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Do Customers Flee from HIV? A Survey of HIV Stigma and Its Potential Economic Consequences on Small Businesses in Tshwane (Pretoria), South Africa*

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Abstract

HIV stigma and discrimination affect care-seeking behavior and may also affect entrepreneurial activity. We interview 2,382 individuals in Pretoria, South Africa, and show that respondents believe that businesses with known HIV+ workers may lose up to half of their customers, although the impact depends on the type of business. Survey respondents' fear of getting HIV from consuming everyday products sold by the business - despite a real infection risk of zero - was a major factor driving perceived decline in customers, especially among food businesses. Respondents' perceptions of the decline in overall life satisfaction when one gets sick from HIV and the respondent's dislike of people with HIV were also important predictors of potential customer exit. We suggest policy mechanisms that could improve the earnings potential of HIV+ workers: reducing public health scare tactics that exacerbate irrational fear of HIV infection risk and enriching public health education about HIV and ARVs to improve perceptions about people with HIV.

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Resumen

El efecto discriminatorio y estigma hacia el VIH puede afectar a la búsqueda de ayuda y a la actividad emprendedora. Entrevistamos a 2.382 personas en Pretoria, Sudafrica. Los encuestados creen que los empresarios con trabajadores con VIH+ conocido pueden perder hasta la mitad de sus clientes, aunque el impacto depende del tipo de negocio. El que los encuestados teman adquirir VIH por el consumo diarios de productos de un negocio, a pesar del riesgo de infección ser nulo, es un factor importante para el declive en el número de clientes, especialmente en el sector alimentario. Otros de los factores que predicen la pérdida de clientes son la percepción de los encuestados de que la satisfacción general de la vida disminuye cuando uno se enferma a causa del VIH y la aversión a las personas con VIH. Sugerimos mecanismos políticos que puedan mejorar el potencial de ingresos de los trabajadores con VIH+: tácticas de reducción de alarma sanitaria que exagera el miedo irracional de riesgo de infección de VIH y enriquecer la educación de la sociedad en salud sobre el VIH y los ARV para mejorar las percepciones sobre las personas con VIH.

Keywords

HIV stigma; infection risk; quality of life; consequences of stigma; small businesses

1 Introduction

HIV stigma was singled out in the very early days of AIDS. The late Jonathan Mann, former World Health Organization Director of the Special Programme on AIDS, predicted that the epidemic of social, cultural, and political reaction to AIDS was “as central to the global AIDS challenge as the disease itself” [1]. Since then, HIV stigma has been shown to be a major impediment to care seeking, with HIV stigma associated with reductions in HIV testing [2, 3] and poorer adherence to AIDS treatments ([4]; for a concise review see [5] and references therein). It has also been linked to social exclusion of people with HIV and feelings of isolation among people with the disease [6, 7]. Furthermore, HIV stigma also imposes negative economic consequences on HIV positive people: they lose jobs, are denied education and other services, and are sometimes forced to leave their homes [8, 9, 10, 11, 12]. In this paper, we examine a different type of economic consequence of HIV stigma: whether customers would avoid a business with an HIV positive worker. We explore three possible reasons for why customers may avoid such a business. The first possible reason is fear of infection: customers may think they will get infected with HIV if they shop there. Second, customers may decide to avoid the business because they think that, if infected with HIV, their life satisfaction would be very poor. Third, customers may refuse to shop at a store with an HIV positive worker because they dislike and disdain people with HIV.

Fear of infection, the first reason for customer exit that we explore, may arise if people think they can get infected by coming into contact with HIV positive people and the products they sell. Disease avoidance has been proposed to be a tenet underlying stigmatization: because of the high cost of error involved in making a mistake, individuals will often prefer to avoid contact even when it is safe, and they will even develop disease-avoidance systems that have more false alarms (label healthy people as sick) than false rejections (label sick people as

healthy) [13, 14, 15]. For example, studies have reported that people choose to avoid wearing a sweater worn by an HIV positive person even after it had been fully laundered [16]. Furthermore, fear of infection may be more important for food items than for non-food items, for which people are more vulnerable to feelings of disgust [17, 18].

