

Spatial Strategies for Restaurants in Response to COVID-19



Employees at PAGU in Boston prepare meals for frontline workers (photo: Keiko Hiromi).

In responding to the pandemic, restaurants can and must play a central role in our redesigned public realm.

From the scale of the table to the scale of the region, restaurants have an outsized impact on what we eat and how we occupy our cities.

Restaurants are a critical part of our public sphere—they are places of hospitality, gatherings, birthdays, anniversaries, and our day-to-days. In the midst of this global coronavirus pandemic, when the very nature of public space has become both threatening and threatened, the future of the restaurant industry is brought into question, and its path forward remains uncertain.

One thing we know for sure: restaurants play a pivotal role in our collective post-pandemic future, and to be able to return to them safely, they must be empowered to be active participants in the rebuilding of trust. To date, there are no formal design guidelines or building codes that have been developed specifically to respond to the novel coronavirus. At best, the recommendation of 6’ of social distancing represents burgeoning understanding of the virus’s transmission. Restaurants could benefit, in both the short and long-term, from spatial guides and cues to optimize operations and keep people safe. With the understanding that “returning to normal” is not possible operationally or financially, we examine the inherently spatial relationship between new protocols for food safety, sanitation, and the viability of restaurant businesses in our post-pandemic future.

The recommendations and prompts in this document seek to come alongside restaurant owners, chefs, staff, and patrons as we navigate our evolving understanding of COVID-19 in restaurant settings and attempt to adapt ideal recommendations to real-life situations. The faster we can design trust back into these spaces, the faster we can stabilize and strengthen the restaurant industry.

About This Document

The following design strategies guide restaurants in spatial literacy as they work towards reopening safely, viably, and vibrantly, and position restaurants at the heart of the public realm.

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 frontlines 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.

Infection control guidelines co-developed with healthcare practitioners for clinics and hospitals emphasize spatial sequencing, personal hygiene infrastructure, materiality, ventilation, and legibility. This document draws upon these healthcare infection control guidelines to support the evolution of existing best practices for restaurants. These recommendations are based on our experience designing for infection control, analysis of existing food safety standards, and case study applications of protocols in restaurants.

We are grateful to Jody Adams and her team at Porto, Ken Oringer and his team at Little Donkey, and the Off Their Plate staff, all of whom generously contributed time and insight during a turbulent time in the lives of their businesses. 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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New and evolving operational protocols must balance the tension between keeping staff, customers, and communities safe, while also facilitating a business model that is already operating on razor thin margins. The following design strategies guide restaurants as they work towards reopening safely, viably, and vibrantly.



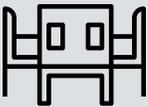
Evaluate new food safety and sanitation protocols as spatial challenges.

Restaurants are already well equipped to manage surface contagion and food containment protocols. FDA regulations and food safety inspection guidelines are thorough, yet new operational requirements present significant spatial barriers to ideal implementation. Continue to monitor guides and recommendations from the FDA, CDC, and others, recognizing that solutions are often spatial in nature.



Examine the spaces of your restaurant with flexible reconfiguration in mind.

Establish a clearly identified exchange zone to mark the transition of food, supplies, and people from the public realm (i.e., dining, waiting) to back of house (i.e., kitchen, storage). This will help develop spatial literacy and introduce additional control over and sanitation within the existing space of the restaurant.



Understand that the 6' rule is not a solution inside restaurants.

Requiring that diners stay 6' apart in existing restaurant settings is, in many cases, simply not possible as it will reduce the number of diners by 50%-70% depending on the space. A finer grain analysis of different types of restaurant seating (tables, bar seating, and booths) can help us develop creative solutions to the 6' rule while still mitigating contagion as restaurants transition back to on-site dining.



Expand into the street and reclaim the restaurant's role in the public realm.

Restaurants of all types are a public services, and that has never been more true than during this pandemic crisis, when restaurants are working around the clock to feed people in need. Local governments and policy makers should eliminate zoning barriers to protect our public spaces, creating more space for pedestrians, cyclists, and outdoor restaurant seating will bolster the restaurant industry.



Design for trust.

Visual grade signs posted on restaurants have historically provided trust in standardized and monitored compliance. Chef uniforms, and open kitchens are also design strategies that make visible the invisible act of safe and clean food handling. Compliance with rapidly-evolving evidence about COVID-19 transmission must be made visible and legible, both from the restaurant employees and from diners and guests.

Evaluate new food safety and sanitation protocols as spatial challenges.

Industry-wide, restaurants are already implementing rigid food safety regulations, as prescribed by FDA Food Code, the USDA Food Safety and Inspection Guidelines, and the National Registry of Food Safety. Other industries have historically looked to restaurants for best practices in food and space management, as well as customer confidence. If restaurants can successfully adapt the following clinical protocols to their spaces, they will serve as a model for other businesses working to re-open:

Sequence spaces to limit droplet spread.

Employees should enter the facilities through a designated entry, separated from guests, and temperatures should be checked and logged upon arrival. **A changing and storage area should provide space for employees to don clean attire and PPE.** Wherever possible, distinguish between “service” and “return” doors and hallways to exchange zones to limit contamination.

Mitigate contagion via surfaces.

The CDC understands that contaminated high-touch surfaces may be a transmission route for COVID-19. In a food establishment, doors, doorknobs, linens, chairs, counter tops, dispensers, toilets, and sinks are examples of high touch surfaces. Materials and surfaces should be deployed and installed to minimize or eliminate touching, to **make touch points obvious**, and with the understanding that they must be frequently cleaned and disinfected.

Control for airborne infection.

