

A Within-Restaurant Analysis of Changes in Customer Satisfaction following the Introduction of Service Inclusive Pricing or Automatic Service Charges

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RUNING HEAD: Tipping Policies and Customer Satisfaction

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**Abstract**

Many U.S. restaurants have recently adopted no-tipping policies or are considering doing so. This study examines the effects of such moves away from tipping on restaurant's online customer ratings. The results indicate that (i) restaurants receive lower online customer ratings when they eliminate tipping, (ii) online customer ratings decline more when tipping is replaced with service-charges than when it is replaced with service-inclusive-pricing, and (iii) less expensive restaurants experience greater declines in online customer ratings when replacing tipping with either alternative than do more expensive restaurants. These findings provide a strong argument for the retention of tipping, especially among lower- and mid-tier restaurants.

Key words: tipping policy, customer satisfaction, online ratings

## **A Within-Restaurant Analysis of Changes in Customer Satisfaction following the Introduction of Service Inclusive Pricing or Automatic Service Charges**

### 1. Introduction

Tipping is widespread in U.S. restaurants, but a growing chorus of journalists, policy analysts, and social commentators have called for its replacement with service-charges or service-inclusive-pricing (see Gennis, 2015; Grimminck, 2015; Keane, 2014; O'Neil, 2015; Palmer, 2013).<sup>1</sup> Moreover, many restaurateurs have heeded these calls. A recent American Express survey of 503 U.S. restaurateurs found that 18 percent had already adopted no-tipping policies, 29 percent were planning to do so, and 27 percent might consider doing so in the future (Crowley and Rami, 2016). These actual and contemplated moves away from tipping are motivated in large part by the recent increases in the legal-minimum wage and the commensurate rise in back-of-the-house labor costs. Many restaurateurs hope to offset such costs by replacing tipping, which generates revenue management cannot legally access, with service charges or higher menu prices, which generate revenue management can control and distribute more equitably between front- and back-of-house employees (Lynn, 2017a).

However, the benefits and costs that restaurateurs must consider before replacing voluntary tipping with alternative compensation structures goes well beyond simple labor cost calculations. While a thorough review of the pros and cons of tipping versus its alternatives is well beyond the scope of this paper (see Lynn, 2017 for such a review) one particularly important factor that restaurateurs should consider if deliberating about abolishing voluntary

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<sup>1</sup> In the United States, restaurants eliminating tipping forgo a tip credit that allows them to pay tipped workers a lower minimum wage. Thus, restaurants without tipping have higher labor costs that must be offset by either service charges or higher, service-inclusive menu prices. Restaurant profit margins are not high enough to eliminate tipping and pay higher wages without generating additional revenue via service charges or price increases. As such, alternative compensation structures aside from those considered here (voluntary tipping, service inclusive pricing, and automatic service charges) are extremely rare.

tipping in their establishments is the resultant effect that such a decision may have on overall customer satisfaction. While there are theoretical reasons to expect that voluntary tipping may either enhance or undermine customer satisfaction vis-à-vis service charges and service inclusive menu pricing there are unfortunately a shortage of published studies that restaurateurs can consult, which have directly assessed customer satisfaction under these various compensation structures.

In fact, we are aware of only one study that has centered on the relationship between customers' overall dining satisfaction and restaurant tipping policies (Lynn, Forthcoming). In this study the author reported overall dining satisfaction to be reduced in Joe's Crab Shack establishments after replacing voluntary tipping with service inclusive pricing. Whether these results can be generalized to other restaurant concepts is unknown. Moreover, there have been no studies done in the restaurant context that have assessed changes in overall dining satisfaction after replacing voluntary tipping with automatic service charges. As such, even if Lynn's (Forthcoming) results can be replicated it remains unknown whether consumer satisfaction would be enhanced, remain the same, or reduced if restaurants replaced voluntary tipping with automatic service charges rather than service inclusive pricing. Further, to our knowledge there are no published studies that have explored restaurant-level characteristics associated with potential increases/decreases in customer satisfaction following the implementation of no-tipping compensation policies (e.g., automatic service charges or service inclusive pricing).

In response, this paper begins with a brief review of the theoretical processes that may produce either positive or negative tipping policy effects on customer satisfaction. Based on this review we posit that customer satisfaction will on average be greater under voluntary tipping than under a service inclusive pricing or automatic service charge structures. Next, we outline

theoretical reasons that lead us to expect that such tipping policy effects on consumer satisfaction will be stronger in less expensive relative to more expensive restaurants. Finally, we test these predictions by analyzing online satisfaction ratings of customers' dining experiences within restaurants that operated under different tipping policies between September 1, 2014 and August 30, 2016. In doing so this study offers a direct test of the within-restaurant changes in customer satisfaction that stem from the introduction of no-tipping compensation policies and identifies restaurant price as an important determinant of successful implementation of such policies.