The second reason for customer exit that we examine is that customers may think life would be much worse if they became infected with HIV. There is evidence that people think that getting HIV is a very negative outcome. HIV has neither a cure nor a vaccine, it has been referred to as the “modern-day plague” [19], and the prejudice against those with HIV has been compared to that of other illnesses such as leprosy, cholera, and syphilis [20]. And although longevity and quality of life of those with HIV have improved with anti-retroviral medicines [21, 22], the medicines are not without side-effects [23, 24].

The third reason for customer exit that we examine is related to dislike and/or blame of people with HIV for their disease. Early studies suggest that prejudice towards HIV had much to do with its association with moral transgressions, which include drug use, homosexual behavior (particularly in developed countries [25, 26, 27]), and promiscuity (particularly in developing countries [28, 29]).

We contribute to the literature by studying whether the presence of an HIV positive worker in a small business affects potential customer exit and by disentangling the effects of these three underlying mechanisms behind HIV stigma. We use a unique dataset, built from a survey conducted in different townships in the Tshwane Municipality in South Africa, to study how stigmatizing behavior affects various everyday purchasing decisions that individuals make - buying food items such as meat, sandwiches, fruit and vegetables, or hiring a common service, such as getting trousers mended. We examine whether and why customers would avoid a certain store once they learn that one of its workers is HIV positive. No prior study of which we are aware has quantified the extent of customer exit due to stigma. Previous studies have elicited likelihood of buying goods from an HIV positive seller as part of a composite HIV stigma scale measure but have not analyzed customer exit and its determinants in detail ([30, 31, 32, 33, 34, 35]). Our recent studies show that running a small business has become an important means by which people in South African townships earn a living due to the scarcity of formal employment opportunities [36, 37], yet we do not know how stigma affects the economic prospects of these businesses. Because the owners and workers of these small businesses are identifiable people, unlike faceless workers in large businesses, small businesses may be an easier target for HIV discrimination than large businesses. Further, HIV prevalence rates are as high or higher than 30% in certain areas, suggesting that some businesses must have HIV positive workers ([38, 39, 40]). If demand falls when a worker’s HIV status is discovered, this can be detrimental to the business. Furthermore, if in turn workers feel the need to hide their positive HIV status, this may also be harmful to their health, as it will be more difficult for them to seek medical care.

2 Methods

2.1 Sample

Our study uses the data from the South African Panel Survey of Small Business and Health, which is a longitudinal survey of owners of small businesses and non-owners in the Tshwane Municipality in South Africa. The two stage stratified probability sampling design used to select the sample for the survey allows the sample to be weighted to become representative of the whole Tshwane Municipality. In addition to the usual socio-demographic variables, the survey included questions on business activity, health and health behavior, cognitive ability tests, risk preferences, and many other variables related to business and health. Each respondent was surveyed up to three times during the five-year study from 2009 to 2014. The HIV prevalence in our weighted sample is around 21%. Across the three waves of the survey, on average twenty-six percent of the respondents in the weighted sample are owners of businesses. More detail on the sample, sampling method, and the survey can be found in [36].

Because the variables on the attitudes towards businesses with an HIV worker and on the attitudes towards people with HIV (both being key variables for this paper) were included only during the last year of the survey, this paper uses only the data from the third wave of the longitudinal survey. While we have 2,475 respondents in the third wave, 93 respondents had incomplete responses for some of the key variables used in the study and were omitted from the analysis to yield a sample of 2,382 respondents that were included in this paper.

2.2 Dependent Measures

Because directly asking whether the respondent himself or herself would shop at a store with an HIV positive worker is more likely to suffer from desirability bias, we employed a projective indirect questioning method by asking about what the respondent expected others would do - a method that has been shown to reduce such bias [41]. Specifically, we asked respondents to state how many customers, out of ten existing customers, would continue to shop at a certain store once they find out that one of the workers there has HIV. Four different questions were asked, specifically about a meat store, a sandwich store (referred to as a “spathlo shop”), a fruit and vegetables stand, and a tailor (see the Appendix). The survey question for the meat store was:

“Two meat stores sell meat for R15. However, customers found out that the worker at one of the shops has the AIDS virus. Out of every 10 customers that used to go there, how many will continue to shop there?”

2.3 Main independent measures

We use three sets of main independent measures. The first set of questions asked respondents to assess the infection risk at the four aforementioned stores. The purpose of these questions was to assess the extent to which drops in customer demand were related to perceived infection risk. The infection risk question for the meat store (see the Appendix for the other stores) was:

“On a scale from 0 to 10, how likely is it that someone will get infected with HIV by eating the meat from the meat store that has the worker with AIDS?”