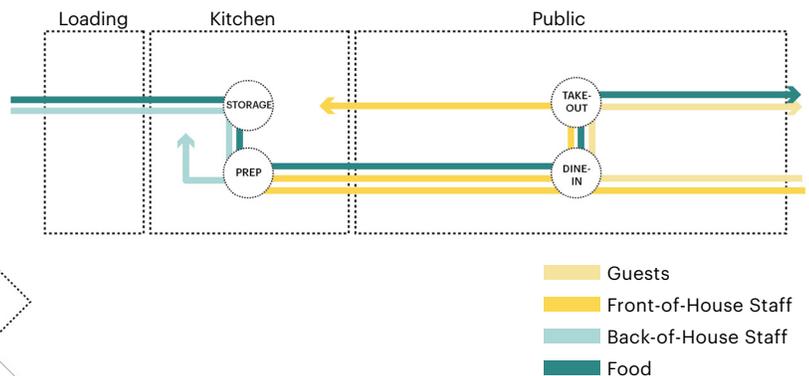
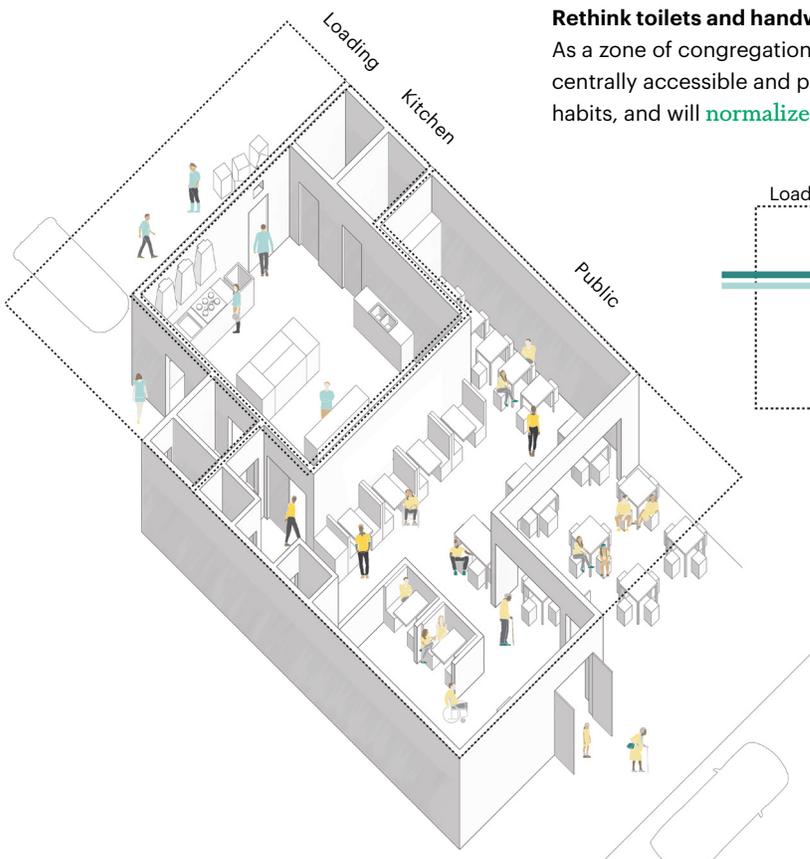
The COVID-19 virus may become aerosolized by certain cooking transformations such as steaming; therefore food establishment should plan for airborne infection control.

HEPA-filters or germicidal ultraviolet (GUV) equipment can efficiently clean and then recirculate conditioned (heated/cooled/dehumidified) air. **Alternatively, contaminated air can be diluted by adding fresh outside air.** The ASHRAE Epidemic Task Force recommends updating existing HVAC air filtration to a minimum of MERV (Minimum Efficiency Reporting Value) 13 and running exhaust systems for two hours before and after occupied times. Consult with a HVAC professional to determine the right systems or specialized equipment for your space.

Rethink toilets and handwashing stations.

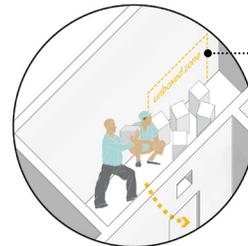
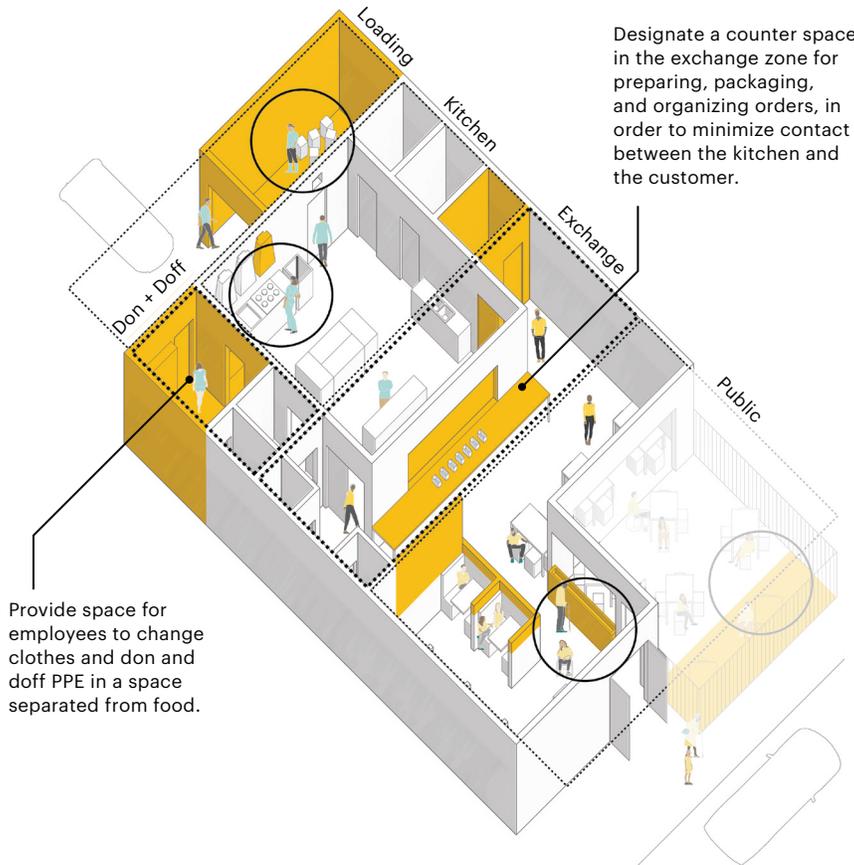
As a zone of congregation and overlap, toilets should be treated as high risk zones. Installing centrally accessible and public-facing handwashing stations will encourage sanitary personal habits, and will **normalize the shared ritual of handwashing before meals.**

