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Fudging the Nudge: Information Disclosure and Restaurant Grading

ABSTRACT. One of the most promising regulatory currents consists of "targeted" disclosure: mandating simplified information disclosure at the time of decisionmaking to "nudge" parties along. Its poster child is restaurant sanitation grading. In principle, a simple posted letter grade ('A,' 'B,' or 'C') empowers consumers and properly incentivizes restaurateurs to reduce risks for foodborne illness. Yet empirical evidence of the efficacy of restaurant grading is sparse. This Article fills the void by studying over 700,000 health inspections of restaurants across ten jurisdictions, focusing on San Diego and New York. Despite grading's great promise, we show that the regulatory design, implementation, and practice suffer from serious flaws: jurisdictions fudge more than nudge. In San Diego, grade inflation reigns. Nearly all restaurants receive 'A's. In New York, inspections exhibit little substantive consistency. A good score does not meaningfully predict cleanliness down the road. Unsurprisingly, New York's implementation of letter grading in 2010 has not discernably reduced manifestations of foodborne illness. Perhaps worse, the system perversely shifts inspection resources away from higher health hazards to resolve grade disputes. These results have considerable implications, not only for food safety, but also for the institutional design of information disclosure.

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INTRODUCTION

When does disclosure work? Mandated disclosure to solve informational failures—and to empower parties to make informed decisions—has long been recognized as a theoretical matter.[1] Examples of mandated disclosure abound across regulatory areas as diverse as securities regulation,[2] campaign finance,[3] product safety,[4] energy regulation,[5] employment law,[6] environmental law,[7] and health law.[8] Yet despite the fact that disclosure is a mainstay of the regulatory toolkit, a fierce debate persists about the conditions under which disclosure works.[9]

1. *See, e.g.*, STEPHEN BREYER, REGULATION AND ITS REFORM 26-28, 161-64 (1982); JOSEPH E. STIGLITZ, ECONOMICS OF THE PUBLIC SECTOR 83-84 (3d ed. 2000).
2. *See* Securities Act of 1933, Pub. L. No. 73-22, 48 Stat. 74 (codified as amended at 15 U.S.C. §§ 77a-77aa (2006)).
3. *See* Federal Election Campaign Act of 1971, Pub. L. No. 92-225, 86 Stat. 3 (codified as amended at 2 U.S.C. §§ 431-56 (2006)).
4. *See* Consumer Product Safety Improvement Act of 2008, Pub. L. No. 110-314, 122 Stat. 3016 (codified in scattered sections of 15 U.S.C (2006)); *see also Publicly Available Consumer Product Safety Information Database*, U.S. CONSUMER PRODUCT SAFETY COMMISSION, http://www.saferproducts.gov (last visited Jan. 30, 2012) (providing a publicly searchable database where submitters can report a harm or risk of harm related to the use of a consumer product or substance).
5. *See* Guide Concerning Fuel Economy Advertising for New Automobiles, 16 C.F.R. §§ 259.1-259.2 (2011) (mandating disclosure of estimated city and highway miles per gallon for automobiles); *id.* § 305.11 (mandating disclosure of energy consumption and water usage for appliances); *see also Energy Star*, U.S. ENVTL. PROTECTION AGENCY, http://www.energystar.gov (last visited Jan. 30, 2012) (describing a joint program with the Environmental Protection Agency and Department of Energy concerning labeling and environmental standards for products and buildings).
6. *See* OSHA Hazard Communication Standard, 29 C.F.R. § 1910.1200 (2011) (mandating disclosure of hazardous chemicals to employers and employees).
7. *See* Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. §§ 11001-11050 (2006) (requiring disclosure of chemical hazards to communities); Standard for Demolition and Renovation, 40 C.F.R. § 61.145 (2011) (mandating disclosure of asbestos-releasing demolition and renovation activity); *id.* § 156.10 (mandating disclosure of pesticide ingredients); Mandatory Reporting of Greenhouse Gases, 74 Fed. Reg. 56,260 (proposed Oct. 30, 2009) (to be codified in scattered parts of 40 C.F.R.) (requiring reporting of greenhouse gas emissions).
8. *See* 21 C.F.R. § 101.9 (2011) (regarding the disclosure of nutritional information for food products); *id.* § 1141.1 (concerning the display of health warnings on packages of cigarettes and cigarette advertisements).
9. *See* JAMES T. HAMILTON, REGULATION THROUGH REVELATION: THE ORIGIN, POLITICS, AND IMPACTS OF THE TOXICS RELEASE INVENTORY PROGRAM (2005); W. KIP VISCUSI & WESLEY A. MAGAT, LEARNING ABOUT RISK: CONSUMER AND WORKER RESPONSES TO HAZARD

Over the past few years, one of the most important regulatory developments has been the emerging focus on "targeted transparency." The chief insight, based on behavioral research, is that the public faces significant cognitive limitations in processing information.[10] More information is not always better.[11] Instead, effective forms of regulatory disclosure are "targeted": simplified disclosures embedded at the point of decisionmaking to "nudge" parties along.[12] In the terms of Cass Sunstein and Richard Thaler,

INFORMATION (1987); Oren Bar-Gill & Franco Ferrari, *Informing Consumers About Themselves*, 3 ERASMUS L. REV. 93 (2010); Marianne Bertrand & Adair Morse, *Information Disclosure, Cognitive Biases, and Payday Borrowing*, 66 J. FIN. 1865 (2011); Leemore Dafny & David Dranove, *Do Report Cards Tell Consumers Anything They Don't Already Know? The Case of Medicare HMOs*, 39 RAND J. ECON. 790 (2008); David Dranove et al., *Is More Information Better? The Effects of "Report Cards" on Health Care Providers*, 111 J. POL. ECON. 555 (2003); Allen Ferrell, *Mandatory Disclosure and Stock Returns: Evidence from the Over-the-Counter Market*, 36 J. LEGAL STUD. 213 (2007); Michael J. Fishman & Kathleen M. Hagerty, *Mandatory Versus Voluntary Disclosure in Markets with Informed and Uninformed Customers*, 19 J.L. ECON. & ORG. 45 (2003); Robert A. Hillman, *Online Boilerplate: Would Mandatory Website Disclosure of E-Standard Terms Backfire?*, 104 MICH. L. REV. 837 (2006); Shameek Konar & Mark A. Cohen, *Information as Regulation: The Effect of Community Right To Know Laws on Toxic Emissions*, 32 J. ENVTL. ECON. & MGMT. 109 (1997); Anthony T. Kronman, *Mistake, Disclosure, Information, and the Law of Contracts*, 7 J. LEGAL STUD. 1 (1978); Paul G. Mahoney, *Mandatory Disclosure as a Solution to Agency Problems*, 62 U. CHI. L. REV. 1047 (1995); Florencia Marotta-Wurgler, *Does Contract Disclosure Matter?*, 168 J. INSTITUTIONAL & THEORETICAL ECON. 94 (2012); Florencia Marotta-Wurgler, *Will Increased Disclosure Help? Evaluating the Recommendations of the ALI's "Principles of the Law of Software Contracts,"* 78 U. CHI. L. REV. 165 (2011); Alan D. Mathios, *The Impact of Mandatory Disclosure Laws on Product Choices: An Analysis of the Salad Dressing Market*, 43 J.L. & ECON. 651 (2000); A. Mitchell Polinsky & Steven Shavell, *Mandatory Versus Voluntary Disclosure of Product Risks*, 26 J.L. ECON. & ORG. 1 (2010); William M. Sage, *Regulating Through Information: Disclosure Laws and American Health Care*, 99 COLUM. L. REV. 1701 (1999); Daniel J. Solove, *The Virtues of Knowing Less: Justifying Privacy Protections Against Disclosure*, 53 DUKE L.J. 967 (2003); Note, *Disclosure as a Legislative Device*, 76 HARV. L. REV. 1273 (1963).

10. *See, e.g.*, James R. Bettman et al., *Cognitive Considerations in Designing Effective Labels for Presenting Risk Information*, 5 J. PUB. POL'Y & MARKETING 1, 2-12 (1986).

11. *See, e.g.*, Eugene G. Chewning, Jr. & Adrian M. Harrell, *The Effect of Information Load on Decision Makers' Cue Utilization Levels and Decision Quality in a Financial Distress Decision Task*, 15 ACCT. ORG. & SOC'Y 527, 539-40 (1990); Kevin Lane Keller & Richard Staelin, *Effects of Quality and Quantity of Information on Decision Effectiveness*, 14 J. CONSUMER RES. 200, 211-12 (1987).

12. The seminal synthesis is ARCHON FUNG, MARY GRAHAM & DAVID WEIL, FULL DISCLOSURE: THE PERILS AND PROMISE OF TRANSPARENCY (2007). *See also* ROBERT BALDWIN ET AL., UNDERSTANDING REGULATION: THEORY, STRATEGY, AND PRACTICE 339 (2d ed. 2012) ("[O]ne of the key debates in recent years has been how 'targeted transparency' can be used to influence (or 'nudge') consumer behaviour in order to rectify the limitations of more conventional and political-bureaucratic understandings of accountability."); RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND

interventions should focus on structuring choices to nudge parties toward decisions that are less prone to heuristics and biases of decisionmaking.[13] Age grading of children's toys,[14] star ratings for SUV rollover risk,[15] and smart energy meters[16] arguably embody such prescriptions.

The Obama Administration has embraced targeted transparency and

HAPPINESS (2008) (proposing a framework for choice architecture to "nudge" parties toward more effective decisionmaking); Omri Ben-Shahar & Carl E. Schneider, *The Failure of Mandated Disclosure*, 159 U. PA. L. REV. 647, 652, 743 (2011) (arguing that "mandated disclosure generally fails to achieve its goals," but that "brief, simple, easy disclosures" and ratings provide a promising regulatory alternative); Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism,"* 151 U. PA. L. REV. 1211, 1221, 1230-32 (2003) (noting that "[t]he goal of asymmetric paternalism is to help boundedly rational consumers make better decisions" and discussing disclosure regulations that further that goal); David M. Grether, Alan Schwartz & Louis L. Wilde, *The Irrelevance of Information Overload: An Analysis of Search and Disclosure*, 59 S. CAL. L. REV. 277, 301 (1986) (noting that certain forms of satisficing "can be ameliorated by disclosure requirements that reduce the costs to consumers of inspecting product attributes"); Samuel Issacharoff, *Disclosure, Agents, and Consumer Protection*, 167 J. INSTITUTIONAL & THEORETICAL ECON. 56, 63 (2001) ("Of critical importance is not only the consumer's ability to obtain relevant information through disclosure, but that the information be of a sort that will prove usable within real-world time and motivation constraints."); Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1533-34 (1998) (discussing how conventional prescriptions to "provide more information" fall short when considering behavioral insights); Christine Jolls & Cass R. Sunstein, *Debiasing Through Law*, 35 J. LEGAL STUD. 199, 207-08 (2006) (analyzing legal strategies for reducing the effects of bounded rationality and discussing intermediate options to greater information disclosure and outright bans); Mario F. Teisl & Brian Roe, *The Economics of Labeling: An Overview of Issues for Health and Environmental Disclosure*, 27 AGRIC. & RESOURCE ECON. REV. 140, 144-47 (1998) (providing a theoretical framework for the welfare analysis of information labeling that poses a tradeoff between information cost and accuracy); David Weil et al., *The Effectiveness of Regulatory Disclosure Policies*, 25 J. POL'Y ANALYSIS & MGMT. 155 (2006) (reviewing principles of effective disclosure across regulatory areas).

