

Boosting Business Value by Reducing COVID-19 Transmission Risk

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Starting business meetings with a handshake, laughing with friends in a bustling restaurant, or squeezing onto a crowded commuter train: Before the coronavirus pandemic, these were the completely unremarkable events of everyday life. But in the absence of an effective vaccine or test-and-trace system, these activities now carry deadly risks. Naturally, individuals, businesses, and governments have taken dramatic actions to reduce the number of social interactions to prevent the spread of COVID-19 and a deepening of the pandemic.

Reducing social contact to slow the spread of the virus has had a major impact on the U.S. economy, but not all businesses have been equally affected. Some companies

provide better trade-offs. Those offering more social and economic importance per social interaction that poses potential risks face less government regulation and a smaller reduction in visits from fearful customers. Governments, businesses, and individuals should seek to maximize the bang for their buck from social interactions. And organizations that can boost their value-risk trade-offs are even in a position to benefit from the crisis.

In our recent research paper, “Rationing Social Contact During the COVID-19 Pandemic,” published in the *Proceedings of the National Academy of Sciences*, we measured the value-risk proposition offered by 26 different location types throughout the U.S.¹ Locations we considered are generally for-profit (such as different types of retailers, entertainment venues, and service providers), but we also looked into the trade-offs offered by some nonprofit organizations.

Regarding benefits, we measured the economic importance of a location in terms of its receipts, employee counts, and payroll. We also included consumer importance as measured through a nationally representative survey. Such surveys have been used in the past to measure the value of free digital goods.² In this survey, respondents could choose between a pair of locations and decide which one they would prefer

to remain open.

To measure the cumulative risk of a location type, we looked at a combination of nine factors drawn from smart-device GPS mobility patterns. A location is considered more dangerous if it is visited frequently and by large numbers of people, and if those visits result in crowding at certain times of day. We considered these factors for the general population but also focused on individuals age 65 and over, a population at higher risk of developing a serious case of COVID-19. Another factor we incorporated was the distance people traveled to given locations from their homes. This last component captures the amount of social mixing at a specific location by people originating from different locations, while the other measures capture the intensity and amount of social interaction. Each of these social mixing measurements was evaluated for each location type.

The figure “Cumulative Danger and Importance of 26 U.S. Location Types” summarizes our findings. The locations that offer the best aggregate risk-reward ratio include banks, grocery stores, department stores, and general goods stores. These locations all offer very high social importance, with banks and grocery stores rating higher because they offer critical services to customers and serve as employers.

The locations that we find offer the worst trade-offs include gyms, liquor stores, sporting goods stores, and cafes. These are generally small, highly trafficked, and highly crowded locations. They are also of lower social importance. While we visit these locations often, they contribute relatively little to GDP, employment, and welfare in terms of the daily necessities they offer consumers and the number of employees served.

These risk-reward trade-offs have profound implications for businesses. From February to March 2020 (the latter being the first month of wide-scale actions to enforce social distancing in the U.S.), visits to all locations in the 26 categories we evaluated declined 24.9%. According to our analysis, this decline was concentrated in locations offering worse risk-reward trade-offs. While banks experienced only a 2% decline in visits during this period, gyms experienced a 33% decline.

Even outliers are usually driven by consumers’ desire for

safety. Hardware stores, despite offering a mediocre risk-reward ratio, actually saw a 19% increase in visits from February to March. We speculate that this was due to consumers stocking up on personal protective equipment, such as masks, and high-demand supplies. Visits to grocery stores also increased by 15%, likely due to consumers seeking to substitute one grocery store visit for multiple risky restaurant visits.

How to Boost Your Value Proposition

Given the data findings and the continued risks to public health, it’s clear that boosting organizations’ risk-to-value proposition is both a financial and moral imperative. Companies that establish reputations for having safer locations will be rewarded by risk-averse clients. Leaders should keep in mind that the effectiveness of potential interventions will vary depending on the business’s type of location.

Implementing Sanitation and Distancing Best Practices

One critical first step every company must take, regardless of industry or location, is implementing basic health and safety best practices by disinfecting surfaces, putting protective barriers in place for staff members and clients, and requiring mask use. Mask wearing is especially important for industries that involve close-proximity personal services, such as hair salons. By looking at the share of workers by occupation in an industry and combining this data with O*Net occupational characteristic scores, we can estimate how much an industry relies on physical proximity. Industries with low scores can more easily allow employees to practice social distancing or work from home, whereas masks will be essential for industries with high scores. In our analysis, we found that dental offices and salons and barbershops are the only two location types with a high share of workers requiring extended close proximity. Amusement parks, gyms, and restaurants of all types also have high shares of workers requiring some degree of

proximity to do their jobs.