These diagrams depict the typical zones and flows within restaurants, which will need to be rethought ahead of reopening.



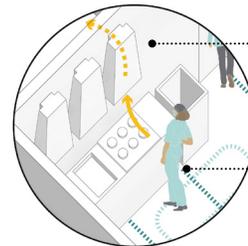
Examine your restaurant with flexible reconfiguration in mind.

These diagrams depict the recommended reconfiguration and flow of staff, guests, and food through the existing spaces of a restaurant. As a baseline, each restaurant should designate exchange zones to control delivery, customer hand-off, don and doff procedures, ventilated storage and cooking, and disposal of contaminated materials.



Delivery & Unpacking

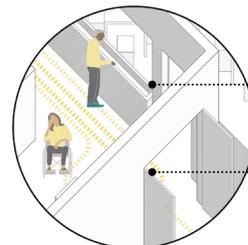
Clearly designate space in the loading/unloading zone where all shipments are received and unpackaged. Tape on the floor, or other visual cues, will ensure this space is visible and easy to clean.



Cooking & Exhausting

Ensure proper airflow, measured by air-changes per hour, to dilute the air and remove contaminants from the kitchen.

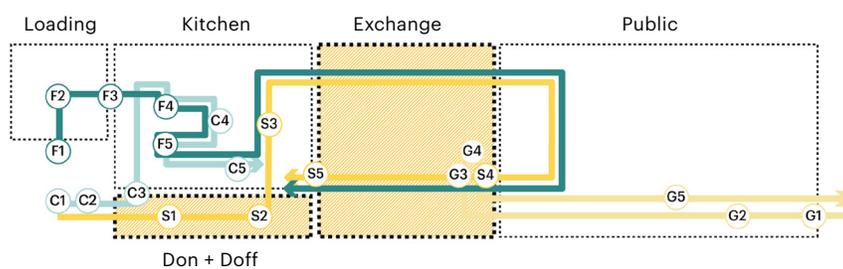
Remind all back-of-house staff to don PPE before entering the kitchen, and to circulate into the exchange zone only through designated entry.



Arrival & Sanitation

Install a handwashing basin for guests to use upon entering the exchange zone.

Post visible safety standards and protocols for both guests and employees.



G Guests

- G1 Guests should enter the main entrance at the time of their reservation
- G2 A concierge shall be positioned for check-in and direct guests to a wash basin prior to being seated
- G3 Tables shall be positioned six feet apart; outdoor seating is preferable
- G4 Ordering systems shall minimize the use of surfaces such as menus and touchscreens
- G5 Guests leaving with take-out shall be instructed with proper handling

S Front-of-House Staff

- S1 Front-of-house staff should check temperatures upon arrival and go to designated zone to apply PPE
- S2 A designated staff restroom should be used to prevent cross-contamination
- S3 Runners should deliver food through a designated delivery doorway, separate from the door servicing dirty dishes
- S4 Employees should maintain an appropriate three foot distance while passing tables with food
- S5 Manage disposal according to protocols with legible instructions