13. *See* THALER & SUNSTEIN, *supra* note 12, at 11-13 (arguing, for example, that designers should give choosers reminders and try to minimize costs for those who do not want to choose).

14. *See Age Determination Guidelines: Relating Children's Ages to Toy Characteristics and Play Behavior*, CONSUMER PRODUCTS SAFETY COMMISSION (2002), http://www.cpsc.gov/businfo/adg.pdf.

15. *See* Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act, Pub. L. No. 106-414, 114 Stat. 1800 (2000) (codified as amended in scattered sections of 49 U.S.C. (2006)).

16. *See* Rebecca Smith, *Smart Meter, Dumb Idea?*, WALL ST. J., Apr. 27, 2009, http://online.wsj.com/article/SB124050416142448555.html; Clive Thompson, *Clive Thompson Thinks: Desktop Orb Could Reform Energy Hogs*, WIRED MAG., July 24, 2007, http://www.wired.com/techbiz/people/magazine/15-08/st_thompson; News Release, Cal. Pub. Util. Comm'n, PUC Approves Smartmeters for PG&E Customers (July 20, 2006), http://docs.cpuc.ca.gov/PublishedDocs/Word_PDF/News_Release/58233.pdf.

behavioral insights in its regulatory approach,[17] most notably in the appointment of Cass Sunstein as Administrator of the Office of Information and Regulatory Affairs (a.k.a. "nudger in chief"[18]). Executive Order 13,563, which reaffirms cost-benefit analysis of proposed regulations and mandates retrospective review of existing regulations, champions "provision of information to the public in a form that is clear and intelligible."[19] In a series of memoranda to agency heads, Sunstein further refined the Administration's approach: "Agencies should consider how best to eliminate unnecessary complexity and to simplify people's choices."[20] Information technology and intermediaries should serve that end, with agencies encouraged to release "complex information and data in standardized, machine readable formats [to] enable consumers to make informed decisions."[21] In 2011, the Administration convened a National Science and Technology Council Task Force on "Smart Disclosure."[22]

Agencies, in turn, have developed a host of proposals in line with targeted transparency. The Securities and Exchange Commission promulgated a rule requiring standardized (machine-readable) risk-return summary disclosures for mutual funds.[23] The Environmental Protection Agency and National Highway Traffic Safety Administration proposed motor-vehicle letter grading

17. *See* Michael A. Livermore & Richard L. Revesz, Address, *Retaking Rationality Two Years Later*, 48 HOUS. L. REV. 1, 19-23 (2011) (discussing the Obama Administration's refinement of cost-benefit analysis to incorporate insights from behavioral economics); Michael P. Vandenbergh, Amanda R. Carrico & Lisa Schultz Bressman, *Regulation in the Behavioral Era*, 95 MINN. L. REV. 715, 717 (2011) ("Regulation has entered the behavioral era."); *cf.* Charles F. Sabel & William H. Simon, *Minimalism and Experimentalism in the Administrative State*, 100 GEO. L.J. 53 (2011) (critiquing minimalist theories of regulatory policy).

18. Jeff Sommer, *When Humans Need a Nudge Toward Rationality*, N.Y. TIMES, Feb. 7, 2009, http://www.nytimes.com/2009/02/08/business/08nudge.html.

19. Exec. Order No. 13,563, 76 Fed. Reg. 3,821 § 4 (2011).

20. Memorandum from Cass R. Sunstein, Adm'r, Office of Info. & Regulatory Affairs, for the Heads of Exec. Dep'ts & Agencies, Disclosure and Simplification as Regulatory Tools 12 (June 18, 2010).

21. Memorandum from Cass R. Sunstein, Adm'r, Office of Info. & Regulatory Affairs, for the Heads of Exec. Dep'ts & Agencies, Informing Consumers Through Smart Disclosure 2 (Sept. 8, 2011).

22. Memorandum from Aneesh Chopra, U.S. Chief Tech. Officer & Assoc. Dir. for Tech., Office of Sci. & Tech. Policy, for the Nat'l Sci. & Tech. Council Comm. on Tech., Winning the Future Through Open Innovation—A Progress Report on Our Open Government Initiative 2 (June 8, 2011).

23. *See* Interactive Data for Mutual Fund Risk/Return Summary, 74 Fed. Reg. 7,748 (Feb. 19, 2009) (to be codified at 17 C.F.R. pts. 230, 232, 239 & 274).

for fuel economy and greenhouse gas emissions.[24] The Food and Drug Administration simplified sunscreen labels to minimize consumer confusion.[25] The Department of Housing and Urban Development issued a grant to the Center for Neighborhood Technology to create a national Housing and Transportation Affordability Index.[26] And the Consumer Financial Protection Bureau is currently experimenting with simplified mortgage disclosure forms.[27] The central ideas of targeted transparency continue to inspire scores of normative proposals.[28]

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24. *See* Revisions and Additions to Motor Vehicle Fuel Economy Label, 75 Fed. Reg. 58,078, 58,082 (Sept. 23, 2010) (proposing letter grading); 76 Fed. Reg. 39,478, 39,488-89 (July 6, 2011) (to be codified at 40 C.F.R. pts. 85, 86 & 600, 49 C.F.R. pt. 575) (choosing alternative label); *Fuel Economy Label: Expert Panel Report*, U.S. ENVTL. PROTECTION AGENCY (Aug. 2010), http://www.epa.gov/fueleconomy/label/420r10908.pdf (making design recommendations for letter-grade labels).

25. *See* Labeling and Effectiveness Testing; Sunscreen Drug Products for Over-the-Counter Human Use, 76 Fed. Reg. 35,620, 35,624 (June 17, 2011) (to be codified at 21 C.F.R. pts. 201 & 310).

26. *See* Press Release, U.S. Dep't of Hous. & Urban Dev., HUD Launches Development of a National Housing and Transportation Affordability Index: New Tool Will Provide Homebuyers with a More Accurate Estimate of Living Costs (Aug. 30, 2011), http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2011/HUDNo.11-180.

27. *See Know Before You Owe*, CONSUMER FIN. PROTECTION BUREAU, http://www.consumerfinance.gov/knowbeforeyouowe (last visited Jan. 30, 2012).

28. *See, e.g.*, IAN AYRES & JENNIFER GERARDA BROWN, STRAIGHTFORWARD: HOW TO MOBILIZE HETEROSEXUAL SUPPORT FOR GAY RIGHTS 79-94 (2005) (proposing a "Fair Employment Mark" to certify that an employer abides by a set of employment policies); HEATHER K. GERKEN, THE DEMOCRACY INDEX: WHY OUR ELECTION SYSTEM IS FAILING AND HOW TO FIX IT 135 (2009) (proposing a "Democracy Index" that would create "better information shortcuts for voters, policymakers, and election administrators" to improve the U.S. election system); LAWRENCE LESSIG, REPUBLIC, LOST: HOW MONEY CORRUPTS CONGRESS—AND A PLAN TO STOP IT 251-63 & n.1 (2011) (discussing how campaign finance, by failing tenets of targeted transparency, will not fix "dependence corruption" in U.S. politics); Omri Ben-Shahar, *The Myth of the 'Opportunity To Read' in Contract Law*, 5 EUR. REV. CONT. L. 1, 21-26 (2009) (proposing "a simple, intuitive format" for rating and labeling of contracts); Nora Freeman Engstrom, *Sunlight and Settlement Mills*, 86 N.Y.U. L. REV. 805, 865-71 (2011) (proposing a disclosure regime for settlement mills that operate in the shadow of tort law and discussing methods to facilitate client use); Cynthia Estlund, *Just the Facts: The Case for Workplace Transparency*, 63 STAN. L. REV. 351, 376-79 (2011) (proposing a mandatory disclosure regime for the workplace and discussing the "ingenious" conception of targeted transparency); Jeff Leslie & Cass R. Sunstein, *Animal Rights Without Controversy*, 70 LAW & CONTEMP. PROBS. 117, 130-36 (2007) (discussing proposals for simplified animal welfare products labels); Kristin Madison, *The Law and Policy of Health Care Quality Reporting*, 31 CAMPBELL L. REV. 215, 251-52 (2009) (discussing efforts to improve health care quality reporting); Lloyd Hitoshi Mayer, *Disclosures About Disclosure*, 44 IND. L. REV. 255, 257-60, 280-84 (2010) (discussing flawed attempts of campaign finance disclosures and proposing

Targeted transparency's poster child is restaurant sanitation grading. The central idea is to summarize sanitation inspections with letter grades ('A,' 'B,' or 'C') and post these in entryways of restaurants to succinctly and intuitively inform consumers. In theory, the disclosure helps consumers select restaurants based on health risk, which in turn incentivizes restaurants to clean up. In the seminal synthetic work on targeted transparency, Archon Fung, Mary Graham, and David Weil systematically review disclosure policies and associated empirical research across regulatory areas, finding restaurant hygiene disclosure to be one of two "highly effective" regimes because of its simplicity and comprehensibility.[29] Indeed, Fung, Graham, and Weil use restaurant grading as the motivating example of how to "embed" disclosures with individual decisionmaking in an informative and comprehensive fashion.[30] Restaurant grading, according to them, exhibits congruence between policy and consumer goals to reduce food-poisoning risk, with only a moderate chance of misinterpretation.[31] Similarly, Omri Ben-Shahar and Carl Schneider argue that mandated disclosure has generally been a failure across policy areas, but they point to restaurant grading as a salutary exception and as the prototype for promising regulatory alternatives.[32]

Restaurant grading is widely considered a paragon of disclosure regulation.[33] In a landmark study, Ginger Jin and Phillip Leslie reported that the adoption of grading in Los Angeles in 1997 caused a 20% reduction in

to change the level of disclosures); Gideon Parchomovsky & Philip J. Weiser, *Beyond Fair Use*, 96 CORNELL L. REV. 91, 96, 126 (2010) (proposing to mandate that content owners provide clear and explicit notification of user privileges); Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 134-43 (2001) (discussing informational strategies for environmental regulation); Andrew Bruck & Andrew Canter, Note, *Supply, Demand, and the Changing Economics of Large Law Firms*, 60 STAN. L. REV. 2087, 2118-26 (2008) (describing data-driven efforts based on targeted transparency to provide rankings of law firms based on hours, diversity, and attrition).