## 2. Literature Review and Hypotheses

There are some theoretical reasons to believe that customer satisfaction will be higher under service charges or service-inclusive menu pricing than under tipping. In particular, it is possible that replacing variable tip income with more certain wages will improve the customer experience by (i) attracting more professional wait-staff (Parise, 1987), (ii) allowing servers to focus on providing good service instead of worrying about tips (Porter, 2013; Fulton, 2016), (iii) encouraging more service-enhancing teamwork (Frumppkin, 1988), and (iv) reducing incentives to discriminate against consumers who are predicted to tip them poorly (Barkan and Israeli, 2004; Brewster, 2015).

While each of these four processes are certainly likely to sometimes undermine customers' dining experiences the available published empirical evidence leads us to be skeptical that the cumulative effects of such processes are sufficiently strong to compromise consumers' overall dining satisfaction . For instance, extant studies have shown that those who prefer working for tips are more likely to be experienced wait-staff, possess more service oriented attitudes, and be more satisfied with their job than those who prefer working under an automatic service charge compensation system (see Lynn, 2017b; Lynn et al., 2011). While the

strength of these associations tend to be quite weak they nevertheless suggest that tipping may selectively attract, rather than discourage, more committed and professionally oriented waiters and waitresses.

Second, the contention that the uncertainty inherent in voluntary tips encourages servers to obsess about being compensated for their efforts and as such are distracted from providing optimal service to their customers (Porter, 2013; Fulton, 2016) assumes that the average server does not see a clear connection between the tips they receive and the quality of the service they provide. However, extant studies indicate that this is not the case. Rather, the vast majority of servers have been shown to perceive a moderate to strong relationship between service quality and the size of the tips that they receive (Kwortnik, et al., 2009; Lynn, et al., 2011). Thus, rather than functioning to distract servers from providing high quality customer service these findings suggest the opposite—most servers are motivated to provide high-quality service, in part, because they trust that their efforts will in fact be rewarded with a fair tip.

Third, the argument that tipping may function to discourage servers from working together as a team and thereby lower overall customer satisfaction (see Frumpkin, 1988) is logical but likewise suffers from a lack of substantiating empirical evidence. In fact, to our knowledge there have been no studies that have directly compared cooperative server behaviors across tipped and non-tipped restaurants. Nor are there any published studies that have assessed within-restaurant changes in cooperative server behaviors after implementing non-tipping compensation policies. Moreover, the limited indirect evidence of this process that is available (see Barkan, et al., 2004) suggests that any increase in cooperative service behaviors that might result from abolishing voluntary tipping is not likely to outweigh the resulting decrease in

individual server motivations that stems from the widespread belief in the service-tip contingency (see Lynn, 2017).

Finally, it has been argued that voluntary tipping undermines consumer satisfaction by encouraging servers to discriminate against patrons who are predicted to tip them poorly. Unlike the previously discussed theoretical processes by which voluntary tipping may undermine customer satisfaction there is a growing body of empirical evidence indicating that servers may in fact withhold effort from customers perceived to be poor tippers (e.g., Barkan and Israeli, 2004; Brewster, 2015; Lynn, 2017). For instance, Barkan and Israeli's (2004) research found that servers are quite proficient at predicting the size of tips that their customers will actually leave, in part, because they manage the service encounter to ensure that their predictions materialize. That is, when servers predicted a poor (good) tip they subsequently tended to exert less (more) effort during the service transaction thereby decreasing (increasing) the size of the tip that was actually left. Customers who are members of social aggregates that are perceived by servers to be on average poor tippers, including racial/ethnic minorities, women, teenagers, elderly adults, Christians, tables with small children, and Christians have been shown to be particularly vulnerable to this tip-driven discriminatory service (see Brewster, 2015).

It nevertheless remains questionable whether tipping motivated service discrimination becomes manifest in consumers' overall satisfaction with their dining experiences. For instance, research documenting the strength and pervasiveness of servers' cynicism towards the tipping practices of Black Americans, in particular, led Brewster and Brauer (2017) to posit that these customers would on average report diminished dining experiences relative to their White counterparts. However, in contrast to the authors' prediction, Black and White consumers in a non-representative but geographically diverse sample were found to report similar levels of

satisfaction across nine distinct measures assessing their typical and recent dining experiences. Further, where interracial differences were observed, Black respondents were found to report slightly more positive and less negative experiences than Whites. These results were largely consistent with those observed in an exit survey of customers leaving a moderately priced restaurant in Detroit, Michigan (see Brewster, Lynn, and Cocroft, 2014). While more research assessing the nature of tip-driven service discrimination and the conditions under such discrimination is likely to become manifest in customer reported dining satisfaction is clearly needed the evidence that is available fails to support the contention that replacing voluntary tipping with either service inclusive pricing or automatic service charges would result in a notable increase in average level of satisfaction among members of social groups that are thought to be inadequate in their tipping practices.