C Back-of-House Staff

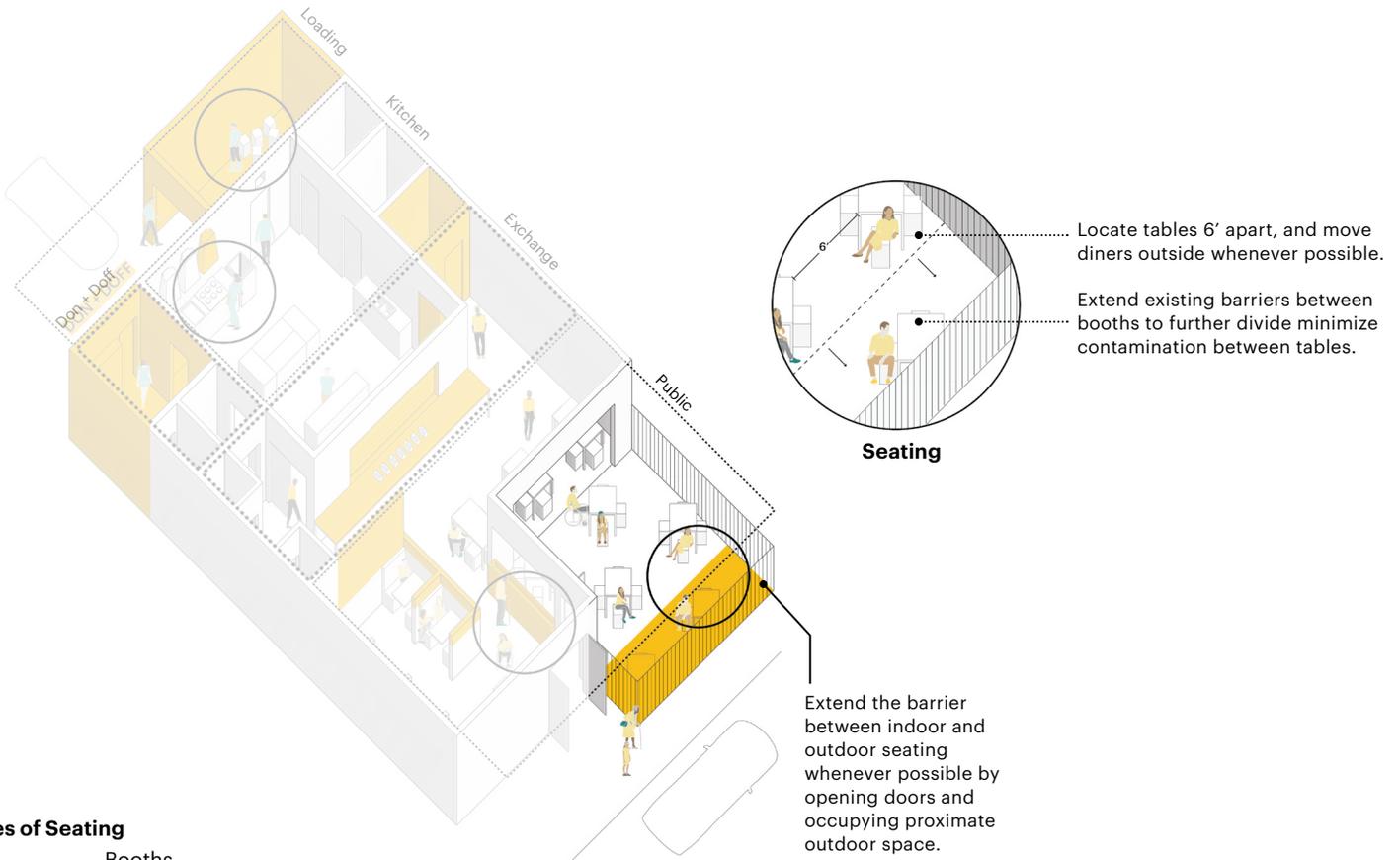
- C1 Check temperature upon arrival
- C2 Back-of-house staff supporting delivery activities may enter the contaminated anteroom but not the main kitchen
- C3 Apply PPE in the designated donning zone
- C4 Fixed cooking equipment shall be spaced to allow for six foot aisles
- C5 Minimize contact with front-of-house staff by maintaining distance across from an exchange table

F Food

- F1 Deliveries should be isolated to the back entrance
- F2 Demarcate a clear zone inside the loading entrance where all shipments get unboxed
- F3 Designate isolated zones for storage of cold food, dry goods, and tableware
- F4 Refer to earlier contagion via surfaces and droplet spread guidelines
- F5 Food shall be covered to avoid contamination during hand-off

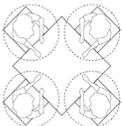
Understand that the 6' rule is not a solution inside restaurants.

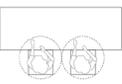
Recent research calls into question whether spacing 6' apart in enclosed spaces with unknown or inadequate ventilation is sufficient to prevent the spread of the disease. Furthermore, asking restaurants to dramatically limit their seating is not a financially viable demand for businesses already operating to maximize their areas and maximize income. For this reason, developing nuanced solutions to a variety of seating types and configurations will be critical to ensuring financial viability while keeping staff and customers safe.

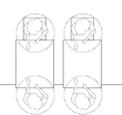


Types of Seating

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Booths
Can be adapted with higher barriers and better ventilation to forego the 6' distancing guidelines and densify seating.
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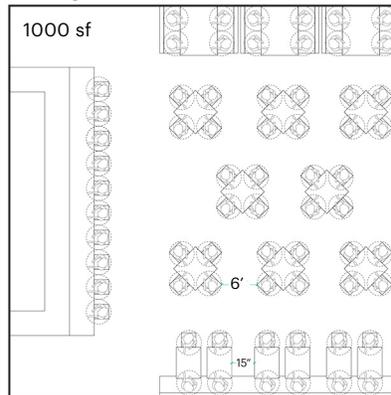
Tables
Flexible, can aggregate for larger groups, and ideal in open rooms and patios.
- 

High Tops and Bars
Difficult to adapt under new distancing guidelines and grows the risk of contamination of exchange zones.
- 

Banquet
Ideal along long walls, can aggregate for larger groups, but may not be worth the additional cost once spaced according to 6' guidelines.

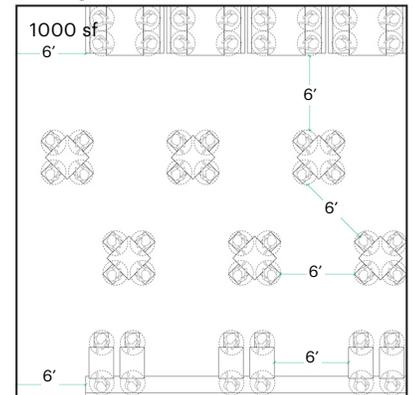
How Can Seating Be Maximized Under New Distancing