29. FUNG ET AL., *supra* note 12, at 82-83.

30. *Id*. at 50-83.

31. *See id*. at 75.

32. *See* Ben-Shahar & Schneider, *supra* note 12, at 743-48.

33. *See, e.g.*, ORG. FOR ECON. CO-OPERATION & DEV., CONSUMER POLICY TOOLKIT 87 (2010); THALER & SUNSTEIN, *supra* note 12, at 190; Paula J. Dalley, *The Use and Misuse of Disclosure as a Regulatory System*, 34 FLA. ST. U. L. REV. 1089, 1119 (2007); Estlund, *supra* note 28, at 394-95; Issacharoff, *supra* note 12, at 60; Frederick Schauer, *Transparency in Three Dimensions*, 2011 U. ILL. L. REV. 1339, 1348; Lior Jacob Strahilevitz, *Reputation Nation: Law in an Era of Ubiquitous Personal Information*, 102 NW. U. L. REV. 1667, 1711 (2008); *Fuel Economy Label: Expert Panel Report*, *supra* note 24, at 16.

hospitalizations for foodborne illness.[34] Mayor Michael R. Bloomberg, who introduced restaurant grading to New York City in July 2010, called grades "wildly popular"[35] and concluded that as a result "the City made restaurants cleaner, safer and more transparent."[36] *Forbes* magazine described New York's system as "The Most Effective Regulatory Disclosure Ever."[37]

Other jurisdictions, in turn, have jumped on the bandwagon. Over the past ten years, in addition to Los Angeles and New York, Georgia,[38] Hartford,[39] Louisville,[40] Mississippi,[41] Toronto,[42] Albany County (NY),[43] Cuyahoga

34. *See* Ginger Zhe Jin & Phillip Leslie, *The Effect of Information on Product Quality: Evidence from Restaurant Hygiene Grade Cards*, 118 Q.J. ECON. 409 (2003).

35. David Seifman, *Mike & Health Dept. in Food-Cart Feud*, N.Y. POST, Aug. 2, 2011, http://www.nypost.com/p/news/local/mike_health_dept_in_food_cart_feud_yCF8Sl8s5u4JQTFA1wMBnJ.

36. Press Release, Office of the Mayor, Mayor Bloomberg, Deputy Mayor Gibbs, Health Commissioner Farley Announce that One in Three Restaurants in New York City Automatically Saved Money by Earning and Keeping 'A's – Over $3 Million in Fines Waived over Last Six Months (Aug. 1, 2011), http://www.nyc.gov/html/om/html/2011b/pr278-11.html.

37. Kai Falkenberg, *The Most Effective Regulatory Disclosure Ever: So Easy Even Toddlers Understand It*, FORBES, May 6, 2011, http://www.forbes.com/sites/kaifalkenberg/2011/05/06/the-most-effective-regulatory-disclosure-ever-so-easy-even-toddlers-understand-it; *see also* Tom Ferrick, Jr., *How New York Gets Food Inspections Right*, METROPOLIS, Nov. 13, 2010, http://www.phlmetropolis.com/2010/11/how-new-york-gets-inspections-right.php ("If you want to see restaurant inspections done right, travel to New York City."); Elisabeth Rosenthal, *I Disclose . . . Nothing*, N.Y. TIMES, Jan. 21, 2012, http://www.nytimes.com/2012/01/22/sunday-review/hard-truths-about-disclosure.html (noting that restaurant grading is considered a helpful form of disclosure, while most disclosure policies may not work).

38. *See* Elizabeth Lee, *Restaurants Face New Rating Code*, ATLANTA J.-CONST., Dec. 1, 2007, at J1.

39. *See* Jenna Carlesso, *Hartford Restaurants To Get Health Grades*, HARTFORD COURANT, Dec. 31, 2011, http://articles.courant.com/2011-12-31/business/hc-hartford-restaurant-scoring-1228-20111223_1_inspection-restaurants-food-storage-and-preparation.

40. *See* Gideon Gil, *New Rating System Set for Jefferson Restaurants*, COURIER-J. (Louisville, Ky.), Dec. 3, 2002, at B1.

41. *See Mississippi State Department of Health Announces New Restaurant Inspection Rating System*, GULF COAST NEWS (Miss.), Sept. 10, 2007, http://www.gulfcoastnews.com/gcnarchive/2007/gcnnewsnewrestaurantheathratings091007.htm.

42. *See* Yvonne Blackwood, *Laurels for Restaurant Inspection System*, TORONTO STAR, Jan. 11, 2001, at A27.

43. *See* Steve Barnes, *New Albany Restaurant-Inspection Grades: Excellent, Good, Fair*, TIMES UNION: TABLE HOPPING (Albany, N.Y.) (Jan. 12, 2012, 2:43 PM), http://blog.timesunion.com/tablehopping/28190/new-albany-restaurant-inspection-grades-excellent-good-fair.

County (OH),[44] Kern County (CA),[45] Maricopa County (AZ),[46] and San Bernadino County (CA)[47] have implemented grading. Around this time, grading was proposed in Florida,[48] New York State,[49] Washington, D.C.,[50] Albuquerque,[51] Chicago,[52] El Paso,[53] Kaufman (TX),[54] New Haven,[55] Pasadena,[56] Pittsburgh,[57] San Francisco,[58] Alameda County (CA),[59]

44. *See* Kaye Spector, *Grading System for Cuyahoga County Restaurants Under Discussion*, PLAIN DEALER (Cleveland, Ohio), Feb. 7, 2010, http://www.cleveland.com/healthfit/index.ssf/2010/02/grading_system_for_cuyahoga_co.html.

45. *See* James Burger, *County Restaurants To Get Health Grades*, BAKERSFIELD CALIFORNIAN, Oct. 18, 2006, http://www.bakersfieldcalifornian.com/local/x1393743116/County-restaurants-to-get-health-grades.

46. *See* Lauren Gilger, *Maricopa County's Restaurant Inspection Process Goes from Being Easy on Restaurants—to Being Even Easier*, PHX. NEW TIMES: CHOW BELLA (Oct. 17, 2011, 10:16 AM), http://blogs.phoenixnewtimes.com/bella/2011/10/maricopa_county_implements_vol.php.

47. *See* Imran Ghori, *County Eateries To Get Grades*, PRESS-ENTERPRISE, June 16, 2004, at B3.

48. *See* Miami-Dade Cnty. Bd. of Cnty. Comm'rs, Res. No. R-195-07 (Fla. 2007), http://www.miamidade.gov/govaction/legistarfiles/MinMatters/Y2007/070252min.pdf.

49. *See* Jeff Klein, Consumer Prot. Comm., *Restaurants That Are Enough To Make You Sick: An Analysis of Unsanitary Conditions at New York City and Westchester County Restaurants*, N.Y. ST. SENATE (Aug. 22, 2005), http://www.nysenate.gov/files/nyss-migrate/NYC-and-Westchester-County-Restaurants-Enough-to-make-You.pdf.

50. *See* Jamie R. Liu, *Mary Cheh Reintroduces Restaurant Hygiene Letter Grade Act*, DCIST (Jan. 19, 2011, 11:30 AM), http://dcist.com/2011/01/cheh_reconsiders_letter_grades_for.php.

51. *See* Dan McKay, *City Chews on Grades for Eateries*, ALBUQUERQUE J., Oct. 15, 2008, http://www.abqjournal.com/news/metro/15946252343newsmetro10-15-08.htm. As described below, Albuquerque was already using one form of grading, but the city proposed to replace it with letter grades.

52. *See* Carolyn Walkup, *Chicago Pols Propose Public Health-Inspection Grading System*, NATION'S RESTAURANT NEWS, Nov. 30, 1998, at 1.

53. *See* Robert Seltzer, *Proposed Eatery Rating System Could Be Easy To Stomach*, EL PASO TIMES, Mar. 11, 2003, at 1B.

54. *See* Michael Gresham, *Council Opts To Educate Not Regulate*, KAUFMAN HERALD, Feb. 26, 2009, http://www.kaufmanherald.com/news/article_7fc3db96-7b7b-543b-a841-228084767ee5.html.

55. *See* Paul Bass & Jacob Cohn, *What's That Report Card in the Window?*, NEW HAVEN INDEP., June 24, 2011, http://www.newhavenindependent.org/index.php/archives/entry/whats_that_report_card_in_the_window.

56. *See* Gary Scott, *Pasadena Council Rejects Letter Grades; Eateries To Post Health Violations*, PASADENA STAR-NEWS, Oct. 21, 2003, at A-1.

57. *See* Patricia Sabatini, *A-B-C Grading Stalled for Restaurants in Allegheny County*, PITTSBURGH POST-GAZETTE, Mar. 30, 2012, http://www.post-gazette.com/stories/sectionfront/life/a-b-c-grading-stalled-for-restaurants-in-allegheny-county-309340.

Ashland/Jackson County (OR),[60] Huron County (OH),[61] Kanawha County (WV),[62] Santa Clara County (CA),[63] and Ventura County (CA).[64] The Center for Science in the Public Interest advocates that "[s]tate and local governments should pass laws requiring the posting of inspection grade cards in the windows of all food establishments."[65]

Restaurant grading has its critics, however. New York City Council Speaker Christine Quinn called the City's grading system "inconsistent"[66] and "borderline harassment."[67] In March 2012, Speaker Quinn convened a raucous, six-hour oversight hearing and reported from a convenience sample that 66% of all restaurateurs (and 59% of restaurateurs who received 'A's) found the system "poor."[68] *Time* magazine called the system "arbitrary and imperious."[69]

58. *See* Suzanne Herel, *Restaurant Health Ratings Win Approval*, S.F. CHRON., May 12, 2004, http://www.sfgate.com/health/article/San-Francisco-Restaurant-health-ratings-win-2780216.php.

59. *See* Meeting Notice: Community Meeting for a Proposed Food Facility Grading System, ALAMEDA COUNTY HEALTH CARE SERVICES (Jan. 12, 2012), http://www.acgov.org/aceh/documents/GradingProjectNotice.pdf.

60. *See* Julie French, *Voters Reject Restaurant Grading System*, ASHLAND DAILY TIDINGS (Colo.), Nov. 6, 2008, http://www.dailytidings.com/apps/pbcs.dll/article?AID=/20081106/NEWS02/811060330.

61. *See* Cory Frolik, *Restaurant Grading Proposal Gets an "F,"* SANDUSKY REG. (Ohio), May 24, 2010, http://www.sanduskyregister.com/article/21802.

62. *See* Lori Kersey, *Carper Wants Restaurants' Health Reports 'Conspicuous,'* CHARLESTON GAZETTE, Jan. 2, 2012, http://wvgazette.com/news/201201020082.

63. *See* Michelle Guido, *Eatery Grading Stirs Debate*, SAN JOSE MERCURY NEWS, Sept. 19, 2000, at 1B.