In contrast to the aforementioned lines of argumentation underpinning proponents' of non-tipping compensation structures there are more empirically supported theoretical reasons to infer that customer satisfaction may be higher under tipping than under service charges or service-inclusive menu pricing. First, the performance contingent nature of tipping helps to attract more service-oriented workers (Lynn, Kwortnik and Sturman, 2011) and motivates them to provide more personalized service to their clientele (Kwortnik, Lynn and Ross, 2009). Thus, eliminating tipping may reduce actual service levels. Further, consumers believe that tipping motivates servers to deliver better service (Mills and Riehle, 1987; Lynn and Wang, 2013), so eliminating tipping may reduce consumer expectations, and with them perceptions, of service quality and this could be the case even if actual service is unaffected. Kwortnik, Lynn, and Ross' (2009) research lends credence to the voluntary tipping-service quality link. The authors compared Zagat service ratings of Miami Beach restaurants and found that ratings were



significantly higher in establishments with voluntary tipping than they were in those with automatic service charges.

Third, tipping is a form of altruistic conspicuous consumption that delivers psychological benefits to the tipper (Lynn, 2015) and consumers report that they like tipping better than its alternatives (Lynn, 2017a), so eliminating tipping would replace a utilitarian and popular service attribute with a less utilitarian and popular one. Additionally, tipping is a form of voluntary pricing and price discrimination that results in approximately 25 percent of customers tipping less than 15 percent of bill size and 65 percent of customers tipping less than 20 percent of bill size (Lynn, 2017a), so replacing tipping with service charges or service inclusive pricing will raise dining costs for a quarter to half of restaurant customers and this is likely to reduce the overall satisfaction of those customers. Finally, tipping is a form of price-partitioning that reduces perceptions of expensiveness even when it does not affect the actual total costs of eating out (Lynn and Wang, 2013), so replacing tipping with service inclusive pricing (though not with service charges) may decrease consumer's perceptions of value even among big tippers whose total costs of eating out have not changed.

The aforementioned theoretical processes provide a compelling basis to believe that overall consumer satisfaction may be reduced if voluntary tipping is abolished and replaced with alternative compensation systems. Surprisingly, however, there have been only two attempts to directly assess changes in consumer satisfaction after implementing a no-tipping compensation policy. In the first of these studies, Lynn and Kwortnik (2015) compared online satisfaction ratings of Carnival Cruises before and after the Cruise Line switched from voluntary tipping to a system wherein daily service charges were automatically added to customers' bill. The authors

found that Carnival's customers rated their overall cruise experience more positively before tipping was replaced with automatic service charges on their ships than they did afterwards.

In the only direct test of the relationship between alternative tipping policies and overall consumer satisfaction in the full-service restaurant context, Lynn (forthcoming) found that online satisfaction ratings were reduced in the 18 Joe's Crab Shacks that abolished voluntary tipping in 2015 relative to 18 selected control restaurants that retained voluntary tipping. Consistent with the processes outlined above the author also found that customers were more likely to reference "tipping," "service/servers," and "price" in their reviews if they had dined in a no-tipping Joe Crab Shack vis-a-vis a control restaurant operating under a voluntary tipping system. Further, references to each of these factors were shown to be associated with lower satisfaction ratings.

The theoretical processes linking no-tipping compensation policies with lowered consumer satisfaction coupled with the results of these two recent studies lead us to predict that customers' overall dining satisfaction will be reduced in restaurants that replace voluntary tipping with either automatic service charges or service inclusive pricing. This prediction is formalized in the following hypothesis.

H1: Customer satisfaction will be lower when restaurants operate under a service charge or service inclusive pricing system than when they operate under a tipping system.

Although many of the previously described negative consequences associated with no-tipping compensation policies apply equally to service charges and service inclusive pricing, some apply to one of these tipping-alternatives more than the other. Most notably, consumers dislike service charges much more than service inclusive pricing (Lynn, 2017a). On the other hand, service charges partition prices much as tipping does, so they increase the perceived costs of services less than do service inclusive prices (Lynn and Wang, 2013). In addition, service

charges undermine fewer incentives for service than do service inclusive prices, because the former rewards suggestive selling and other sales-oriented behaviors while the latter do not (Kwortnik, Lynn and Ross, 2009). It is hard to tell a-priori if one of these effects dominates the other or if they cancel one another out, so it is possible that replacing tipping with service charges has stronger, weaker, or the same negative effects on customer satisfaction than/as does replacing tipping with service inclusive pricing. These possibilities are reflected in the following competing hypotheses.