Seating Before



15 sf / occupant	67 seats
12 booth	11 high-tops
32 open table	12 banquet

Seating After



20 sf / occupant	52 seats
16 booth	0 high-tops
24 open table	12 banquet

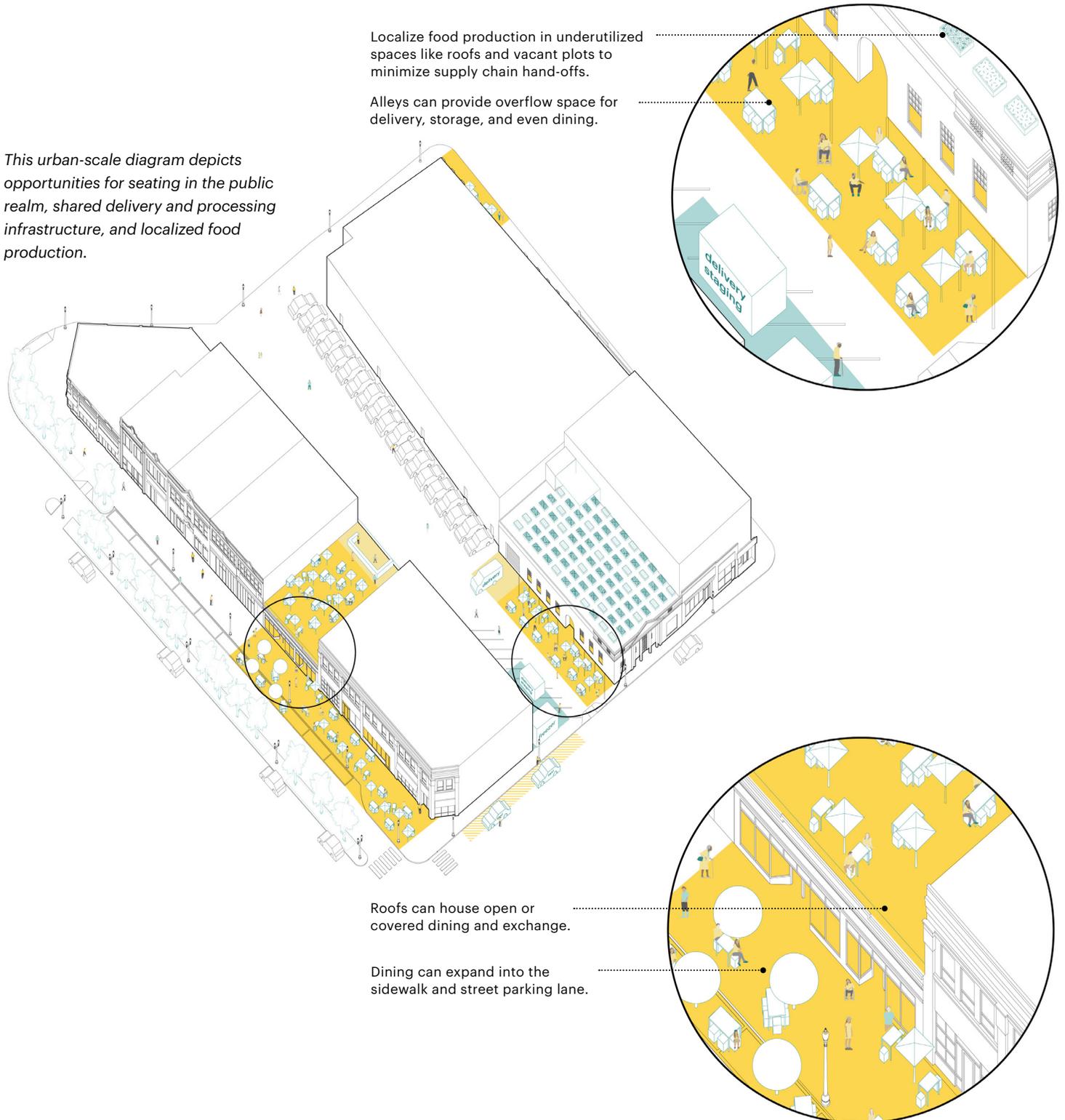
Expand into the street and reclaim the restaurant's role in the public realm.

Restaurants of all types offer a public service, and that has never been more true than during this pandemic crisis, when restaurants are working around the clock under serious operational strain to feed people in need. Local governments and policy makers should enact rapid zoning amendments to protect our public spaces; lowering the barriers to restaurants expanding outdoor seating into parking lots and the public right-of-way, and creating more space for pedestrians and cyclists.

Localize food production in underutilized spaces like roofs and vacant plots to minimize supply chain hand-offs.

Alleys can provide overflow space for delivery, storage, and even dining.

This urban-scale diagram depicts opportunities for seating in the public realm, shared delivery and processing infrastructure, and localized food production.



Roofs can house open or covered dining and exchange.

Dining can expand into the sidewalk and street parking lane.

Design for trust.

Beyond stopping pathogens, food establishments must support people. Employees must be supported through safe, trusted, and clear working conditions. Guests may be dissuaded from entering dining spaces if they seem unsafe, uncomfortable, or undignified.

Visual grade signs posted on restaurants provide trust in standardized and monitored compliance. Chef uniforms, and open kitchens, are also design strategies that make visible the invisible act of safe and clean food handling. COVID-19 presents a new set of challenges to ensure compliance in light of rapidly-changing clinical evidence, as restaurants work to keep employees and diners safe.



Clear sightlines between kitchen and dining spaces can reassure the public of robust safety protocols (photo: Keiko Hiromi).



Signage explains new processes for ordering and pick-up before entering the restaurant (photo: Andrew Rush/Post-Gazette).

Consider integrating...

a legible, obvious ventilation strategy that clearly demonstrates environmental safety.

individual lockable storage for employee's valuables, electronics, and medications.

visible documentation of new protocols including PPE, temperature tests, publicly accessible handwashing stations, ordering and processing, and social distancing.

highly legible signage that directs and manages the flow of people, including floor and wall markings.