Scheduling Visits

Companies and business owners can also take steps to lower risk in their physical locations by modifying their business hours and admitting customers on a staggered schedule that creates lower density. Keep in mind that strategies aimed at lowering risk can have their own drawbacks. For instance, having customers wait outside a store while it is at its (reduced) maximum capacity means a higher chance of frustrated customers and still allows the opportunity for customers to infect one another. Much better alternatives include special hours for vulnerable populations, time-restricted coupons, surge pricing, and increased enforcement of scheduled rather than walk-in visits.³ Time-restricted coupons and discounts also have the benefit of doing less to dissuade spontaneous and impulsive visits compared with strict scheduling.

Offering Premium Lower-Density Services

During the pandemic, companies that have provided tiered services may need to pause or disband options previously available to customers that are now less safe. A tutor or personal trainer who has offered both individual and group training might decide to focus on premium one-on-one services, for example. A larger-scale example comes from Uber and Lyft canceling their discount ride-sharing options that pool multiple riders in one vehicle. Businesses continuing to offer services that push large numbers of clients together are likely to face both lower demand and more resistance from their employees and governments.

The figure “Potential for Reducing Crowding by Scheduling Attendance” looks at how different business types can benefit by better using spare capacity. On the x-axis is the importance-risk trade-off favorability of a location. On the far left are gyms, which offer the worst trade-off; on the far right are banks, which offer the best trade-off. The y-axis plots location types by the average variance of their crowdedness. A location with high variance in crowding is

very crowded at some points but nearly empty at others, such as the typical cafe or liquor store. Locations in this category have more to gain from new strategies for customer visits.

The good news is that locations that offer the worst trade-offs due to COVID-19 have the best opportunities to improve their safety through customer timing and scheduling changes — such as clothing stores, dentists, liquor and tobacco stores, and restaurants of all types. This is demonstrated by the strong negative trend line. For dentists and restaurants in particular, where visits are commonly scheduled in advance, reductions in transmission risk might be easily achieved with little disruption to processes or increases in costs.

Know Your Brand

Within a location type, there can be large variation in the potential gains from rescheduling visitors. In the figure below, the top and bottom panels show the cumulative danger due to proximity and the potential for danger reduction through scheduling visits for the 30 top restaurants brands in the U.S. As before, the marker sizes indicate the total monthly visitors in February 2020. Unsurprisingly, for each of these location types, the number of visits to a chain (marker size) is positively related to the cumulative danger of the chain (position on the x-axis).

What else does this figure show us? Consider, for example, a pair of restaurant chains: The Cheesecake Factory and Ruby Tuesday. Both chains have approximately the same number of normal visits monthly: about 1.7 million. However, they vary dramatically in terms of their current safety and the safety they might gain through rescheduling. The Cheesecake Factory’s guests are concentrated in short periods, with the highest visit-weighted average crowding variance at open locations compared with any restaurant brand. This leads it to have a much higher danger index than Ruby Tuesday, despite having the same number of visits. In order to better deliver value to customers during the COVID-19 crisis, The Cheesecake Factory should take steps to reduce the crowding of its restaurants during peak hours.

Generally, restaurant chains strongly associated with a single

meal or event type tend to have higher variance in crowdedness over time. For example, IHOP (breakfast), Texas Roadhouse (dinner), and Buffalo Wild Wings (sporting events) all have above-average variance in crowdedness. These chains have the most to gain by redistributing their visitors throughout the day. However, due to the strong association of their brands with these events, they may face additional challenges in doing so. The takeaway from this is that businesses face an important trade-off in creating an identity that is tightly associated with a particular event or time of day. This association may prevent them from fully utilizing capacity in off-peak hours.

Within grocery and department stores, there is also significant variation in the amount that stores can gain through redistributing visits across time. Within grocery stores, ShopRite and Kroger have much higher variance in crowding than Winn-Dixie, Whole Foods Market, Aldi, and Publix. Within department stores, Target and Sears have higher crowding variance than J.C. Penney and Safeway. Kohl's is doing a particularly good job at keeping its stores evenly attended and therefore has a very small cumulative danger score for its number of visitors.