64. *See* Ventura Cnty. Grand Jury 2008-2009, *Is Your Favorite Restaurant Clean?*, COUNTY OF VENTURA (June 23, 2009), http://portal.countyofventura.org/portal/page/portal/Grand_Jury/Reports/TAB4579372/13IsYourFavoriteRestaurantClean.pdf.

65. Sarah Klein & Caroline Smith DeWaal, *Dirty Dining: Have Reservations? You Will Now*, CENTER FOR SCI. IN THE PUB. INT. 35 (June 2008), http://www.cspinet.org/dirtydining/DirtyDiningReport.pdf.

66. Editorial, *Food for Thought*, N.Y. DAILY NEWS, Mar. 11, 2012, http://articles.nydailynews.com/2012-03-11/news/31144196_1_restaurant-grades-letter-grades-restaurant-inspection-process.

67. Michael Howard Saul, *Quinn Critical of Restaurant Grade System*, WALL ST. J., Dec. 17, 2011, http://online.wsj.com/article/SB10001424052970204553904577103023839163292.html; *Heard Around Town*, CITY & STATE, Mar. 7, 2012, http://www.cityandstateny.com/heard-town-march-7-2012.

68. Glenn Collins, *Restaurateurs Voice Anger over Health Inspections*, N.Y. TIMES: CITY ROOM (Mar. 7, 2012, 4:19 PM), http://cityroom.blogs.nytimes.com/2012/03/07/restaurateurs-voice-anger-over-health-inspections; *see* Marc Beja, *City Grilled over 'Inconsistencies' in Restaurant Grading System*, AM N.Y. (Mar. 7, 2012), http://www.amny.com/urbanite

The *Wall Street Journal* and *New York Times* documented suggestive evidence of gaming of the grading thresholds, which we use as a starting point of our analysis of New York below.[70]

Despite the pivotal role that grading commands in the debate over information disclosure (and the exhaustive review of the literature by Fung, Graham, and Weil), restaurant grading's merits turn out to rest on remarkably fragile empirical grounds. The only large-scale empirical study of grading examines Los Angeles around 1997.[71] To cure this empirical gap, this Article amasses large-scale microdata from over 700,000 restaurant inspections in ten other jurisdictions to evaluate the efficacy of restaurant grading.[72] For expositional simplicity, the analysis of our research team focuses on San Diego and New York, but the findings generalize to the other jurisdictions.[73] We show that the benefits of grading are vastly overstated, and costs vastly understated. The regulatory design, implementation, and practice in these jurisdictions are flawed at their core. As practiced, regulators fudge the nudge.

The findings, in brief, are fourfold. First, nearly every restaurant in San Diego receives an 'A,' limiting the meaningfulness of grades. Second, New

-1.812039/city-grilled-over-inconsistencies-in-restaurant-grading-system-1.3586988; Press Release, N.Y.C. Council, Majority of Restaurant Inspection Survey Participants Received A Grades and Still Rated the System Poorly (Mar. 7, 2012), http://council.nyc.gov/html/releases/pdfs/restaurantrelease.pdf (reporting results from a survey asking, among other questions, "how would you rate the letter grading system?"). The author of this Article testified as an independent expert at this hearing. *See Empirical Facts About Restaurant Grading*, *Hearing Before the N.Y.C. Council Comm. on Governmental Operations, Comm. on Health, Comm. on Oversight & Investigations, & Comm. on Small Bus.* (Mar. 7, 2012) (statement of Daniel E. Ho) (on file with author); *see also* Daniel E. Ho, Op-Ed., *Improve Restaurant Report Cards*, N.Y. TIMES, Mar. 7, 2012, http://www.nytimes.com/2012/03/07/opinion/the-restaurant-grade-system-is-broken.html.

69. Josh Ozersky, *Giving an F to New York's Restaurant Grading System*, TIME, July 20, 2010, http://www.time.com/time/nation/article/0,8599,2005191,00.html.

70. *See* Sumathi Reddy & Hilke Schellmann, *Many Eatery High Marks Are Close Call*, WALL ST. J., July 28, 2011, http://online.wsj.com/article/SB10001424053111904888304576472323664531488.html; Brian J. McCabe, *Grading New York Restaurants: What's in an 'A'?*, N.Y. TIMES: FIVETHIRTYEIGHT (Jan. 19, 2011, 8:33 PM), http://fivethirtyeight.blogs.nytimes.com/2011/01/19/grading-new-york-restaurants-whats-in-an-a ("Closer inspection of the underlying data reveals a suspicious distribution of restaurants near the cut-off point between an A and a B.").

71. *See* FUNG ET AL., *supra* note 12, at 78, 82-83, 193-94 (relying exclusively on studies of Los Angeles in assessing the efficacy of restaurant grading).

72. Five of the jurisdictions grade: San Diego, New York, North Carolina, South Carolina, and Louisville. Three of these jurisdictions score, but do not grade: El Paso, Austin, and Seattle. Two jurisdictions do not score or grade: Chicago and Florida. Nongrading jurisdictions provide a comparison group, which confirms the effects of grading. *See infra* Appendix D.

73. *See infra* Appendix D.

York grades vary widely, but, unlike San Diego's underlying numerical scores, New York scores exhibit little substantive consistency. A score (or grade) in one year predicts little about the restaurant's cleanliness down the road. Third, differing inspection criteria provide one compelling explanation for the difference in consistency between San Diego and New York. The relative *complexity* of New York's inspection criteria appears to impede uniform scoring across inspectors and restaurants. Fourth, grading in New York has had no discernible health benefits but may come at a large, previously unrecognized cost in administrative resources. Specifically, grading reallocates inspection resources away from restaurants that pose the greatest public health risk toward grade resolution at lower-risk restaurants.

These findings speak richly to longstanding puzzles in regulation and administrative law. How should policymakers best channel administrative discretion? How does the institutional design of inspection or disclosure regimes affect regulatory outcomes? How can we disclose information to enlist private actors to properly incentivize regulated industries? The concrete policy implications are considerable. Targeted transparency's emphasis on simplification shouldn't just apply to information *disclosure*, but also to information *collection*. What proponents of targeted transparency and grade reformers miss is that cognitive limitations impede not just users of information, but suppliers as well. At the same time, all raw microdata underlying the letter grades (i.e., the full inspection database) should be made available in machine-readable format. Combining simple retail disclosure (letter grades) with wholesale complex disclosure (microdata) empowers information intermediaries to develop better and more useful information summaries. More generally, the findings show that targeted transparency is extraordinarily sensitive to context and regulatory design. If targeted transparency teaches us to target information, this study shows that targeting can be achieved in myriad ways that undermine the effectiveness of disclosure.

The Article proceeds as follows. Part I examines the historical antecedents of current grading regimes and the extant evidence of grading's benefits. Contrary to the conventional perception of targeted transparency as a phenomenon of the last twenty years, restaurant grading was a common practice in the 1940s. Its demise was tied to deep skepticism in the public health field about the benefits of grading. Currently, the only systematic empirical evidence in support of restaurant grades comes from a study of Los Angeles around 1997. Part II articulates the empirical approach of this Article, namely to examine evidence from other jurisdictions. It shows why credible policy evaluation of the impact of restaurant grading is riddled with challenges. Examining major metropolitan areas, we show that institutional features of inspections and of grading vary dramatically across jurisdictions, providing

good reason to doubt that the benefits of grading in Los Angeles generalize to other jurisdictions.

Part III turns to the evidence in San Diego, which has been practicing restaurant grading since 1947. Part IV discusses the evidence in New York, which adopted grading in July 2010. Part V examines whether the complexity of inspection criteria may explain the divergence in consistency of scoring between San Diego and New York. Part VI finds no evidence of the intended health benefits, but documents that New York's implementation comes at a previously unrecognized cost of shifting inspection resources away from the highest-risk restaurants toward grade resolution. Part VII discusses policy implications.

I. THE LANDSCAPE OF GRADE REFORM

A. Historical Antecedents

In 1934, the National Recovery Administrator proposed a Code of Fair Competition for the Restaurant Industry.[74] Although the Code Authority, which had delegated the task of developing minimum sanitation standards to a committee,[75] would fall by the wayside,[76] the Public Health Service (PHS) and later the Food and Drug Administration (FDA) continued to develop a model food code, first proposing grading in 1940.[77] Drawing on letter grading for milk,[78] the model code proposed rating restaurants with letter grades for

74. Nat'l Recovery Admin., No. 282, Code of Fair Competition for the Restaurant Industry (Feb. 16, 1934).

75. *Id.* at 524.

76. *See* A.L.A. Schechter Poultry Corp. v. United States, 295 U.S. 495 (1935) (invalidating the National Industrial Recovery Act and the associated industrial codes).

77. U.S. PUB. HEALTH SERV., ORDINANCE AND CODE REGULATING EATING AND DRINKING ESTABLISHMENTS (1940) [hereinafter 1940 CODE]. Grading also appeared in the model food code in 1938, but this version was "tentative" because it had not been reviewed by the Sanitation Advisory Board. *See* U.S. PUB. HEALTH SERV., ORDINANCE AND CODE REGULATING EATING AND DRINKING ESTABLISHMENTS 2 (1938). These model codes are advisory and not codified by the federal government.

78. *See* RICHARD H. BOEHNKE, INTERNATIONAL SURVEY ON PUBLIC POSTING OF RESTAURANT INSPECTION REPORTS, AND/OR GRADE CARD POSTING SCHEMES BASED UPON HEALTH INSPECTIONS 4 (2000) ("A decade later, in 1934, the same United States Public Health Service introduced the first model food code. It was based directly upon the existing 1924 Milk Code complete with the milk bottle letter grade system.").

sanitation standards.[79] A restaurant was deemed grade 'A' if it complied with each of seventeen inspection items (ranging from standards for doors and windows to refrigeration of perishable food).[80] Grade 'B' restaurants complied with most items but violated one of five (evidently less egregious) specific items (i.e., floors, walls and ceilings, lighting, ventilation, miscellaneous).[81] Grade 'C' restaurants failed to meet either standard.[82] Modern ideas of targeted transparency were already apparent. The code required restaurants to display grades in a fashion readily visible to customers[83] (not unlike the National Recovery Administration's Blue Eagle[84]). As one PHS official described it, requiring "public display of a [sanitation] grade notice in all restaurants" would exert "competitive effect . . . to improve . . . sanitation."[85]

The idea proved popular. Large cities such as St. Louis,[86] Atlanta,[87] San Diego,[88] and Pittsburgh[89] instituted grading systems in the 1940s and 1950s.[90] By one estimate, roughly four hundred U.S. cities had grading systems in place in 1951.[91]

PHS and FDA revised the model food code over the decades.[92] In 1962, the

79. The model code included versions for "grading" and "non-grading" jurisdictions. *See* 1940 CODE, *supra* note 77, at 5 n.1.