Case Studies in Operational Change

We know these guidelines are not always feasible within the constraints of existing restaurant spaces. The following prompts and case studies will guide restaurants in self-evaluating their spaces for possible reconfiguration.

These guidelines and recommendations are written in recognition of the fact that every restaurant is starting from a different place, and working towards a different goal. Resources (financial, staff, supply chain) will be scarce, and scrappy solutions will be required to weather this radical transformation of the industry.

Maybe your restaurant never closed and has been supplying boxed meals to frontline workers. Or maybe your restaurant closed completely at the start of the shutdown but is hoping to reopen for takeout soon. The following case studies reflect various conditions and paths forward. Our hope is to gather additional case studies to iterate and test these design strategies in different contexts to support the further development of guidelines that can help our restaurants reopen safely.

Initial Case Studies

Restaurant	Location	Size	Goal	
Porto	Boston, MA	180 seats	Phase a slow return to take-out and dine-in services.	p. 10
Little Donkey	Cambridge, MA	100 seats	Return to dine-in services and consider expanding seating.	p. 12

Key things to look out for when examining your existing spaces:

Do you have separate entrances for staff, and guests? Do deliveries arrive directly to the restaurant, or through shared space?

Does staff have designated space to put on and take off clean clothes, masks, and gloves?

Does the ventilation system in your kitchen adequately exchange air to minimize COVID-19 transmission in kitchen?

Where can you designate an exchange zone (a clearly identified place of exchange between staff and the public)?

What types of seating did your dining room accommodate before the shutdown? How many seats, and what is the general amount of spacing between each? Social distancing will require creative solutions to maximizing the number of tables in a dining room.

Does your restaurant have access to outdoor space such as parking, sidewalk space, outdoor dining areas, or proximate street frontage and right-of-way?

What is the current visual relationship between the kitchen and the dining room? Can diners see the cooking happening? Designing for visibility and trust will be critical as diners are welcomed back into the restaurant.

Porto Restaurant

Location	Ring Road, Boston, MA
Chefs	Jody Adams, Eric Papachristos, Sean Griffing
Menu	Meze-style Mediterranean seafood
Typical Hours	Sunday-Saturday, 4-9pm
Dining size	4000 sf
Kitchen size	1020 sf
Year Opened	July 2016
Seating	180; indoor, bar, and patio

Site description: Located on the second floor of the Prudential Center, facing Ring Road. Parking is available in the Prudential Garage.



The main dining room with views to the kitchen (photo: Porto).



The vestibule, which once served as Porto's public entrance, has now transformed into a controlled pick-up zone (photo: Porto).



Porto's outdoor patio is a major asset and will be invaluable as the restaurant reconfigures seating for dine-in services (photo: Porto).

COVID-19 Response

Following the Massachusetts state order for non-essential business closures on March 23, 2020, Porto did not suspend operations. Instead, it closed its dining room and focused kitchen operations exclusively on meals for frontline workers in partnership with [Off Their Plate](#).

Design Opportunities

The vestibule has been taken over as an environmentally-isolated single-person exchange zone between the restaurant team and delivery people.

Outdoor patio seating and doors allow for ample natural cross-ventilation in warmer months.

Public entry is separate from service entry, and includes proximate public bathrooms for handwashing immediately upon entry.

Floor plan allows for clearly identified exchange zone between the dining room and kitchen.

Adherence Gaps in Current Operation

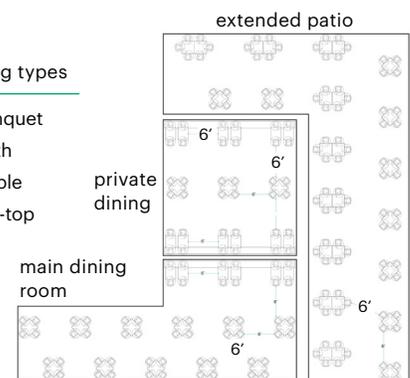
Food arrives from shared loading dock and is transported via shared elevator to the restaurant service entry. Shared building amenities are hard to control for sanitation and access.

Seating Before

Area+counts	Seating types
4000 sf	80 banquet
180 seats	0 booth
110 indoor	70 table
70 outdoor	30 high-top