H2a: Service charge systems will decrease customer satisfaction (relative to satisfaction under a tipping system) more than will service inclusive pricing systems.

H2b: Service charge systems will decrease customer satisfaction (relative to satisfaction under a tipping system) less than will service inclusive pricing systems.

H2c: Service charge systems and service inclusive pricing systems will decrease customer satisfaction equally (relative to satisfaction under a tipping system).

Some of the negative consequences of replacing tipping described above may also decrease with the price-tier of the restaurant. First, no-tipping policies are more common in upscale restaurants and in countries outside the United States, so customers of upscale restaurants, who are wealthier and presumably travel abroad more than do poorer consumers, should be more familiar with and accepting of those policies. Second, the wealthier customers of upscale restaurants should be less price sensitive than are the customers of mid- and down-scale restaurants. Third, upscale restaurants are typically smaller and have a higher server to customer ratio than do mid- and down-scale restaurants, so managers of the former restaurants can more readily monitor and motivate good service in the absence of tipping. Finally, upscale

restaurants have more cues leading to high consumer expectations of service than do mid- and down-scale restaurants, so the former restaurants may be less dependent on tipping as a signal of service quality. All of these considerations suggest the following hypothesis.

H3: The negative effects of service charge and service inclusive pricing systems (as opposed to tipping systems) on customer satisfaction will be weaker at more expensive restaurants.

### 3. Method

The research hypotheses above were tested using a data set with 9,467 observations of the following variables: a customer's online restaurant rating, the date the rating was posted online, the name of the website the rating was posted on, the restaurant's name, the restaurant's price tier, the tipping policy at the restaurant when the rating was posted. Each of these variables is described in more detail below.

Customer ratings of restaurants on a 5-point scale were obtained from a commercial firm, "ReviewTrackers," that scraped online reviews of 41 independent restaurants at the request of the investigators. Nine-thousand, four-hundred, sixty-seven ratings of these restaurants posted between September 1, 2014 and August 30, 2016 and were provided by Review Trackers along with the date and online source of the reviews.

The date the rating was posted online was recoded to reflect the sequential number of days in the data set – i.e., September 1, 2014 was recoded as "1", September 2, 2014 was coded as "2", etc...). This recoded value and its squared value were used in the regression analyses to control for nonlinear temporal trends.

All ratings came either from Yelp, Google, Facebook, TripAdvisor, OpenTable, or Zomato. Dummy variables were created for each of these sources and were used in the regression analyses to control for potential differences between the websites and their visitors.

The name of the restaurant being rated was provided by Review Trackers and dummy variables were created for each restaurant for use as control variables in the regression analyses. The 41 restaurants whose online reviews were scraped were selected by the investigator based on press reports indicating that each had no-tipping policy in place for at least a brief period of time between September 1, 2014 and August 30, 2016. The list of restaurants and some descriptive details about each are provided in Table 1.

The price tier of the restaurant being rated was obtained from YELP.com, which uses a four-tiered price classification -- \$ (not present in this data set), \$\$ (coded as 2), \$\$\$ (coded as 3), and \$\$\$\$ (coded as 4).

The tipping policy at the rated restaurant when the rating was posted was coded as “tipping,” “service charge,” or “service inclusive pricing” and dummy variables for service charge and service inclusive pricing were used in the regression analyses to contrast these policies with tipping.<sup>2</sup> The nature and dates of the tipping policies at each restaurant were obtained from various online sources in the vast majority of cases, but in a few cases where the information could not be ascertained online. In these instances the information was obtained via direct communications with the restaurants in question. In most cases, these sources provided only the month and year of policy changes along with descriptions of the policies, but more

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<sup>2</sup> In some states, such as NY, “service charges” are legally regarded as tips, but “administrative fees” are not, so restaurateurs call their service charges the former rather than the latter. For this reason, restaurants adding service charges and those adding administrative fees to customer’s bills were both regarded as operating under a service charge policy in this study.

precise policy dates were sometimes available. If a restaurant switched from one policy to another in a given month but the exact day of the switch was unknown, then the new policy was assumed to have occurred at the beginning of the month. The tipping policy attached to each rating in the manner described above has a high probability (but not a certainty) of being the tipping policy in effect when the rater dined in the restaurant. In other words, the measure of tipping policy is crude and imprecise. However, this imprecision should reduce differences in ratings between the tipping policy conditions, so the reported service charge and service inclusive pricing effects are conservative.