The second set of questions asked respondents to rate the life satisfaction of both people without HIV and people with HIV who are sick. These questions were used to approximate how bad respondents perceived living with HIV to be. Although infection risk may matter, unless people believe that becoming infected with the disease would be a very negative outcome, they might not care if they were infected. We asked respondents two questions: (i) “How would you rate the life satisfaction of a person without HIV?” and (ii) “How would you rate the life satisfaction of a person with HIV and sick?” on a 0 to 100 visual analog scale. Similar questions are used to measure health in the EQ-5D standardized health instrument [42] and have been used to assess happiness [43].

The third set of questions assessed dislike of people with HIV using an HIV externalized stigma instrument developed for South Africa that asked respondents about their negative attitudes towards HIV positive persons [44] (this instrument is presented in the Appendix). The instrument broadly measures aversion and disapproval of people with HIV. We include this instrument to determine the extent to which customer demand is related to negative attitudes towards people with HIV. We refer to the scores on this instrument as the “dislike” of people with HIV. (We note that we also use an alternative instrument for “dislike” where we include only items 1, 2, 3, 6, and 8 from the externalized stigma instrument, keeping the items that most clearly connote dislike and omitting the items that may also connote fear of infection. In this paper we present the results from the full instrument. The results from the alternative instrument are not discussed further because they are qualitatively the same.)

2.4 Other independent measures

We also included socio-demographic variables: age, gender, marital status, education, physical health, mental health, and digit span. Physical health and mental health scores were obtained using the SF-12 health status instrument [45], with higher values indicating higher health levels. Digit span was measured with a series of questions that assess how many digits a person can recall, with possible values from 0 to 9 [46]. Higher values indicate better memory recall.

2.5 Analysis

All data analysis was done in Stata 12. Because of the sampling design, we applied the proper weights in the analysis. We calculated the means and standard deviations for the dependent variables, key explanatory variables, and demographic controls. We analyzed the distributions for the dependent variables and characterized the distributions of the key explanatory variables as non-normal (hence requiring non-parametric tests for the analysis). We ran Wilcoxon matched-pairs signed rank tests to compare the distributions of the dependent variables and key explanatory variables. We created standardized versions of our three key independent variables to use in the regressions by subtracting from the mean and dividing by the standard deviation of the respective variables.

We used ordinary least squares regression models to estimate, separately for each of the four different businesses, the number of customers that the respondent thinks will continue to buy

at a store once they learn that it has an HIV positive worker, when a similar store without HIV positive workers is available. We analyzed how the estimated number of customers related to: (i) the respondent's perceived infection risk of consuming or wearing the product sold by the store with the HIV positive worker; (ii) the respondent's perceived drop in life satisfaction when a healthy person gets HIV and becomes sick; and (iii) the respondent's dislike of people with HIV. The respondent's individual characteristics are also included in the models. We used post-estimation commands in Stata to compare the differences between coefficients within the same regression [47]. We also tested whether the coefficients across the regressions differ from each other using the *suest* command in Stata [48]. For instance, we tested whether the effect of fear of infection on perceived customer exit differed between the sandwich shop and the tailor.

3 Results

3.1 Respondent characteristics

Respondent characteristics are summarized in Appendix Table A.I.

3.2 Summary statistics

We find that respondents generally perceive the presence of an HIV positive worker as detrimental to a business. For meat stores, 77% of customers said there would be a drop in customers (74% for sandwich stores, 53% for fruit and vegetable stores, and 32% for tailors). The mean expected loss of customers is also highest for the meat store (with just below 5 out of 10 customers remaining to shop there), followed by the sandwich store, fruit stand, and tailor. The distributions, shown in Table I, are statistically significantly different between all pairings of shops (see footnote in Table I).

We also find support for all three reasons for the potential avoidance of shops with HIV positive workers; Table II displays means and distributions for the three main independent measures. We find that mean perceived infection risk is non-zero. The proportion of respondents who perceived infection risk to be non-zero was 32% for the meat store, 27% for the sandwich store, 22% for the fruit stand, and 14% for the tailor (not reported in the tables). We also find that, on a scale from 0 to 10, the mean perceived infection risk is highest for the meat store (1.77), followed by the sandwich store, followed by the fruit stand, and it is lowest for the tailor (0.55). For all stores, the responses cover the full scale but the distributions are statistically significantly different between all pairings of shops (see note in Table II). Respondents also rated a significant drop in life satisfaction (from a mean of 84 to 28, on a scale of 0 to 100; signed rank test statistic $Z = 42.28$, $p < .0001$) when a healthy person gets HIV and becomes sick. The mean summary score for the dislike of people with HIV was 0.67 but ranged from 0 to 8, with 47% of respondents showing some stigmatizing attitude (reflected in a non-zero summary score for the instrument).