80. *Id.* at 17-31.

81. *Id.* at 31-32.

82. *Id.* at 32.

83. *Id.* at 14-15.

84. *See* DAVID M. KENNEDY, FREEDOM FROM FEAR: THE AMERICAN PEOPLE IN DEPRESSION AND WAR, 1929-1945, at 183-84 (2001) (describing the Blue Eagle).

85. A.W. Fuchs, *The U.S. Public Health Service Restaurant Sanitation Program*, 32 AM. J. PUB. HEALTH 848, 850 (1942) (paraphrasing language from the model code).

86. *See* Maurice E. Trout, *Cleaning Up the Restaurants*, 38 NAT'L MUN. REV. 335, 335 (1949).

87. *See Council To Consider Restaurant Clean-Up*, ATLANTA CONST., Sept. 16, 1945, at 3A; *Grade "C" Eating Places Have 30 Days To Improve*, ATLANTA DAILY WORLD, Oct. 29, 1946, at 6.

88. *See* Brooke Williams & Agustín Armendariz, *A Recipe for Trouble: Coming Clean on Restaurant Grades*, SAN DIEGO UNION-TRIB., July 22, 2007, http://www.signonsandiego.com/uniontrib/20070722/news_lz1n22recipe.html.

89. *See Pittsburgh Forcing Cafes To Clean Up or Close Up*, L.A. TIMES, Mar. 6, 1951, at B8.

90. Washington, D.C. proposed grading in 1943. *See* Anne Hagner, *Bill Tightens Restaurant Sanitary Code*, WASH. POST, Sept. 15, 1943, at 10.

91. *See Pittsburgh Forcing Cafes To Clean Up or Close Up*, *supra* note 89, at B8.

92. *See* Food Service Sanitation: Proposed Uniform Requirements for State and Local Regulatory Agencies, 39 Fed. Reg. 35,438 (Oct. 1, 1974), *withdrawn by* Food Service Sanitation: Withdrawal of Proposal and Termination of Rule Making Proceeding, 42 Fed. Reg. 15,428 (Mar. 22, 1977); *see also* Clinton L. Rappole, *Sanitation in the Food Service*

model code continued with letter grading (and required posting of grade placards), but based the grades on the total number of "demerit" points issued for each violation.[93] In 1976, after a failed attempt to promulgate federal uniform sanitation standards,[94] the FDA abandoned restaurant grading altogether. In place of demerit points, the model code proposed a 100-point scoring system, with weighted points ranging from 1 to 5 assigned to forty-four violations.[95] A score below 60 required the restaurant to take corrective action within forty-eight hours, and failure to do so would potentially lead to a shutdown.[96] Although the model code required that the inspection report be available to the public on request,[97] it made no mention of publicly posting the score or any other inspection output.

A contemporaneous report by the General Accounting Office,[98] reviewing sanitation inspection systems, explained that "[p]ublicizing restaurant inspection results [was] surrounded by some controversy" among health officials.[99] FDA officials acknowledged the benefits of disclosure (empowering customers and incentivizing restaurateurs), but noted numerous criticisms of publicizing results, in particular the limited consumer understanding of inspection results and the fact that "[c]onditions found on inspection date may change greatly (degrade or improve) on later days," thereby "giv[ing] the customer a false sense of security."[100] By 1993, the FDA had abandoned numerical scoring entirely.[101] Currently, the FDA acknowledges that "scoring

Operation: The Implications of the Proposed Sanitation Ordinance, 18 CORNELL HOTEL & RESTAURANT ADMIN. Q. 31 (1977) (describing proposed modifications to the food code).

93. U.S. DEP'T OF HEALTH, EDUC., & WELFARE, PUB. HEALTH SERV., FOOD SERVICE SANITATION MANUAL 77 (1962) (proposing a model ordinance for the grading of food service establishments).

94. U.S. DEP'T OF HEALTH, EDUC., & WELFARE, PUB. HEALTH SERV., FOOD & DRUG ADMIN., FOOD SERVICE SANITATION MANUAL 74 (1976).

95. *See id*. at 88.

96. *Id*. at 75.

97. *Id*. at 74.

98. The name "General Accounting Office" was changed to the "Government Accountability Office" by the GAO Human Capital Reform Act of 2004, Pub. L. 108-271, § 8, 118 Stat. 811, 814 (codified as a note in 31 U.S.C. § 702 (2006)).

99. COMPTROLLER GEN. OF THE U.S., GEN. ACCOUNTING OFFICE, MWD-76-42, FEDERAL SUPPORT FOR RESTAURANT SANITATION FOUND LARGELY INEFFECTIVE 19 (1975).

100. *Id*. at 20.

101. *See* U.S. DEP'T OF HEALTH & HUMAN SERVS., PUB. HEALTH SERV., FOOD & DRUG ADMIN., FOOD CODE, ANNEX 4, at 38-41 (1993) (recommending comparison of establishments by the number of critical violations, but noting that "there is no defined point at which a score translates into a significant health hazard" and doing away with the prior 100-point score).

may provide a mechanism for consumers to make informed choices," but also points to "negative consequences" such as a restaurant receiving "a high numerical or letter score while exhibiting some very serious deficiencies."[102]

In sum, while scholars of targeted transparency may be right that such regulatory interventions are a phenomenon of the last twenty years,[103] the historical trend in sanitation inspections is, if anything, the reverse. In line with grading's demise in the food code, most local jurisdictions abandoned such systems over the course of the twentieth century.[104]

B. Public Health Doubts

The demise of the first generation of grading schemes reflects a deeper skepticism in the public health community. A crucial predicate for restaurant grading is that there are "consensus metrics"[105]: established methods to consistently measure attributes of direct interest. For instance, if standardized tests represent a consensus metric (i.e., measure attributes of direct interest), "teaching to the test" may not be problematic. As one administrative law casebook writes: "It is useful to provide information . . . about restaurant cleanliness, because most people agree on the relevance of those factors and how to measure them."[106]

A review of the public health literature, however, reveals that such consensus may be illusory: put simply, "a single indicator has not been developed that summarizes all the relevant factors into one measure of safety."[107] Several obstacles impede consensus. First, sanitation conditions can change rapidly. Even within a single day, an inspection during the lunch rush may yield sharply different results than in the late afternoon. "[T]he traditional inspection represents a snapshot of the facility operation, or about one hour of time from what may be an 18-hour day . . . ."[108] Moreover, restaurant patrons, staff, and management—and, in turn, sanitation conditions—fluctuate rapidly

102. U.S. PUB. HEALTH SERV., FOOD & DRUG ADMIN., FOOD CODE 569 (2009).

103. *See, e.g.*, FUNG ET AL., *supra* note 12, at 20 ("In the last twenty years, targeted transparency policies have played a prominent role . . . .").

104. *See* BOEHNKE, *supra* note 78, at 4; *Pittsburgh Forcing Cafes To Clean Up or Close Up*, *supra* note 89, at B8.

105. ADMINISTRATIVE LAW AND REGULATORY POLICY: PROBLEMS, TEXT, AND CASES 740 (Stephen G. Breyer et al. eds., 7th ed. 2011) (discussing FUNG ET AL., *supra* note 12).

106. *Id.*

107. Chris J. Wiant, *Scores, Grades, and Communicating About Food Safety*, 61 J. ENVTL. HEALTH 37, 38 (1999).

108. *Id.* at 37.

across days.[109]

Second, inspectors may use a seemingly objective scoring rubric in drastically divergent ways. As two environmental health scholars put it: "[I]f two professionals evaluate the same restaurant at the same time . . . are their grades the same? . . . If *one* professional inspects the same restaurant at different times . . . will the grades be the same?"[110] Assessing the existence and severity of violations, such as an "improperly constructed" surface,[111] "inadequate" "personal cleanliness,"[112] or food not in "good condition,"[113] necessarily requires inspector discretion and is thereby subject to variability in implementation across inspectors. As another health official notes, "many departments have extensive checklists [but] it is the norm for every single person to do an inspection differently."[114] One study of Tennessee from 1993 to 2000 documented that mean scores (out of a scale of 100) for 190 inspectors who each performed at least 100 inspections ranged from 69 to 92.[115] Inspector heterogeneity leads "restaurant inspections [to be] inherently inconsistent."[116]

Third, consumers may misunderstand the import of a disclosed grade (or score). A random phone survey of two thousand Tennessee adults, for example, documented highly unrealistic expectations of the inspection system. Over 50% of respondents believed health inspections should be performed at least twelve times per year; Tennessee in fact conducted two. Forty-five percent of respondents indicated that the minimum acceptable score to eat at a restaurant would be 90; the mean score in fact was 82.[117] In addition,

109. *Cf.* BOEHNKE, *supra* note 78, at 25 ("Given the extremely high turnover rate in the restaurant industry both in staff and in operators, a stated grade value posted at a restaurant at the time of the patrons' visits is much more likely to be dated history than currently accurate.").

110. Owen H. Seiver & Thomas H. Hatfield, *Grading Systems for Retail Food Facilities: A Risk-Based Analysis*, 63 J. ENVTL. HEALTH 22, 24 (2000).

111. Bureau of Food Safety & Cmty. Sanitation, *Self-Inspection Worksheet for Food Service Establishments*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 2 (Dec. 2010), http://www.nyc.gov/html/doh/downloads/pdf/rii/self-inspection-worksheet.pdf (Violation 5C).

112. *Id.* at 2 (Violation 6A).

113. Food & Hous. Div., *Retail Food Facility Operator's Guide*, COUNTY OF SAN DIEGO DEP'T OF ENVTL. HEALTH 6 (2007), http://www.sdcounty.ca.gov/deh/food/pdf/publications_opguide.pdf [hereinafter *Retail Food Facility Operator's Guide*] (Violation 13).

114. THOMAS PEACOCK, IS IT SAFE TO EAT OUT? HOW OUR LOCAL HEALTH OFFICIALS INSPECT RESTAURANTS TO ASSURE FOOD SAFETY . . . OR DO THEY? 59 (2002).

115. Timothy F. Jones et al., *Restaurant Inspection Scores and Foodborne Disease*, 10 EMERGING INFECTIOUS DISEASES 688, 688 (2004).