How can businesses best protect their customers from the coronavirus while still delivering or even increasing the value they offer? How businesses answer that question is a critical success factor moving forward. Companies need to meet government regulations but also attract and win back customers and clients based on their proactive risk-prevention measures. Not every business will find this easy, but boosting quality never is. The only alternative is a dismal one — businesses undertaking coronavirus safety “theater,” and cynical clients and governments looking the other way, while hundreds of thousands more die.

But there is a silver lining to this challenge. It is exactly the type of problem that market forces are good at solving. In the past, competitive pressures have forced companies to

economize on resources. Today, they must economize on social proximity as well. As long as clients, workers, and governments demand this of their economies, the invisible hand of competition will deliver it.

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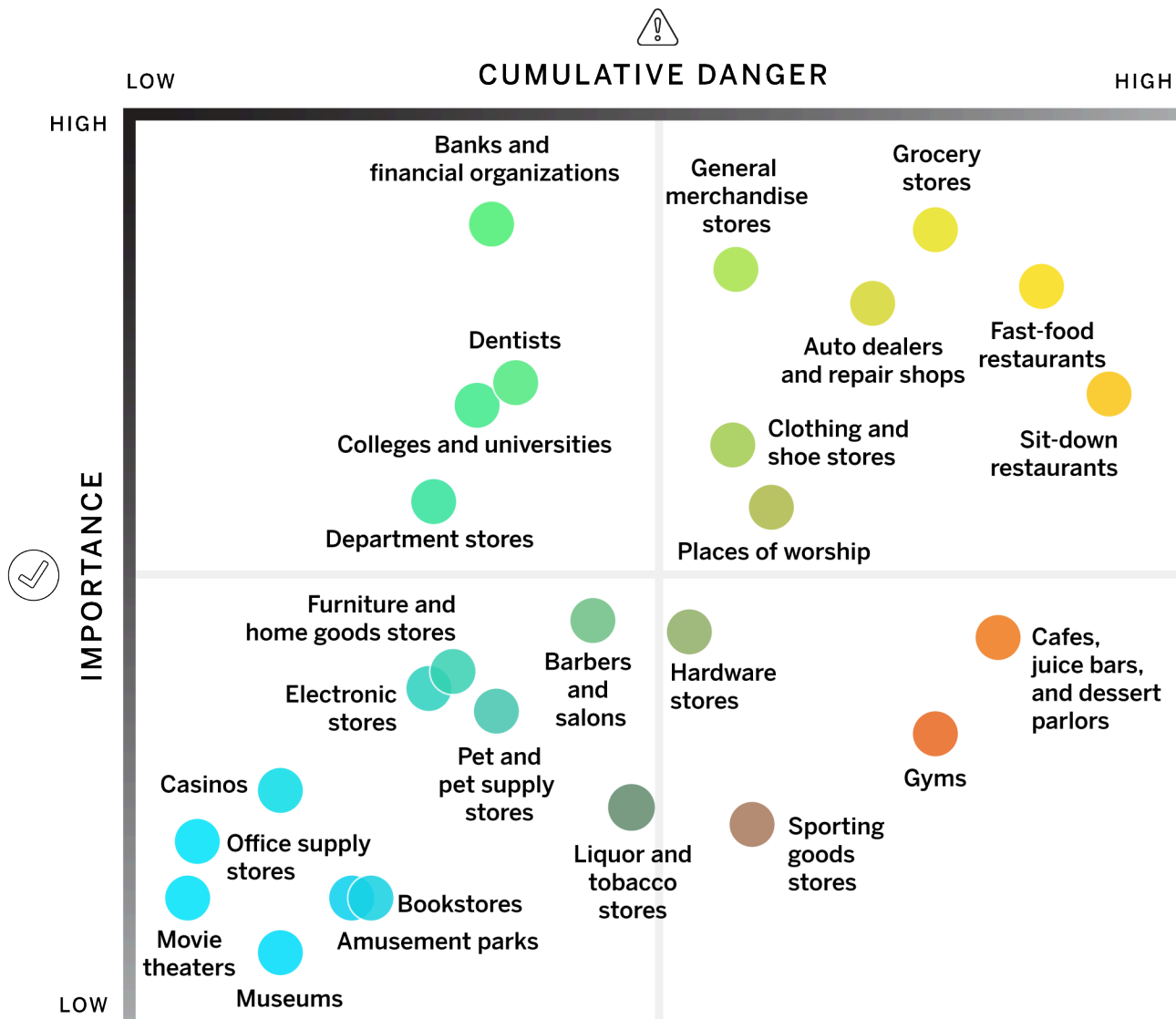
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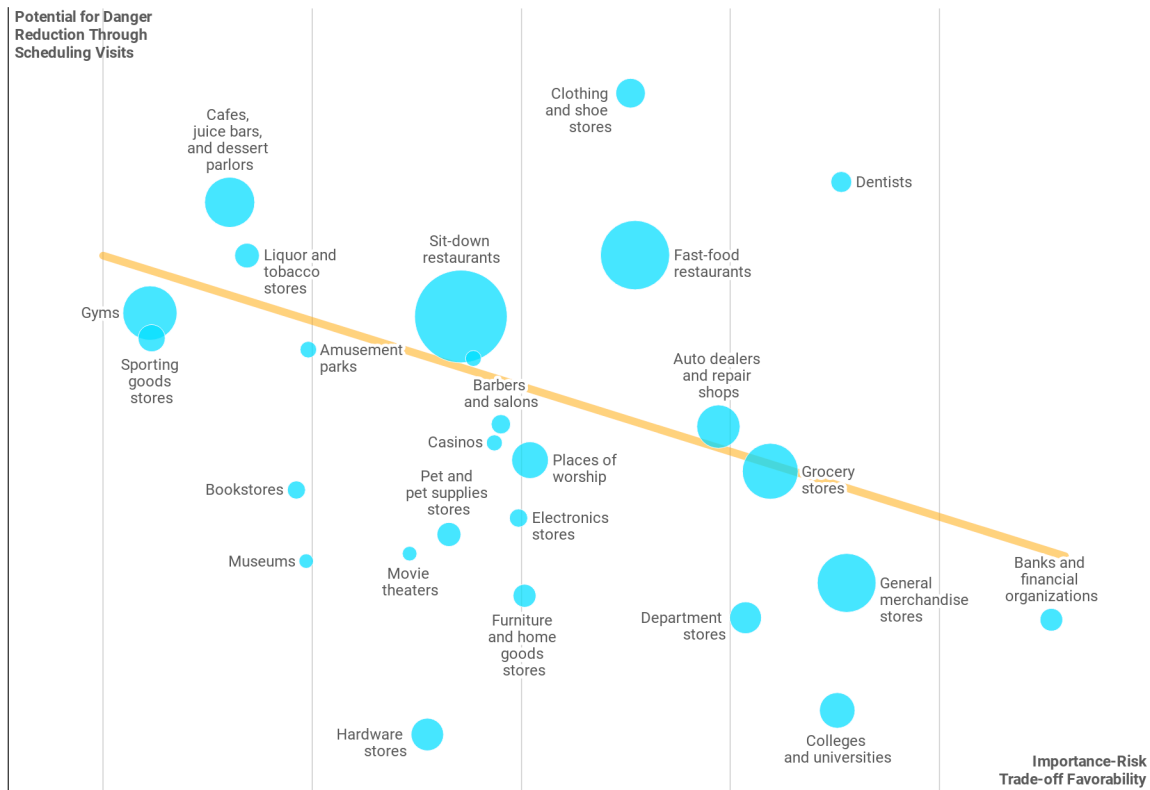
Cumulative Danger and Importance of 26 U.S. Location Types

Location types in the top left of the figure are of high importance and offer the best importance-risk trade-offs in terms of potential danger due to social proximity. Location types in the bottom right of the figure offer the worst trade-offs.



Potential for Reducing Crowding by Scheduling Attendance

This chart shows the importance-risk trade-offs and potential for danger reduction through scheduling visits for 26 U.S. location types. Importance-risk trade-off corresponds to the ratio of a location type's social and economic importance to its potential to contribute to COVID-19 transmission. The potential benefit from rescheduling visits across time is measured as the visit-weighted average variance of crowdedness for locations in that category. The size of a node indicates the number of visitors to the location type in February 2020.



Cumulative Danger Due to Proximity Index

This chart shows cumulative danger due to proximity and potential for danger reduction through rescheduling visits for restaurant chains. The potential benefit from rescheduling visits across time is measured as the visit-weighted average variance of crowdedness for locations in that category. The size of a node indicates the number of visitors to the location type in February 2020.