3.3 Regressions

We find that perceived infection risk, perceived loss in life satisfaction, and dislike of people with HIV are all significant and negative determinants of the number of customers that potentially remain at each of the four types of stores. Table III shows the results when the

explanatory variables are entered simultaneously into a regression, and all coefficients but two are highly statistically significant ($p < .001$). The individual characteristics are included as additional controls and are reported in Appendix Table A.II.

Because Table III reports the coefficients of standardized variables, the results allow us to compare infection risk, loss of life satisfaction, and the dislike score to examine these variables' relative impact on the number of customers that remain. The magnitude of the coefficients of these three variables can be interpreted as a measure of the sensitivity with which the store's customer base will change when one of these three explanatory variables changes relative to mean responses. We illustrate by interpreting the responses from the meat store: when the perceived infection risk is one standard deviation above the mean, the number of customers drops 1.27 units (i.e., the respondent thinks that one fewer customer is likely to stay). When the perceived loss in life satisfaction from HIV is one standard deviation above the mean, the number of customers decreases 0.24 units. When the score for the dislike of people with HIV is one standard deviation above the mean, the number of customers drops by 0.36 units. For the meat store, the effect of perceived infection risk on the number of customers exiting is five times larger than from the quality of life lost from HIV and three and a half times larger than from dislike.

The relative importance of perceived infection risk, perceived loss in life satisfaction, and dislike depend on the product type. For the food products, perceived infection risk has a larger effect on perceived customer exit than quality of life loss from having HIV and being sick ($F(1, 2368)$ ranges from 9.10 to 63.66, $p = .0026$ to $p < .0001$). For meat (and for fruit), perceived infection risk also has a larger effect on perceived customer exit than dislike ($F(1, 2368) = 41.50$, $p < .0001$ and $F(1, 2368) = 7.23$, $p = .0072$). For all products, the difference between dislike and quality of life loss from having HIV and being sick on perceived customer exit is statistically insignificant. For the tailor, perceived infection risk, perceived loss in life satisfaction, and dislike all have a similar effect on customer exit.

Our results also show differences across regressions (not shown in Table III). The contribution of infection risk to potential customer exit is also statistically significantly different across regressions (i.e., across businesses), with all differences being highly statistically significant ($\chi^2(1)$ ranging from 16.94 to 81.15 with $p < .001$) except for the difference between sandwich and fruit which was insignificant. In particular, infection risk has the strongest effect on perceived customer exit in the meat store, compared to all other stores. The contributions of perceived loss in life satisfaction to customer exit do not differ across the stores, except for fruit compared to tailor ($\chi^2(1) = 4.23$, $p = .0396$). The contribution of dislike to perceived customer exit is significantly different for meat compared to sandwich ($\chi^2(1) = 4.73$, $p = .0297$) and for meat compared to fruit ($\chi^2(1) = 4.57$, $p = .0325$), as well as for fruit compared to tailor ($\chi^2(1) = 4.32$, $p = .0377$).

4 Discussion

4.1 Main Discussion

We find that respondents believe that, in a set of everyday transactions, many customers would stop shopping at a given store once they learn that a worker there is HIV positive.

This change in perceived purchasing behavior affects small businesses differently. The number of customers potentially exiting from stores that sell food items is higher than from a tailor that mends clothes; a meat store, our respondents believed, could lose half of its customers. Perceived infection risk, the expected drop in life satisfaction when one gets HIV and becomes sick, and dislike of people with HIV were all relevant reasons in explaining the drop in customer demand.

While the overall perceived infection risk is low, it is still non-zero. This may be somewhat surprising given that there is no epidemiological risk of HIV infection from casual contact with HIV infected people [49]. The effect is clear: even very low perceived infection risk is enough to deter people from potentially buying from a store with a known HIV positive worker. Perceived infection risk was especially important for the stores selling food items (and especially large for meat), suggesting that our respondents think customers worry more about infection risk when buying something that they will ingest.

