommunication devices built into the base unit were seen as luxury items. These same elements during the pandemic are proving to be essential in maintaining physical, mental, and emotional health and should be included in future projects as essential. Less-institutional spaces that have been intentionally designed for people’s well-being are better for infection control.

All of these suggestions will of course mandate a cultural shift in the way we fund and finance affordable housing. However, as COVID-19 continues to show the devastating connection between the design of housing and its negative impacts on health, we have the opportunity to prove that good design matters and that everyone deserves a safe, dignified, and healthy home.