Seating After

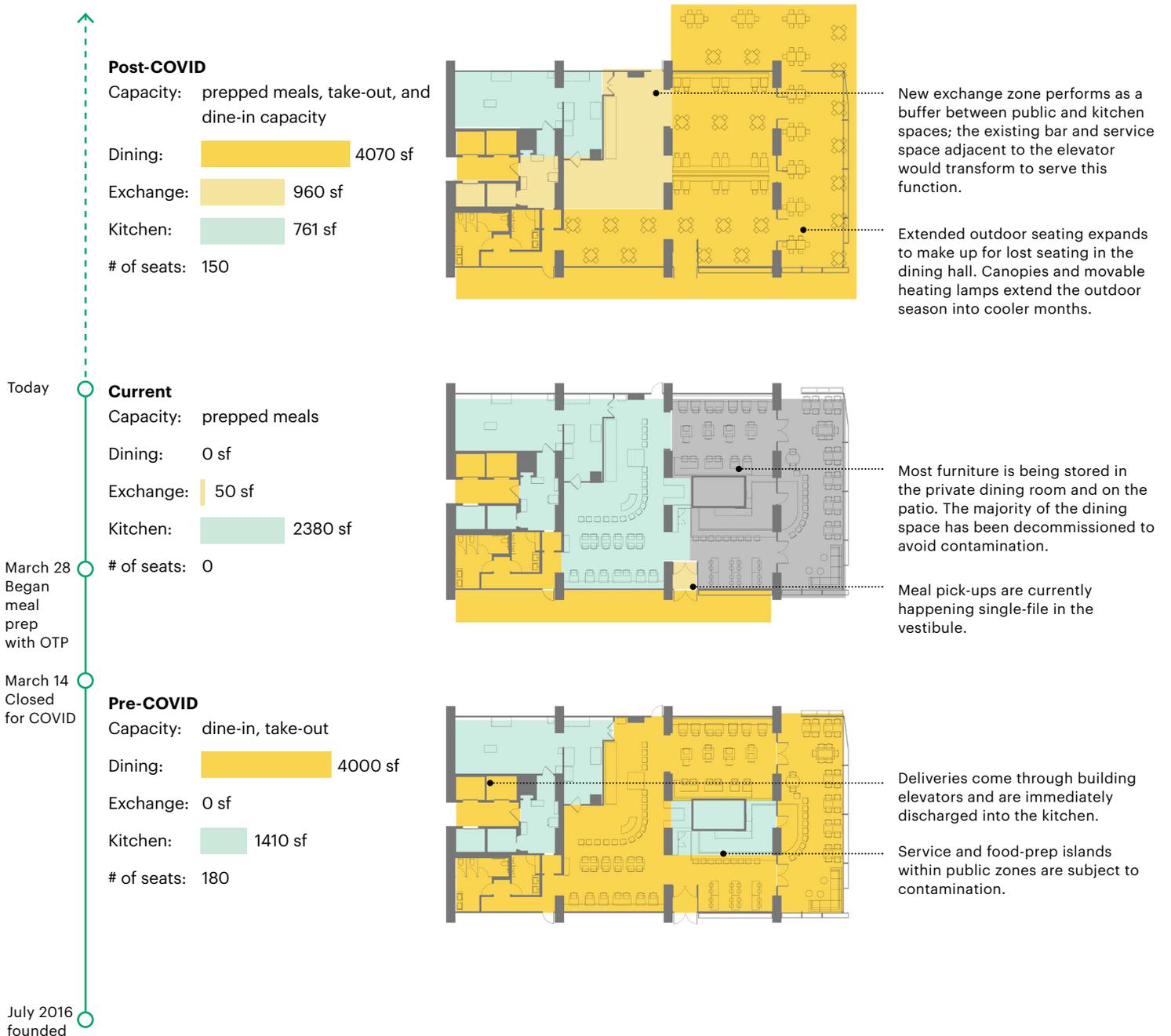
Area+counts	Seating types
4070 sf	36 banquet
186 seats	0 booth
96 indoor	150 table
90 outdoor	0 high-top



Porto Restaurant
(cont.)

“It’s important that we return to dine-in services and find ways to build back pre-COVID capacity, or the business won’t pencil out.”

—Jody Adams, Founding Chef



Little Donkey Restaurant

Location	505 Massachusetts Ave Cambridge, MA
Chefs	Ken Oringer, Jamie Bissonnette
Menu	Global cuisine
Typical Hours	Monday-Friday, 12-3pm Saturday-Sunday, 10-3pm Monday-Sunday, 5-11pm
Dining size	1920 sf
Kitchen size	950 sf
Year Opened	July 2016
Seating	100; indoor and bar

Site description: Located off of bustling Central Square with public storefront access and service access through back parking lot



The front bar and storefront (photo: Natalie Ann Schaefer).



The intimate bar dining experience will need to be rethought in light of new distancing protocols (photo: Nina Gallant).



Operable storefronts will enable beneficial ventilation once the restaurant opens back up to diners (photo: Little Donkey).

COVID-19 Response

Following the Massachusetts state order for non-essential business closures on March 23, 2020, Little Donkey did not suspend operations. Instead, it closed its dining room and focused kitchen operations exclusively on meals for frontline workers in partnership with [Off Their Plate](#).

Design Hacks

The entire dining room is being used as staging and packaging for Off Their Plate meals, and has been configured as an assembly line.

Adherence Gaps in Current Operation

Kitchen staff are changing downstairs or in the public bathroom.

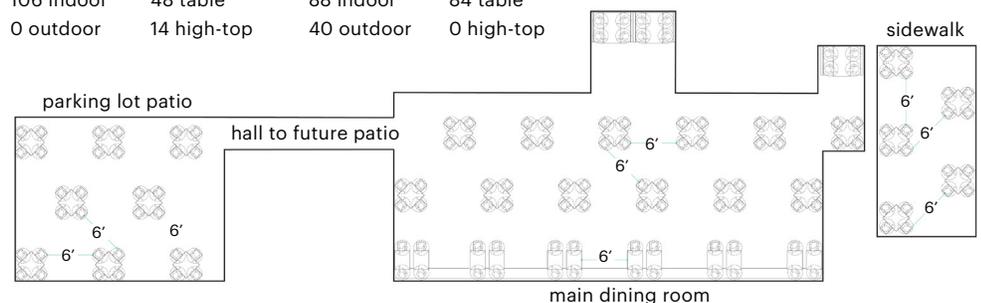
Passive ventilation is available from large storefront windows and doors that open, but the back of the restaurant is limited by an under-performing HVAC system.