Dislike of people with HIV was as important as perceived infection risk for the sandwich shop and tailor, but perceived infection risk was clearly much more important for the meat store (and somewhat more important for the fruit store) in predicting customer exit. Perceived loss in life satisfaction had a smaller effect on perceived customer exit than perceived infection risk in all stores except the tailor's shop. Our results thus suggest that avoidance of businesses with HIV positive workers is not just related to fear of infection, as the other reasons for perceived customer exit are also important.

One limitation of this study is that it is based on survey data that assesses perceived customer behavior rather than actual customer behavior. However, proxy questions have successfully been used in similar circumstances to approximate actual behavior [50], and in particular have been used extensively to proxy for consumer behavior in marketing research [41]. Another limitation is that in a real setting people may not know a worker's HIV status with certainty. If customer behavior is more forgiving when the HIV status of the worker is unknown, our results would overstate the negative effects for businesses. If, on the other hand, not knowing the HIV status of the worker makes customers more cautious, our results may understate the negative effects for businesses. In addition to avoiding the businesses known to have HIV positive workers, customers may also avoid businesses suspected of having HIV positive workers. Considering the theory of disease avoidance [15] and studies that suggest people are ambiguity averse [51, 52, 53], the latter scenario seems more likely. It is also possible that when people think about going to a store with an HIV positive worker, they worry not just about HIV infection but other infections they could catch from this person such as tuberculosis or the common cold. Because we do not estimate fear of infection or customer exit for these different conditions, we could be overestimating the effect of HIV on customer exit. An additional limitation is the way our survey asked about the life satisfaction of a person with HIV who is also sick. Because different respondents may have assumed the severity of the sickness differently, the difference in interpreting the degree of sickness could result in measurement error for this variable, leading to a weaker association between loss in life satisfaction and potential customer exit.

Finally, while we try to disentangle different reasons for stigmatizing behavior, we recognize that they are closely related and possibly affected by other factors. For example, research suggests that HIV knowledge (e.g., [54]) should also be measured because of its close relationship with HIV stigma [55, 56]. And for food items in particular, disgust is an emotion that may be important to isolate when analyzing customer exit [17]. Future work should thus explore the roles such factors play in determining actual and potential customer exit.

4.2 Policy Implications

Everywhere, small business survival depends on skill, hard work, and some luck. However, as our study's results suggest, in South Africa small businesses may also be impaired by misinformation about HIV infection risk in daily casual contact, a lack of general understanding about ARVs and their benefits, and a continued disdain of people with HIV. Public health policy can help correct such issues, and address this important and somewhat neglected economic cost of HIV stigma. This is especially important in countries like South Africa where so many people - over 30% in some areas - run small businesses because of the difficulty of finding formal employment [37, 36]. Furthermore, if these entrepreneurs need to hide their own or their workers' HIV status due to fear of losing customers, this could become a significant barrier to care-seeking. This is also an important issue in many other countries in sub-Saharan Africa where there are high rates of self-employment and high rates of HIV prevalence.

We draw three main policy implications from our results. First, while HIV education has been shown to reduce the dislike of those with HIV [55, 56] and mitigate the psychological discomfort of HIV positive people, we now show that HIV education - by reducing dislike of HIV positive persons - may also have positive externalities on the earnings potential of HIV positive persons and reduce the negative economic impact of HIV. Second, our work raises a novel concern about public health messages that overplay HIV infection risk to try to prevent people from engaging in risky sexual behavior. We show that exacerbating the infection risk carries important negative economic side consequences that need to be taken into account when designing public health messages. This is especially relevant considering that scare tactics may not be the best method for nudging people not to engage in risky sex, as sexual risk-taking tends to be more motivated by pleasure-seeking than risk-avoidance [57]. Finally, our results show that people who attach a greater loss to the quality of life from having HIV and being sick also expect higher levels of customer exit. Because ARVs can significantly mitigate the severity of illness with HIV and thus reduce the quality of life loss, public health education can have another benefit. Public health education about the effectiveness of ARVs and the improvement in quality of life that they provide may thus reduce the potential avoidance of small businesses with HIV positive workers.

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Appendix

Dependent variables for customer exit

(Meat) Two meat stores sell meat for R15. However, customers found out that the worker at one of the shops has the AIDS virus. Out of every 10 customers that used to go there, how many will continue to shop there?