116. Seiver & Hatfield, *supra* note 110, at 25.

117. Timothy F. Jones & Karen Grimm, *Public Knowledge and Attitudes Regarding Public Health Inspections of Restaurants*, 34 AM. J. PREVENTIVE MED. 510, 511-12 (2008).

consumers exhibit inconsistent risk perceptions of grades and scores, subject to considerable framing effects: "A single grade fails to deliver a consistent message regardless of the underlying purpose."[118]

A survey of college students and food safety professionals showed that while grade signs affected willingness to eat at an establishment, there was no consensus on the meaning of a grade or score. Most tellingly, a sample of seventy-two food safety professionals was asked to interpret a 'C' grade. Forty percent said the restaurant was "average," 32% said that the restaurant had problems, and the rest were unclear about the meaning.[119] Only 22% of students would be willing to eat at a 'C'-graded restaurant (one student thought 'C' stood for "compliant"), compared to 65% of food safety professionals.[120] To better understand inspection scores, one *New York Times* food reporter invited a health inspector to score his home kitchen. A New York restaurant receives an 'A' if it scores below 14 (violation) points. The score for the reporter's kitchen was 77.[121] Not only would a score of 77 knock the kitchen out of the 'A' range, but it would also put it at serious risk for an immediate shutdown. Most home kitchens would arguably fare poorly. Violations such as washing hands in a sink where dishes are done or failing to label food in Tupperware containers are not necessarily what consumers perceive as salient health risks.

Fourth, grading is in some tension with evolving conceptions of food safety. Since 1993, the FDA has advocated so-called Hazard Analysis and Critical Control Points (HACCP) principles.[122] The chief idea of HACCP is to shift inspections away from "floor-walls-ceilings" approaches (where violations at endpoints are counted) toward a focus on preventing structural risk factors in the process of food preparation.[123] Restaurateurs should focus on critical

118. Thomas H. Hatfield & Owen H. Seiver, *Preference Reversals in Grading Systems for Retail Food Facilities*, 63 J. ENVTL. HEALTH 19, 23 (2001).

119. Lauren Dundes & Sushama Rajapaksa, *Scores and Grades: A Sampling of How College Students and Food Safety Professionals Interpret Restaurant Inspection Results*, 64 J. ENVTL. HEALTH 14, 15-16 (2001).

120. *Id*. at 16.

121. Henry Alford, *Would the City Shut Down Your Kitchen?*, N.Y. TIMES, Sept. 28, 2010, http://www.nytimes.com/2010/09/29/dining/29inspector.html.

122. U.S. DEP'T OF HEALTH & HUMAN SERVS., PUB. HEALTH SERV., FOOD & DRUG ADMIN., FOOD CODE, INTRO. (1993) ("[T]he new Code incorporates a framework for the application of Hazard Analysis Critical Control Point (HACCP) principles at retail . . . .").

123. BOEHNKE, *supra* note 78, at 24; *see* FOOD RES. INST., FOOD SAFETY 1994, at 470 (1994); Ctr. for Food Safety & Applied Nutrition, *Managing Food Safety: A Regulator's Manual for Applying HACCP Principles to Risk-Based Retail and Food Service Inspections and Evaluating Voluntary Food Safety Management Systems*, U.S. DEP'T OF HEALTH & HUM. SERVICES, FOOD &

points of the food preparation process, when food may be contaminated or adulterated—e.g., delivery, preparation, and serving.[124] Because more of the onus is on restaurants to establish documentary records of the flow of food, some argue that a more educational approach to inspections is required. "[T]he application of HACCP principles," in that sense, "is not conducive to simple grading schemes,"[125] which penalize violations without necessarily addressing the processes that lead to those violations. Grading can also erode the ability of inspectors to educate by setting up an antagonistic relationship with restaurateurs.[126]

The result of these obstacles, as we show in Section II.B, is that although virtually all jurisdictions follow the FDA's model food code, there is little uniformity in the way violations are assessed. Nine of twenty top metropolitan areas do not use any formal numerical score at all. And in the jurisdictions that do use numerical scoring, violations receive drastically different weights. Numerous health practitioners have proposed alternative scoring and weighting techniques, arguing that extant techniques are deficient.[127] One study synthesizing "best practices," based on a survey of forty-seven state and local inspection systems, never mentioned scoring or grading as relevant practices.[128]

Perhaps the most compelling synthesis of these critiques comes from Richard Boehnke, who surveyed forty-five state health agency senior officials

DRUG ADMIN. 1-2 (Apr. 2006), http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Regulators/UCM078159.pdf.

124. *See* Ctr. for Food Safety & Applied Nutrition, *supra* note 123, at 1-2.

125. BOEHNKE, *supra* note 78, at 24; *see also* LORA ARDUSER & DOUGLAS ROBERT BROWN, HACCP & SANITATION IN RESTAURANTS AND FOOD SERVICE OPERATIONS: A PRACTICAL GUIDE BASED ON THE FDA FOOD CODE 155 (2005) ("Traditional inspection is relatively resource-intensive and inefficient and is reactive rather than preventive compared to the HACCP approach . . . .").

126. *See* Paul Frumkin, *Health Departments Becoming Educators*, NATION'S RESTAURANT NEWS, May 6, 2007, http://nrn.com/article/health-departments-becoming-educators ("In New York, a sense of 'us versus them' seems to pervade much of the restaurant community . . . .").

127. *See, e.g.*, Brian Emanuel, *Grading a Food Establishment*, 58 J. ENVTL. HEALTH 20 (1995) (proposing a new scoring system); David Z. McSwane et al., *In Search of the Ingredients of a Successful Retail Food Compliance Program*, 50 J. ENVTL. HEALTH 341, 344 (1988) (discussing criticisms by sanitation officers of 1976 food code scoring); Robert K. Stevenson, *A Food Service Establishment Evaluation Program Procedure for the 1980's and 1990's*, 50 J. ENVTL. HEALTH 25 (1987) (proposing scoring based on hazard potential).

128. *See* McSwane et al., *supra* note 127. *But see* Kathleen Irwin et al., *Results of Routine Restaurant Inspections Can Predict Outbreaks of Foodborne Illness: The Seattle-King County Experience*, 79 AM. J. PUB. HEALTH 586 (1989) (using case-control matching with a sample of eighty-four restaurants to show that poorer inspection scores were associated with a foodborne illness outbreak).

across the United States.[129] Health officials pointed to each of the criticisms above, concluding that "consistent inspection standards are never achieved."[130] In addition, officials noted two more nuanced points. Restaurants may take measures solely to achieve a high grade, which may not in fact reduce the risk of foodborne illness.[131] Conversely, officials noted the presence of "political pressure . . . inevitabl[y] to raise grades" and that "all grades go toward 'A' through pressure on inspectors."[132] Pressure can be quite direct. In 1988, twenty-eight of seventy New York inspectors were charged with extortion,[133] and in Los Angeles, one inspector was caught on camera saying, "It's going to cost $200 to get an 'A.'"[134]

In light of these critiques, many have called for studying the efficacy of disclosure systems.[135] Yet as of 2000, only one jurisdiction (Florida) reported ever having evaluated any form of grading.[136]

C. Los Angeles Faith

So where does the enthusiasm for grading come from? The only credible, systematic, empirical evidence for the benefits of grading comes from one set of studies focusing on the implementation of sanitation grading in Los Angeles in January 1998.[137] Prior to January 1998, Los Angeles scored restaurants numerically based on the (weighted) number of violations, with a score of 100 indicating no violations and a score of 0 indicating full noncompliance. In December 1997, the county proposed that these numerical scores be summarized and posted as letter grades. Scores of 90-100 would turn to 'A's;

129. *See* BOEHNKE, *supra* note 78, at 2.

130. *Id*. at 11.

131. *Id*. at 26.

132. *Id*. at 12.

133. *See* Howard Kurtz, *28 New York City Restaurant Inspectors Accused of Extortion*, WASH. POST, Mar. 25, 1988, at A3.

134. *Health Inspection Bribe Report Prompts Hotline*, L.A. TIMES, Nov. 11, 1998, http://articles.latimes.com/1998/nov/11/local/me-41653.

135. *See* Katie Filion & Douglas A. Powell, *The Use of Restaurant Inspection Disclosure Systems as a Means of Communicating Food Safety Information*, 20 J. FOODSERVICE 287 (2009); Seiver & Hatfield, *supra* note 110; Wiant, *supra* note 107.

136. *See* BOEHNKE, *supra* note 78, at i.

137. Studies of other inspection systems exist, but these are not focused on the impact of grading per se. *See, e.g.*, Sylvanus Thompson, Ron de Burger & Olayemi Kadri, *The Toronto Food Inspection and Disclosure System: A Case Study*, 107 BRIT. FOOD J. 140 (2005) (assessing Toronto's food inspection system).

80-89 to 'B's; and 70-79 to 'C's. Scores below 70 would be posted without a letter grade. While Ginger Jin and Phillip Leslie published several leading papers based on Los Angeles, the core findings—cited widely by proponents of grading[138]—are from an article in the *Quarterly Journal of Economics*.[139]

The article examined data from 1996 to 1998, encompassing (1) restaurant inspections in Los Angeles County, (2) quarterly sales-tax data for 57% of these restaurants, and (3) admissions to hospitals for food-related and non-food-related digestive disorders for three-digit ZIP codes.[140] Assuming that the adoption of grading (by the county and individual cities[141]) was exogenous, the article examined several effects of grading. First, mandatory grading increased numerical inspection scores by 4.4 points.[142] Roughly 23% of the variation in scores appeared to be explained by restaurant-specific attributes,[143] suggesting that the score in one year reveals meaningful information about the restaurant's future cleanliness. The "effects on hygiene from the grade cards [we]re realized fairly rapidly,"[144] within one year of the introduction of grade cards.

Second, mandatory posting caused statistically significant changes in revenue of: (1) a 5.7% increase for 'A'-grade restaurants, (2) a 0.7% increase for

138. *See, e.g.*, FUNG ET AL., *supra* note 12, at 194 (discussing studies by Jin and Leslie and noting that these "found significant decreases in food-borne-illness hospitalizations"); Bd. of Health, *Notice of Adoption of Amendments to Article 81 of the New York City Health Code*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE (2010), http://www.nyc.gov/html/doh/downloads/pdf/notice/2010/Article-81.pdf (noting a "20% decline in hospitalizations for food-borne illnesses" to justify the adoption of restaurant grading in New York); Klein & DeWaal, *supra* note 65, at 32 (advocating that all jurisdictions adopt restaurant grading and noting that "the grading system has contributed to a 20 percent *decrease* in foodborne-illness-related-hospitalization" in Los Angeles).

139. *See* Jin & Leslie, *supra* note 34; *see also* Ginger Zhe Jin & Phillip Leslie, *Reputational Incentives for Restaurant Hygiene*, 1 AM. ECON. J.: MICROECON. 237 (2009) (examining Los Angeles evidence in support of restaurant grading); Paul A. Simon et al., *Impact of Restaurant Hygiene Grade Cards on Foodborne-Disease Hospitalizations in Los Angeles County*, 67 J. ENVTL. HEALTH 32 (2005) (same); Ginger Zhe Jin & Phillip Leslie, *The Case in Support of Restaurant Hygiene Grade Cards*, CHOICES, 2d Quarter 2005, at 97 (same).

140. Three-digit ZIP codes are simply the first three digits of conventional ZIP codes, and are thus more highly aggregated.