#### 4. Results

Descriptive statistics for, and correlations among, the key variables in this study are presented in Table 2. The effects of tipping policies on customer satisfaction were assessed in a series of regression models that controlled for date, date squared, source-of-review fixed effects (or dummy variables), and restaurant fixed effects (or dummy variables) and that clustered errors within restaurant (see Table 3).<sup>3</sup> Note that all the control variables produced reliable, but theoretically uninteresting, effects that are ignored in the discussion of results.

One regression model predicted review ratings from the controls, service-charge policy (y/n) and service- inclusive-pricing policy (y/n). This model produced a significant negative effect of service-charge policy ( $B = -.24$ ,  $t(40) = -4.63$ , one-tailed  $p < .001$ ) and a marginally-significant, negative effect of service-inclusive-pricing policy ( $B = -.08$ ,  $t(40) = -1.57$ , one-tailed  $p < .07$ ). Post-hoc comparisons indicated that the difference in the strength of these effects was itself reliable ( $F(1, 40) = 6.93$ ,  $p < .02$ ). Consistent with H1 and H2a, customer ratings of the

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<sup>3</sup> Very similar results were obtained when date and date squared were replaced with dummy variables for Month/Year.

restaurants were about a quarter of a point higher under tipping than under service charge policies and were about a tenth of a point higher under tipping than under service-inclusive-pricing policies.

To see if these effects varied across levels of restaurant expensiveness, a second regression model added the products of price-level with service-charge policy and with service-inclusive-pricing policy to those in the first model. This analysis produced a significant, positive price-level by service-charge interaction ( $B = .11$ ,  $t(40) = 2.72$ , one-tailed  $p < .01$ ) and a significant, positive price-level by service-inclusive-pricing interaction ( $B = .06$ ,  $t(40) = 1.70$ , one-tailed  $p < .05$ ). Consistent with H3, the negative service-charge and service-inclusive-pricing effects on customer ratings of the restaurants were weaker among more expensive restaurants than among less expensive ones.

To break the interactions down into simple main effects of service-charge and service-inclusive-pricing at each restaurant price level, a third regression model predicted review ratings from the controls and the products of service-charge and service-inclusive-pricing with dummies for each restaurant price level. This analysis produced progressively smaller but still reliable negative effects of service-charge at low ( $B = -.39$ ,  $t(40) = -4.88$ , one-tailed  $p < .001$ ), medium ( $B = -.21$ ,  $t(40) = -3.18$ , one-tailed  $p < .004$ ), and high ( $B = -.16$ ,  $t(40) = -3.06$ , one-tailed  $p < .005$ ) price restaurants. It also produced significant negative effects of service-inclusive-menu-pricing at low ( $B = -.10$ ,  $t(40) = -1.79$ , one-tailed  $p < .05$ ) and medium ( $B = -.18$ ,  $t(40) = -1.90$ , one-tailed  $p < .04$ ), but not high ( $B = .04$ ,  $t(40) = 0.85$ ,  $p < .41$ ) price restaurants. These findings indicate that restaurants at all price tiers should expect the elimination of tipping to reduce online customer ratings. The only exception is expensive restaurants replacing tipping with service-

inclusive-menu-pricing; in that case only can tipping be eliminated without reducing online customer ratings.

## 5. Discussion

Restaurateurs that are debating about whether or not to replace voluntary tipping with either automatic service charges or service inclusive menu pricing will find that there is a shortage of published studies that can be consulted to inform their deliberations. Research centered on the relationship between tipping/no-tipping compensation policies and customers' overall dining satisfaction is, in particular, lacking. In response, this study offers several contributions to this literature. First, the current research joins only one study (Lynn, Forthcoming) in finding that overall customer satisfaction is higher when restaurants operate under voluntary tipping vis-a-vis service inclusive pricing. Consistent with Lynn and Kworntnik's (2015) research on Carnival Cruise ships we also find that overall consumer satisfaction is reduced when full-service restaurants replace voluntary tipping with automatic service charges. Further, this is also the first study to demonstrate that service charges are associated with a larger decrease in overall customer satisfaction (relative to that under tipping) than is service inclusive pricing, and both service charges and service inclusive pricing are associated with larger decreases in overall customer satisfaction (relative to that under tipping) at less expensive restaurants than at more expensive ones. The theoretical and practical implications of these findings are discussed below along with directions for future research.