(Sandwich) Two spathlo shops sell identical sandwiches for R15. However, customers found out that the worker at one of the shops has the AIDS virus. Out of every 10 customers that used to go there, how many will continue to shop there?

(Fruit and vegetables) Two fruit and veggie stands sell identical packs of fruit and vegetables for R15. However, customers found out that the worker at one of the shops has the AIDS virus. Out of every 10 customers that used to go there, how many will continue to shop there?

(Tailor) There are two different tailors. Both charge R15 to alter a pair of trousers. However, customers found out that the tailor at one of the shops has the AIDS virus. Out of every 10 customers that used to go there, how many will continue to shop there?

Independent variables for infection risk

(Meat) On a scale from 0 to 10, how likely is it that someone will get infected with HIV *by eating the meat from the meat store that has the worker with AIDS?**

For the other businesses the italics were replaced with:

(Sandwich) *eating the spathlo from the shop?*

(Fruit and vegetables) *eating fruit and vegetables from the fruit and veggie stand?*

(Tailor) *wearing clothes altered by the tailor?*

Stigma attitude questionnaire from Kalichman et al. (2005) [44]

Please answer whether you agree or disagree with the following statements:

1. People who have AIDS are dirty.
2. People who have AIDS are cursed.
3. People who have AIDS should be ashamed.
4. It is safe for people who have AIDS to work with children.

5. People with AIDS must expect some restrictions on their freedom.
6. A person with AIDS must have done something wrong and deserves to be punished.
7. People who have HIV should be isolated.
8. I do not want to be friends with someone who has AIDS.
9. People who have AIDS should not be allowed to work.

Table A.I

Individual Characteristics, Means and Standard Deviations

Variable	Mean	S.D.
Female	0.63	0.48
Age	45.11	15.19
Married or cohabitating	0.46	0.50
Education		
Less than primary	0.15	0.36
Primary complete	0.07	0.25
Some secondary	0.38	0.49
Secondary complete	0.24	0.43
More than secondary	0.16	0.36
Physical Health Score (PCS12)	52.44	7.83
Mental Health Score (MCS12)	51.54	9.37
Digit Span	6.27	1.36

Note: N=2382.

Table A.II

Factors that affect perceived demand for the different products (full regressions)

	(1) Meat	(2) Sandwich	(3) Fruit & Vegetable	(4) Tailor
Business specific infection risk	-1.27 *** [-1.44, -1.11]	-0.76 *** [-0.95, -0.56]	-0.89 *** [-1.09, -0.70]	-0.28 *** [-0.43, -0.12]
Quality of life loss from HIV	-0.24 * [-0.44, -0.04]	-0.36 *** [-0.51, -0.22]	-0.32 *** [-0.47, -0.16]	-0.21 ** [-0.28, -0.08]
Dislike	-0.36 *** [-0.55, -0.18]	-0.54 *** [-0.70, -0.38]	-0.53 *** [-0.69, -0.37]	-0.37 *** [-0.53, -0.22]
Age	0.02 ** [0.01, 0.04]	0.03 *** [0.02, 0.04]	0.01 [-0.01, 0.02]	0.00 [-0.01, 0.02]
Education (Omitted category: Some secondary)				
Less than primary	-0.00 [-0.62, 0.62]	-0.27 [-0.79, 0.26]	-0.01 [-0.47, 0.46]	-0.47 * [-0.87, -0.07]
Primary complete	-0.36 [-1.18, 0.46]	-0.41 [-1.06, 0.25]	-0.26 [-0.86, 0.34]	-0.49 [-0.98, 0.01]
Secondary complete	-0.08 [-0.59, 0.43]	0.12 [-0.35, 0.59]	-0.25 [-0.67, 0.17]	-0.43 * [-0.81, -0.06]
More than secondary	-0.04 [-0.64, 0.57]	-0.42 [-0.87, 0.03]	-0.33 [-0.76, 0.10]	-0.53 *** [-0.92, -0.13]