141. *See* Josh Meyer, *Loophole Hampers Restaurant Crackdown*, L.A. TIMES, Feb. 4, 1998, http://articles.latimes.com/1998/feb/04/local/me-15324.

142. *See* Jin & Leslie, *supra* note 34, at 424-25 & tbl.3.

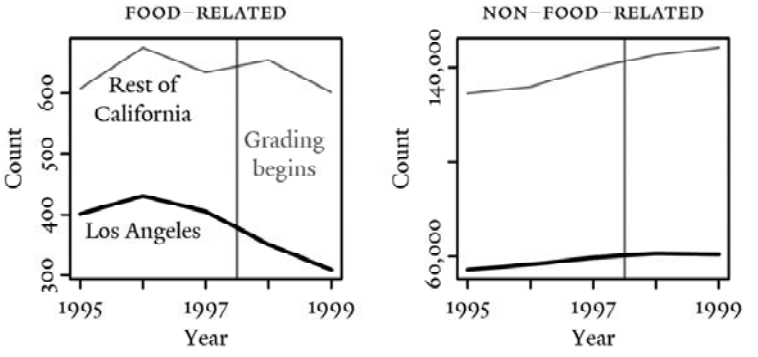
143. *Id.* at 424 & tbl.3 (reporting an R^2 of 0.5874 with restaurant fixed effects and an R^2 of 0.3574 without fixed effects in a panel regression of sanitation scores). R^2 "measures the proportion of the total variation [in a variable] that is explained by the fitted [regression] line." GEORGE CASELLA & ROGER L. BERGER, STATISTICAL INFERENCE 524 (1990).

144. Jin & Leslie, *supra* note 34, at 426.

'B'-grade restaurants, and (3) a 1% decrease for 'C'-grade restaurants.[145] Third, the study found some evidence that grading affected inspector discretion, particularly a spike of the use of the score 90, the cutoff for an 'A'.[146] Fourth, comparing hospitalization rates from 1995 to 1999 for food-related (and non-food-related) illnesses between Los Angeles County and the rest of California, the study found that mandatory posting "cause[d] a highly statistically significant 20 percent decrease in hospitalizations."[147] Although the study performed a sophisticated decomposition of the health effect, the intuition of the effect, as the article discusses, can be seen in Figure 1 (adapted from Table V by Jin and Leslie's study).

Figure 1.

INTUITION OF LOS ANGELES GRADING EFFECT ON HOSPITALIZATIONS



Hospital admissions for food-related digestive disorders on the left panel and for non-food-related digestive disorders on the right panel for Los Angeles County (in black) and the rest of California (in gray). These data are adapted from Table V of Jin and Leslie's study and illustrate the gist of the panel design. Food-related hospitalizations drop slightly more sharply in Los Angeles than in the rest of California, while non-food-related hospitalizations increase more sharply in the rest of California.

The left panel plots the number of hospital admissions for food-related illnesses (on the *y*-axis) against years (on the *x*-axis). Los Angeles County is

145. *Id.* at 429 & tbl.4.

146. *Id.* at 433-34.

147. *Id.* at 439-40.

plotted in black, and the rest of California is plotted in gray. In 1997, for example, 405 persons were admitted for food-related illnesses in Los Angeles, compared to 654 in the rest of California. The vertical gray line indicates the beginning of restaurant grading. The right panel similarly plots non-food-related hospitalizations for digestive disorder. Hospitalizations for food-related illnesses dropped in Los Angeles, from 405 cases in 1997 to 351 cases in 1998, which is not the case for the rest of California (nor did non-food-related cases exhibit such sharp shifts). As Jin and Leslie state, "This is basic and compelling evidence in favor of hygiene grade cards causing an improvement in actual health outcomes."[148]

The Jin and Leslie study is admirable. It compiles rich microdata from multiple sources, examines specific mechanisms by which disclosure affects restaurants, and applies modern econometric (panel) approaches to study the effect of grading. There are, however, reasons to question the findings on foodborne illness. The number of food-related hospitalizations is very small (certainly relative to the population incidence of food poisoning) and likely subject to sharp movements in such a short time frame (e.g., the sharp *increase* in 1996 for California). Los Angeles's drop in food-related illnesses possibly began before the imposition of grading. As one *Journal of Economic Literature* review points out, "national trends indicated a reduction in foodborne illnesses (and hospitalizations) during the same period that the grade cards were introduced in Los Angeles County."[149] Los Angeles and the rest of California diverge in non-food-related illnesses, suggesting that the rest of California (or non-food-related illnesses) may not be a good comparison group.[150]

148. *Id.* at 438.

149. Clifford Winston, *The Efficacy of Information Policy: A Review of Archon Fung, Mary Graham, and David Weil's* Full Disclosure: The Perils and Promise of Transparency, 46 J. ECON. LITERATURE 704, 709 (2008). Winston also points to attention paid to the *E. coli* outbreak and the 1998 adoption by the USDA of HACCP testing. *See id.* at 709-11.

150. The credibility of a "difference-in-differences" design hinges on the comparability of a long preintervention time series. The Jin and Leslie linear least squares regression model explains the outcome of the number of hospital admissions for digestive disorders in one of fifty-seven three-digit ZIP codes for a month (logged) with (1) fixed effects for each ZIP code and indicator for whether the illness is food-related/non-food-related, (2) fixed effects for months, (3) the proportion of a ZIP code subject to mandatory grade posting (proportion mandatory), (4) the proportion of the ZIP code subject to voluntary grade posting (i.e., when a city council has not made posting mandatory) (proportion voluntary), (5) an interaction effect between an indicator for whether the illness is food-related (food-related indicator) and the proportion mandatory, and (6) an interaction effect between the food-related indicator and the proportion voluntary. The joint effects of the coefficients for (2) and (4) provide the net effect estimate of a 20% reduction in food-related hospitalizations due to mandatory posting. *See* Jin & Leslie, *supra* note 34, at 438-40 & tbl.6.

While understanding such threats to validity is important (and could be the subject of an important replication study), we do not focus on these for the remainder of this Article. Instead, this Article shows that the evidence in other jurisdictions—which have never been studied before—should give pause to the unfettered enthusiasm for restaurant grading, and that targeted transparency should focus to a much greater extent on institutional design.

II. EMPIRICALLY ASSESSING GRADING

A. The Confounding Nature of Grade Reform

To assess the causal effect of grade reform, the ideal experiment would randomize a large number of jurisdictions (or restaurants) to be subject to sanitation grading. Randomization would ensure that jurisdictions (or restaurants) subject to grading are comparable to those that are not.[151] When researchers cannot control the intervention, observational studies aim to replicate that hypothetical experimental template by finding units that are similar in all respects except for restaurant grading. Herein lies the basic challenge for policy evaluation. Restaurant grading is essentially never *randomly* adopted. To the contrary, as with much regulatory reform, the intervention is, first, often a political response to a perceived crisis, and second, rarely proposed in isolation.[152] The former means that any purported benefit may be due solely to regression to the mean alone. Pasco County, Florida, for example, instituted a grading system in the 1990s after a severe outbreak of foodborne illness.[153] A reduction in foodborne illness after the imposition of grading may simply reflect a return to the pre-outbreak risk. The latter (that grading is usually part of a reform package) means that isolating the causal effect of grading becomes extraordinarily difficult.

In Los Angeles, for example, grade reform was a response to a series of

151. Of course, any single randomization might still result in groups that are distinct, but randomization over a large sample of jurisdictions guarantees that the chances of such imbalances are vanishingly small.

152. *Cf.* Daniel E. Ho & Donald B. Rubin, *Credible Causal Inference for Empirical Legal Studies*, 7 ANN. REV. L. & SOC. SCI. 17 (2011) (discussing principles for causal inference); John J. Donohue III & Daniel E. Ho, Does Fighting Terrorism Increase Ordinary Crime? A Reexamination and Cautionary Tale (June 1, 2011) (unpublished manuscript) (on file with author) (illustrating the difficulty of drawing inferences about the effect of increased policing when it was part of a comprehensive response to a terrorist attack).

153. *See* BOEHNKE, *supra* note 78, at 45; Bruce Vilmetti, *Restaurant Ratings To Start; Health Officials Rush To Post Grade Stickers*, ST. PETERSBURG TIMES, Sept. 27, 1987, at 1.

television exposés of sensationally poor sanitation in several restaurants in November 1997.[154] Although one might argue that this timing is random, a languishing health-inspection system may have facilitated the exposé. Even if the impetus was random, the response was comprehensive. In the months following the exposé, the county Heath Services Department closed restaurants at three times the previous rate in a county-wide crackdown.[155] On December 9, the Board of Supervisors voted on an array of reforms.[156] (In a further complication, each incorporated city in the county still had to individually adopt the posting requirement for grades.) Almost simultaneously, the state adopted new requirements for food temperatures.[157]

The Los Angeles experience shows that multiple, simultaneous policy changes can confound inferences about grading. First, one typical crisis response is to increase the *number* of health inspectors. Los Angeles immediately hired twenty new inspectors, for example, to implement a "zero tolerance" policy.[158] Grade reform, relatedly, is often also accompanied by a change in the *frequency* of inspections. Los Angeles appeared to increase the frequency of inspections, but, perplexingly, restaurants can also pay for an immediate reinspection upon an undesirable grade.[159] Second, the reform might also incentivize inspectors to engage in tougher inspections. In Los Angeles, the Department flexed its muscles by shutting down more restaurants, rotating inspectors across the county to prevent any familiarization with regulated parties, and establishing a public hotline to register complaints.[160] Third, the nature of the disclosure may vary, from posting the

154. *Behind the Kitchen Door* (KCBS television broadcast Nov. 16-18, 1997).

155. *See* Hector Tobar & Jeff Leeds, *Restaurants Get a Taste of Tough County Health Policy*, L.A. TIMES, Jan. 29, 1998, http://articles.latimes.com/1998/jan/29/news/mn-13177.

156. *See County To Tighten Rules for Restaurants*, L.A. TIMES, Dec. 10, 1997, http://articles.latimes.com/1997/dec/10/local/me-62632.

157. *See* Lauren Beth Rudolph Food Safety Act of 1997 (codified at CAL. HEALTH & SAFETY CODE § 114004 (West 2012)).

158. Tobar & Leeds, *supra* note 155; *see* Meyer, *supra* note 141.

159. An owner-initiated inspection is available once every twelve-month period to food-facility owners who want the opportunity to improve their numerical score, letter grade, or both. *See* L.A. COUNTY, CAL., CODE § 8.04.339 (2012); *see also* Bob Pool, *Work Boils Over for Restaurant Inspectors*, L.A. TIMES, July 19, 1999, http://articles.latimes.com/1999/jul/19/local/me-57458 ("But restaurant operators unhappy with a bad grade can do a fast cleanup and pay a $161 fee to apply for a quick reinspection."). The reinspection fee depends on the assessed risk level of the restaurant. L.A. COUNTY, CAL., CODE § 8.04.728(F) (2012).