Seating Before

Area+counts	Seating types
1920 sf	32 banquet
106 seats	12 booth
106 indoor	48 table
0 outdoor	14 high-top

Seating After

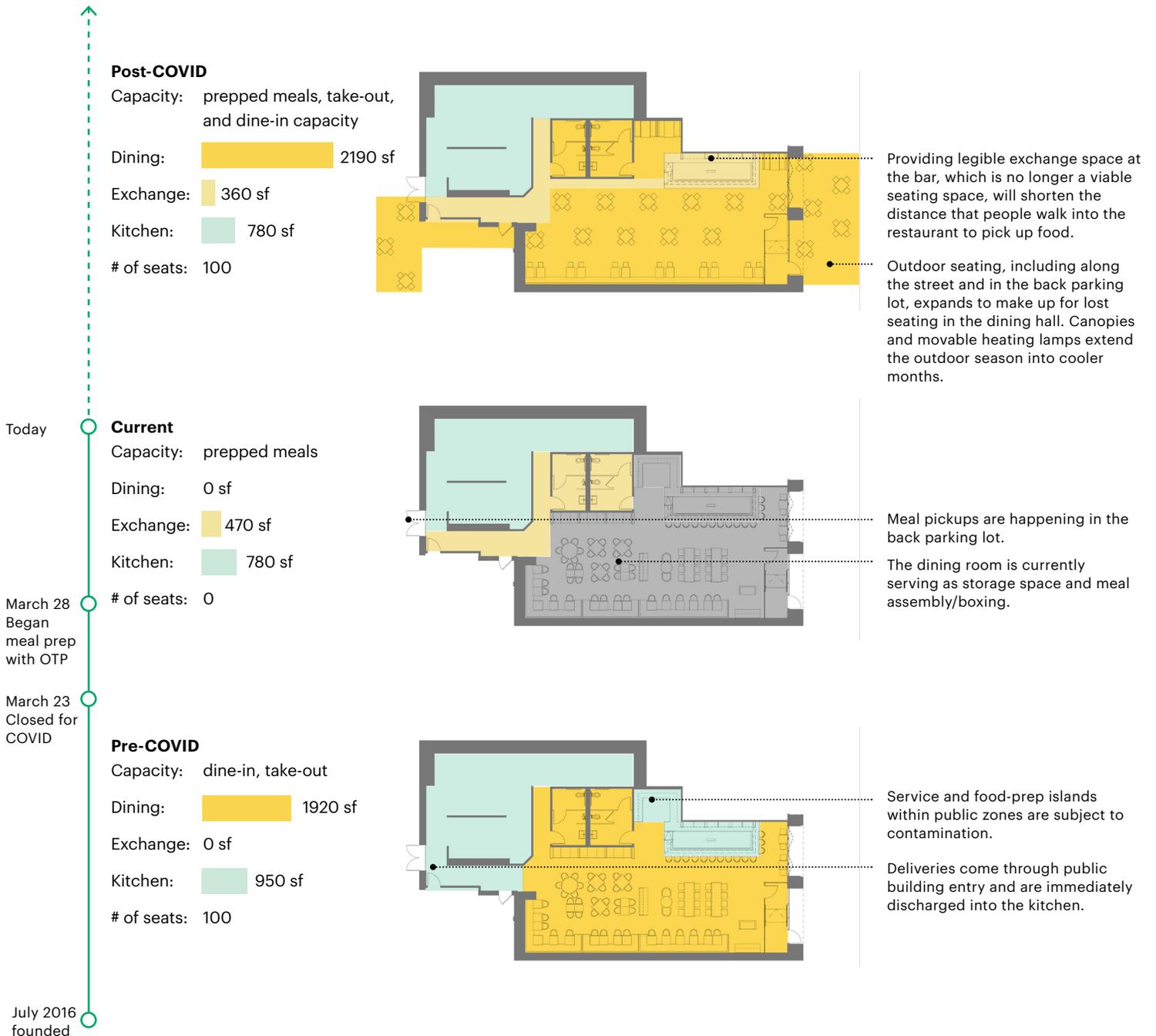
Area+counts	Seating types
2190 sf	20 banquet
128 seats	24 booth
88 indoor	84 table
40 outdoor	0 high-top



Little Donkey Restaurant
(cont.)

“We want to be ready to be open again. Every day that we are open is going to be under a magnifying glass. Not only will we have to make up for lost revenue, but we also need to keep diners safe.”

— Ken Oringer, Co-Founding Chef



The Fight Ahead

The COVID-19 pandemic has revealed the precarity of our national food system. From the challenging working conditions of farmers and food service employees, who have been deemed 'essential' but lack access to critical preventative support, to the over-consumption of grocery staples and forced closure of restaurants, the pandemic threatens our country's food security at every step in the system.

The restaurant industry alone employs more than 15.6 million people and is valued at \$899 billion, exceeding sales in agriculture, airline, railroad, ground transit, and sports industries combined. In March 2020, 60% of the 701,000 people who lost their jobs were restaurant workers. The coming months will usher in an economic recovery period and the challenge of bringing restaurants back online will require multi-pronged attention. In addition to worker's rights and advocacy, procurement and supply chain stabilization, and financial planning, restaurant networks will need an evolved set of spatial and food safety guidelines.

A Living Document

This document draws upon MASS's design experience with epidemic outbreaks as well as work within the food system, including with our collaborators: Jody Adams and her team at Porto, Ken Oringer and his team at Little Donkey, and the Off Their Plate staff, all of whom generously contributed time and insight during a turbulent time in the lives of their businesses. These recommendations will be iteratively updated to reflect the key learnings from ongoing case study advising, and shared as part of a larger national response network under development.

MASS is grateful to the experts who have advised on this document. It does not represent the opinions or full understanding of any one person. Please reach out to covidresponse@massdesigngroup.org if you have any questions, are seeking support, or would like to be included as a case study in this evolving body of work. For more information, check out the following publications:

- [Reopening Critical Path for Independent Restaurants + Bars](#)
- [National Restaurant Association Reopening Guidelines](#)
- [Off Their Plate Restaurant Onboarding Pack](#)
- [Coronavirus Guidance for the Food Industry](#)