### 5.1. Theoretical implications

There are numerous potential processes underlying the effects of tipping policies on customer satisfaction observed in this study. The current data does not permit a separate assessment of each of these processes, but evidence for many of those processes already exists as



described in the introduction. That is, existing research has already shown that tipping (as opposed to alternative compensation/pricing policies) selectively attracts and retains better workers (Lynn, Kwortnik and Sturman, 2011), motivates workers to provide more personalized service (Kwortnik, Lynn and Ross, 2009), increases customers' service expectations (Lynn and Wang, 2013) and their retrospective ratings of service (Kwortnik, Lynn and Ross, 2009), and decreases the perceived and actual expensiveness of services (Lynn, 2017; Lynn and Wang, 2013). The value of this study lies not in testing these processes, but in assessing the joint, net effect of these and other potential processes connected to tipping policies on overall customer satisfaction and the extent to which that net effect varies with the type of system used to replace tipping (i.e., automatic service charges and service inclusive pricing) and with restaurant expensiveness. The data is correlational, so it cannot prove that tipping policies causally affect customer satisfaction. However, plausible processes underlying such a causal effect have already been empirically supported (as described above) and extensive controls for restaurant, source of rating, and temporal trends rule out the most obvious confounds that might undermine such causal interpretation of the current findings. Thus, this study adds to a limited body of evidence that tipping increases overall customer satisfaction relative to that under alternative compensation/pricing systems – especially when compared to service charge systems and at less expensive establishments.

## 5.2. Practical implications

Empirical support for the idea that tipping increases overall customer satisfaction relative to that under alternative compensation/pricing systems is practically important because it provides a strong argument for tipping's retention. The evidence that this effect is stronger among less expensive restaurants suggests that the argument for retaining tipping is even

stronger the lower a restaurant's price-tier. The evidence that this effect is stronger when tipping is replaced with service-charges than with service-inclusive-pricing suggests that the latter alternative should generally be preferred over the former if restaurateurs choose to abolish tipping in their establishments. Overall, the current findings suggest that, if any restaurants are going to lead the movement away from tipping, it should be upscale restaurants and those restaurants should replace tipping, not with service charges, but with service-inclusive pricing. Indeed, the data suggest that only upscale restaurants can abandon tipping without suffering a reduction in overall customer satisfaction and only if they replace it with service-inclusive-pricing.

Given the already ubiquitous and increasing popularity of online reviews, and the influence that such e-word of mouth has been shown to have on consumers' purchasing/patronage behaviors (see Kim, Li, and Brymer, 2016; Ong, 2012; Zhang, Ye, Law, and Li, 2010), our results also have important implications for restaurants' bottom-line that warrant being underscored. For instance, in a longitudinal analysis (2003- 2009) of Yelp online reviews and revenue data for every restaurant in the city of Seattle Luca (2016) recently estimated that restaurateurs can expect a 9% increase in revenue for every one-star Yelp rating improvement. Thus, if the results of our study are shown to be reliable and Luca's (2016) estimate generalizable then it follows that low and moderately priced restaurants that decide to replace voluntary tipping with either automatic service charges or service inclusive pricing can expect to experience a nontrivial loss in profits as a function of lower online satisfaction ratings.

While our results should inform restaurateurs' deliberations and decisions about whether or not voluntary tipping is retained or replaced in their establishments these findings should be considered alongside other empirical realities. The current paper centered only on the

relationship between tipping policies and overall levels of customer satisfaction—a relationship that to-date has been under scrutinized. However, there are a range of additional outcomes that stem from voluntary tipping that were beyond the scope of the current analysis but which should nevertheless be considered if restaurateurs are thinking about implementing non-tipping compensation structures in their establishments. For instance, voluntary tipping has been shown to encourage income tax evasion and contributes to pay inequities between equally skilled and important tipped (waiters and waitresses) and non-tipped (e.g., dishwashers, cooks, and porters) restaurant employees (Lynn 2017). Voluntary tipping has also been shown to encourage a large proportion of wait-staff to steal from their employer by providing their customers with free food/drinks in an effort to increase their tips (Brady, Voorhees, and Brusco, 2012).

Voluntary tipping may also function as a mechanism that permits, if not encourages, consumer discrimination. For instance, results from two field studies found that customers tipped Black servers significantly less than they did White servers and these differences could not be attributed to interracial differences in service delivery (Brewster and Lynn, 2014; Lynn, et al., 2008). Similarly, waitresses with physical features that are congruent with normative Western beauty ideals (e.g., young, large breast, blond hair, and slim) have been shown to receive greater tips than their “less attractive” coworkers (Lynn, 2009). Further, many waitresses report feeling forced to accept as part of the job various forms of sexual harassment from their male customers and servers more generally have to occasionally tolerate abusive and/or obnoxious customer behaviors in order to procure a meaningful tipped income (see Yagil, 2008). Finally, even if overall customer satisfaction is not sensitive to servers’ propensities to differentially allocate their efforts in accordance with customers’ known or predicted tipping

behaviors this does not negate the body of growing body of evidence linking voluntary tipping with disparate customer service (e.g., Barkan and Israeli, 2004; Brewster, 2015).