	(1) Meat	(2) Sandwich	(3) Fruit & Vegetable	(4) Tailor
Male	0.14 [-0.25, 0.540]	0.18 [-0.15, 0.51]	0.03 [-0.27, 0.34]	0.10 [-0.17, 0.37]
Married or cohabitating	-0.01 [-0.39, 0.38]	0.08 [-0.24, 0.40]	-0.17 [-0.47, 0.13]	-0.04 [-0.30, 0.22]
Physical Health Score (PCS12)	-0.00 [-0.04, 0.03]	-0.00 [-0.03, 0.02]	-0.03** [-0.05, -0.01]	-0.00 [-0.02, 0.02]
Mental Health Score (MCS12)	0.01 [-0.01, 0.03]	0.01 [-0.01, 0.02]	0.01 [-0.01, 0.02]	0.00 [-0.01, 0.02]
Digit span	0.06 [-0.09, 0.20]	0.19** [0.07, 0.32]	0.16** [0.04, 0.28]	0.17** [0.07, 0.27]
Constant	3.14* [0.54, 5.74]	3.31*** [1.62, 5.00]	7.25*** [5.62, 8.90]	7.51*** [6.05, 8.98]

Note: Regression coefficients and 95% confidence intervals are from ordinary least squares regressions. Business specific infection risk, quality of life loss from HIV, and dislike are standardized variables.

*** indicates a statistically significant with $p < .001$,

** with $p < .01$, and

* with $p < .05$.

N=2382.

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Table I

Summary statistics for the number of customers (out of 10) that remain at each business

Business	Mean	S.D.	Min	0.25	Median	0.75	Max
1. Meat	4.80	3.66	0	2	5	9	10
2. Sandwich	5.98	3.18	0	4	5	10	10
3. Fruit & Vegetable	7.34	3.15	0	5	8	10	10
4. Tailor	8.58	2.49	0	8	10	10	10

Note: All responses range from 0 to 10. Wilcoxon matched-pairs signed rank tests show that all matched comparisons are statistically significantly different from each other with the absolute value of Z ranging from 21.36 to 37.31, $p < .0001$. $N=2382$.

Table II

Reasons for customers exiting

		Mean	S.D.
Infection risk	Meat	1.77	3.19
	Sandwich	1.28	2.70
	Fruit & Vegetable	1.01	2.42
	Tailor	0.55	1.77
Quality of life	Healthy	83.91	16.80
	HIV and sick	27.69	18.07
Dislike	Summary score	0.67	0.97

Note: The scale for infection risk was from 0 to 10. Wilcoxon matched-pairs signed rank tests show that all matched comparisons for infection risk are statistically significantly different from each other with the absolute value of Z ranging from 4.52 to 18.60, $p < .0001$. The quality of life scale was from 0 to 100. Quality of life shows a 56 percentage point difference which is statistically significant ($Z = 42.28$, $p < 0.0001$). The stigma summary score ranged from 0 to 8 on a 0 to 9 scale. $N=2382$.

Table III

Factors that affect perceived demand for the different products

	(1) Meat	(2) Sandwich	(3) Fruit & Vegetable	(4) Tailor
A. Business specific infection risk	-1.27 ^{B***C***} [-1.44, -1.11]	-0.76 ^{B**} [-0.95, -0.56]	-0.89 ^{B***C**} [-1.09, -0.70]	-0.28 [-0.43, -0.12]
B. Quality of life loss from HIV	-0.24 ^{A***} [-0.44, -0.04]	-0.36 ^{A**} [-0.51, -0.22]	-0.32 ^{A***} [-0.47, -0.16]	-0.21 [-0.28, -0.08]
C. Dislike	-0.36 ^{A***} [-0.55, -0.18]	-0.54 [-0.70, -0.38]	-0.53 ^{A**} [-0.69, -0.37]	-0.37 [-0.53, -0.22]
Constant	3.14 [0.54, 5.74]	3.31 [1.62, 5.00]	7.25 [5.62, 8.90]	7.51 [6.05, 8.98]

Note: Regression coefficients and 95% confidence intervals are from ordinary least squares regressions. Business specific infection risk, quality of life loss from HIV, and dislike are standardized variables. Additional variables in the regressions are: age, education, marital status, gender, physical and mental health scores, and digit span. All coefficients shown are significant predictors of the dependent variable with $p < .001$ except for the quality of life loss from HIV coefficients in regressions 1 and 4, which are significant with $p = .019$ and $p = .007$, respectively. Superscripts indicate that a coefficient is significantly different than another coefficient in the same regression,

*** indicates statistically different from the other coefficient with $p < .001$,

** with $p < .01$, and

* with $p < .05$.

N=2382.