Each of the above outcomes have been empirically shown to stem, at least in part, from the custom of voluntary tipping restaurant servers and as such each could theoretically be curtailed by instituting non-tipping systems of remuneration into U.S. restaurant establishments. Restaurateurs will thus need to carefully weigh the potential gains against the costs, including potential reductions in overall online customer satisfaction ratings, which are likely to result from implementing non-tipping compensation policies in their specific establishments.

### 5.3. Future research

The results of this study suggest that abandoning tipping will reduce customers' overall satisfaction, but the observed effects occurred in the context of U.S. restaurants, where tipping is the norm. It is possible that tipping policies have a different effect on customer satisfaction in other service contexts or countries where tipping is less common. In fact, the prevalence and perseverance of no-tipping policies outside the U.S. provide prima-facia evidence for this possibility. It is also possible that the effect in U.S. restaurants will dissipate over time if and when U.S. consumers become more familiar with no-tipping policies. In fact, such a familiarity effect could underlie the weaker negative effects of no-tipping policies at more expensive restaurants because wealthy consumers should be more familiar with no-tipping policies, which are more common in upscale restaurants and resorts and in countries outside the U.S.. If valid, such moderation of tipping policy effects on customer satisfaction by familiarity with those policies would diminish the managerial implications of the effects. Thus, future researchers should test this potential boundary condition of the current findings.

While no-tipping compensation structures aside from those considered in this study are (service inclusive pricing, and automatic service charges) quite rare there is variability in the way in which these policies are designed and implemented that we were not able to take into account in this study. For instance, there is variability not only in the size of automatic service charges (10%, 15%, 20%, etc.) but also in the way that such charges are presented to consumers (e.g., as a flat dollar amount or as a percentage of the bill). Consumers' overall satisfaction with their dining experiences are likely to be sensitive to these qualitative differences in no-tipping policies (see Lynn and Wang, 2013; Wang and Lynn, 2014). Thus, we encourage future work in this area that considers and adequately measures the nuanced differences that are known to exist within no-tipping compensation systems.

Finally, while the effects of tipping policies on overall customer satisfaction are important when or if managers consider abandoning or outlawing tipping, there are other potential effects of eliminating tipping that also need to be considered. Tipping policies may also affect employee recruitment, retention, and motivation as well as consumer expectations, patronage and spending. As previously mentioned, some evidence for these effects already exists (e.g., Kworntnik, Lynn and Ross, 2009; Lynn, 2017; Lynn, Kworntnik and Sturman, 2011; Lynn and Wang, 2013), but more research is needed to understand their boundaries and to assess their joint, net effects on firm profits. Thus, future researchers should also study these other effects to more fully inform managerial decisions regarding tipping policies.

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Table 1. List of restaurants studied and their attributes.

Restaurant	Location	Price Level <sup>a</sup>	Average Rating Under Tipping	Average Rating Under No-Tipping	Number of Reviews	Type of No-Tipping Policy <sup>b</sup>	Dates of No-Tipping Policy <sup>c</sup>
42 Grams	Chicago	\$\$\$\$	.	4.63	52	SC	9/14 on
Acadia	Chicago	\$\$\$\$	4.33	4.42	306	SC	1/16 on
Alinea	Chicago	\$\$\$\$	.	4.35	432	SC	9/14 on
Annisa	NYC	\$\$\$\$	4.17	4.15	125	SIP	1/16 on
Aqua by El Gaucho	Seattle	\$\$\$\$	3.88	3.82	254	SC	3/21/16 on
Aviary	Chicago	\$\$\$\$	.	4.23	398	SC	9/14 on
Bar Agricole	San Francisco	\$\$\$	3.67	3.34	259	SIP	3/15 – 12/15
Biang	NYC	\$\$\$\$	4.14	4.30	179	SIP	3/27/16 on
Cafe China	NYC	\$\$	3.97	4.00	482	SIP	3/16 on
Dahlia Lounge	Seattle	\$\$\$	3.96	3.71	345	SC	2/16 on
Daniel's Boiler	Seattle	\$\$\$\$	3.74	3.78	291	SC	4/5/16 on
El Gaucho	Seattle	\$\$\$\$	4.28	4.27	260	SC	3/21/16 on
EL Ideas	Chicago	\$\$\$\$	.	4.57	95	SC	9/14 on
Eleven Madison Park	NYC	\$\$\$\$	4.23	4.43	619	SIP	1/1/16 on
Elizabeth Restaurant	Chicago	\$\$\$\$	.	4.38	66	SC	9/14 on
Farm Spirit	Portland, OR	\$\$\$\$	.	4.98	52	SIP	6/15 on
Fedora	NYC	\$\$\$	4.06	4.07	113	SIP	1/16 – 5/8/16
Girard	Philadelphia	\$\$	.	4.44	151	SIP	9/14 on
Goosefoot	Chicago	\$\$\$\$	.	4.65	62	SC	9/14 on
Huertas	NYC	\$\$	3.78	3.98	160	SIP	12/14/15 on
I Trulli	NYC	\$\$\$	3.83	3.60	70	SC	11/15 on
Ivar's Salmon House	Seattle	\$\$	3.53	3.63	425	SIP	4/16 on
Le Pigeon	Portland, OR	\$\$\$	4.37	4.63	291	SIP	6/18/16 on
M. Wells Steakhouse	NYC	\$\$\$	3.70	3.87	186	SC	2/16 on
Maialino	NYC	\$\$\$	4.44	3.79	114	SIP	2/25/16 on
Mollusk	Seattle	\$\$	3.89	3.41	141	SC	11/15 – 3/16
Next Restaurant	Chicago	\$\$\$\$	.	3.87	141	SC	9/14 on
North End Grill	NYC	\$\$\$	4.40	4.25	70	SIP	4/28/16 on
Okonomi	NYC	\$\$	4.56	4.45	302	SIP	11/1/15 on
Ootoya Times Square	NYC	\$\$	4.09	4.37	379	SIP	3/28/16 on
Palace Kitchen	Seattle	\$\$	3.89	3.76	272	SC	2/16 on
Reynard	NYC	\$\$	3.68	3.86	105	SIP	5/16 on
Roman's	NYC	\$\$\$	4.05	4.17	44	SIP	1/18/16 on
Sushi Yasuda	NYC	\$\$\$\$	.	4.12	632	SIP	9/14 on
Thai Fresh	Austin, TX	\$\$	3.54	3.57	293	SIP	1/18/16 on
The Carlile Room	Seattle	\$\$	4.12	3.73	203	SC	2/16 on
The Modern	NYC	\$\$\$\$	4.43	4.46	103	SIP	11/26/15 on
The Radler	Chicago	\$\$	4.10	3.77	192	SC	10/15 on
The Walrus and the Carpenter	Seattle	\$\$\$	4.28	4.19	493	SC	5/15 on
The Whale Wins	Seattle	\$\$\$	3.63	3.56	165	SC	5/15 on
Yuji Ramen	NYC	\$\$	4.69	4.40	153	SIP	11/1/15 on

<sup>a</sup> Price level on a four point (\$) scale according to Yelp

<sup>b</sup> SC = service charge or administrative fee; SIP = service inclusive pricing

<sup>c</sup> Dates within the study frame of SC or SIP policies from start-date thru end-date (endpoints inclusive). Tipping policies were in effect on other dates.

Table 2. Summary statistics for, and correlations among, key study variables (n = 9,467).

	Mean	S.D.	YELP	GOOGLE	TIPPING	SC	SIP	RPL
Rating	4.08	1.21	-.13**	.12**	-.04**	.02	.03**	.08**
Yelp Review <sup>a</sup>	.73	<b>.44</b>		-.96**	.15**	-.03**	-.13**	-.01
Google Review <sup>a</sup>	.25	<b>.43</b>			-.15**	.01	.16**	-.03**
Tipping Policy <sup>a</sup>	.46	.50				-.57**	-.56**	-.23**
Service Charge Policy <sup>a</sup>	.27	.45					-.37**	.31**
Service Inclusive Pricing Policy <sup>a</sup>	.27	.44						-.06**
Restaurant Price Level	3.11	.87						

<sup>a</sup> yes = 1, no = 0; Note: Dummy variables for Facebook, TripAdvisor, OpenTable, and Zomato were excluded from the table because only about 2 percent of the ratings came from these sources.

Table 3. Coefficients (and robust standard errors clustered within restaurant) from regression models predicting customers' ratings of the restaurants ( $n_{\text{observations}} = 9,467$ ,  $n_{\text{clusters}} = 41$ ).

	Model 1	Model 2	Model 3
Intercept	included	included	included
Date	included	included	included
Date Squared	included	included	included
Source of Review Dummies	included	included	included
Restaurant Dummies	included	included	included
Service-Charge (SC)	-.24**** (.05)	-.59**** (.15)	
Service-Inclusive- Pricing (SIP)	-.08 (.05)	-.25** (.11)	
SC x Price-Tier		.11*** (.04)	
SIP x Price-Tier		.06* (.04)	
SC x \$\$			-.39**** (.08)
SC x \$\$\$			-.21*** (.07)
SC x \$\$\$\$			-.16*** (.05)
SIP x \$\$			-.10* (.06)
SIP x \$\$\$			-.18* (.10)
SIP x \$\$\$\$			.04 (.05)
R <sup>2</sup>	.08	.08	.08

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ , \*\*\*\*  $p < .001$