160. *See* Jonathan E. Fielding et al., *Making the Grade: Changing the Incentives in Retail Food Establishment Inspection*, 17 AM. J. PREVENTIVE MED. 243, 244 (1999) (describing changes with the Los Angeles grading system).

grade, the score, an inspection summary, or some combination thereof. Fourth, jurisdictions may also simultaneously change the underlying scoring metric, such as California's changes in temperature controls. Fifth, jurisdictions also often increase licensing requirements. In this case, Los Angeles required that managers be certified in food handling.[161] Last, the crisis itself may change behavior with respect to food safety, both by consumers and restaurateurs. Any health improvement, for example, could be due to the TV exposé.

In short, grade reform is often confounded with several other policy interventions. For a given jurisdiction, we might more credibly assess the joint effect of the entire reform package, rather than the isolated effect of grading. Jointly assessing the reform, however, also makes it more difficult to assess how different reform packages in other jurisdictions will fare.

B. Jurisdictional Variation

Despite a federal model food code (or perhaps because of its advisory nature), local jurisdictions in fact administer health inspections in divergent ways. Table 1 reports results from a survey of twenty large metropolitan areas in the United States. (Appendix E lists statutes, regulations, compliance manuals, news reports, and phone interviews used to compile the information in Table 1 and Table 2.)

Table 1 reveals several findings. Inspectors do not necessarily specialize in restaurant inspections. In Los Angeles, some 240 inspectors are jointly responsible for housing, pool, and restaurant inspections, such that the full-time equivalent employees performing restaurant inspections is roughly 106.[162] Whether and how a point system is used varies considerably. Nine jurisdictions do not use any formal numerical point system. In seven of the twenty jurisdictions, restaurants must publicly post a grade or some other indicator. Last, the availability of online data on individual inspections varies considerably. In New York, one can view the specific violations cited for each inspection, along with the score and any action taken by the restaurant following the inspection (e.g., issuance of a notice of violation). In Baltimore, on the other hand, consumers can only view a list of restaurants that have been shut down by the health department.

161. *See* Jill Leovy, *Tougher Restaurant Health Codes Urged*, L.A. TIMES, Feb. 12, 1998, http://articles.latimes.com/1998/feb/12/local/me-18325.

162. For the more precise calculation of "full-time equivalent" employees, see the caption of Table 1, *infra*.

Table 1.

FOOD INSPECTION SYSTEMS IN MAJOR METROPOLITAN AREAS

	REGULATORY JURISDICTION				INSPECTORS								INFORMATION ONLINE				
METROPOLITAN AREA	CITY	COUNTY	STATE	ESTABLISHMENTS	FTE ESTIMATES	INDIVIDUALS	MIN. INSPECTIONS	PUBLIC GRADING	PUBLIC POSTING	POINT SYSTEM	TOTAL POINTS	FOLLOW-UP THRESHOLD	ALL INSPECTIONS	ALL VIOLATIONS	RESULTS/SCORE	ACTION TAKEN	DATASET
NEW YORK	✔			24,000	140	180	1	✔	✔	✔	-1,286	≥14	✔	✔	✔	✔	✔
LOS ANGELES	✔	✔		22,652	106	240	1	✔	✔	✔	+100		✔	✔	✔		
PHOENIX		✔		19,000	70	89	2						✔	✔	✔		
CHICAGO	✔			15,500	26	35	½		✔				✔	✔	✔		✔
PHILADELPHIA	✔			13,609	21-27	26-32	1						✔	✔	✔		
HOUSTON	✔			12,500	28-31	37	1		✔				✔	✔	✔		
SAN DIEGO		✔		12,000	37-40	51	2	✔	✔	✔	+100	<90	✔		✔		
SEATTLE		✔		10,500	32	37	1			✔	-428	≥35	✔	✔	✔		✔
SAN FRANCISCO		✔		7,000	21	24	1		✔	✔	+100		✔	✔	✔		
MIAMI/DADE			✔	5,600	20	26	3						✔	✔		✔	✔
BALTIMORE	✔			5,456	14		½									✔	
WASHINGTON, D.C.	✔			5,000	11	17	2						✔	✔			
EL PASO	✔			5,000	18		1			✔	+100	<80	✔		✔		✔
AUSTIN		✔		5,000	20	25	2			✔	+100	<70			✔		
BOSTON	✔			4,747	16-17	17-18	1						✔	✔		✔	
ATLANTA		✔		4,700	13	14	1	✔	✔	✔	+100	<80	✔	✔	✔		
LOUISVILLE		✔		3,500	13	14	2	✔	✔	✔	+100	<85	✔		✔		✔
MILWAUKEE	✔			3,400	8-14	16-17	1						✔	✔			
CHARLOTTE		✔		3,400	18	33	1	✔	✔	✔	+102		✔	✔	✔		
ST. LOUIS	✔			2,300	10		1	✔	✔	✔	+100	<85	✔	✔	✔	✔	

> "Regulatory jurisdiction" indicates at which level of governmental authority sanitation inspections of food service establishments (FSEs) are conducted. In Los Angeles, both county and city authorities retain authority. In both San Francisco and Louisville, the city and county are a unified jurisdiction. "Establishments" indicates the number of FSEs inspected, and may include, depending on local law, not only conventional restaurants, but also school cafeterias, delis, and grocery stores that serve ready-to-eat food. The "inspector" columns list (a) the estimated full-time equivalent (FTE) of employees devoted to FSE inspections; and (b) the estimated number of individuals with direct responsibility for conducting on-site sanitation inspections. For example, in New York City, although there are 180 inspectors, roughly 78% of inspections are devoted to FSE inspections, making for 140 FTEs. We report both numbers when inspectors do not appear to specialize exclusively in food inspections. "Min. inspections" indicates the minimum number of inspections that the jurisdiction aims or is required to perform per year, either for all FSEs or the lowest risk FSE when a jurisdiction bases inspection frequency on risk levels. "Public grading" and "public posting" indicate whether local law requires that (a) a letter (or equivalent) summary; or (b) any summary of an inspection be publicly posted for all FSEs in the adopting jurisdiction. For example, in Los Angeles County, all FSEs in a city adopting grading are required to post letter grades. In San Francisco, because only FSEs with certain inspection histories are required to post a "Symbol of Excellence," it is not classified as a grading jurisdiction. The "point system" column indicates whether a numerical point system is used to score inspections. "Total points" indicate the maximum score, where a (-) sign indicates that the score counts violations (e.g., in New York) and a (+) sign indicates that the score represents the degree of compliance (e.g., in San Diego). The "follow-up threshold" is the number of points that trigger a follow-up inspection. Cells are gray where not applicable. The columns for "information online" indicate whether (a) all inspections (e.g., routine and follow-up); (b) individual violations; (c) scores; (d) actions taken by the health authority in response to the inspection (e.g., shutdown); or (e) readily downloadable microdata are available online. These figures are estimates based on sources listed in Appendix E.

The variation becomes even more apparent when examining the design of grading systems. Table 2 reports differences in design elements of seventeen grading jurisdictions.[163] While we observe several first-generation graders (e.g., North Carolina, San Diego, and St. Louis), most current grading systems were adopted starting in the late 1990s. (In that sense, proponents of targeted transparency are correct that such policy efforts emerged in the last twenty years.) Maricopa County, Arizona, instituted grading in 2011, apparently disregarding its opinion in 2001 that "[t]he grade card does not give the public the complete history of the establishment, but a possible false sense of security."[164]

163. These seventeen jurisdictions are not an exhaustive list of grading jurisdictions, but simply provide a sense of the range of grading practices.

164. *Submission for 2001 Samuel J. Crumbine Consumer Protection Award*, MARICOPA COUNTY ENVTL. SERVICES DEP'T 21 (2001), http://www.fpi.org/images/2001%20maricopa_application.pdf.

Table 2.

RESTAURANT GRADING REGIMES

JURISDICTION	ENACTMENT	TOTAL POINTS	CRIT. POINTS (C)	GEN. POINTS (G)	POSTED SIGN (WITH SIGN COLOR – ONLINE VERSION ONLY) CRITERIA BASED ON POINTS & VIOLATIONS (C AND G ARE THE NUMBER OF CRITICAL OR GENERAL VIOLATIONS)				SCORE POST.	REINSPECTION EXISTS	REINSPECTION TRIGGER	REINSPECTION DAYS	REINSPECTION FEE	MIN. INSP.
NORTH CAROLINA	1941	+102	58 (1-4)	42 (0.5-3)	A 90-102	B 80-89	C 70-79	Closure <70	✔	✔	Req.	15	0	1
SAN DIEGO COUNTY (CA)	1947	+100	64 (2-4)	36 (1-2)	A 90-100	B 80-89	C <79			✔	<90	30	142/ hr	2
ST. LOUIS	1947	+100	57 (4-5)		A 85-100 c=0-2	B 70-84 c≥3 'A' but crit. uncorr.	C <69 70-84 reinspec. 'B' but crit. uncorr.			✔	<85	1-10	50	1
SOUTHERN NEVADA (LAS VEGAS)	1960s	-100	89 (3-5)	11 (1)	A 0-10	B 11-20	C 21-40	Closure >40		✔	>10	15	477	1
SOUTH CAROLINA	1967	+100	57 (4-5)	43 (1-2)	A 88-100	B 78-87	C 70-77	Closure <70		✔	Req.	10-30	0	1
ALLEGHENY COUNTY (PA)	~1994				Inspected & permitted	Consumer alert	Closure			✔	c	10	0	1
LARIMER COUNTY (CO)	~1998	-569	530 (5-20)	39 (1-2)	Excellent 0-19	Good 20-39	Average 40-69	Marginal 70-99 Inadeq. ≥100						1
ALBUQUERQUE (NM)	<1998				Approved c=0	On Notice 1≤c≤3	Unsatisfactory c≥4 repeat viol.			✔	Unsa-tis.	5	0	2
LOS ANGELES COUNTY (CA)	1998	+100	64 (4-6)	36 (1)	A 90-100	B 80-89	C 70-79	Score <70		✔	Req.	1-23	287-383	1
TORONTO, CANADA	2001				Pass Min. vio.	Cond. Pass Sig. vio.	Closed Crucial vio.			✔	Cond. Pass Closed	1-2	0	1
LOUISVILLE (KY)	2002	+100	68 (3-5)	32 (1-2)	A 85-100 & c=0	B 2 fails 1 reinspec. fail prior closure	C <85 c>0	Closure <60	✔	✔	<85	7-10	0	2
SAN BERNARDINO COUNTY (CA)	2004	+100	56 (4)	44 (1-2)	A 90-100	B 80-89	C 70-79	Closure <70		✔	<80 Req.	40	52 /hr	2
GEORGIA	2006	+100	82 (4-9)	58 (1-3)	A 90-100	B 80-89	C 70-79	U <70	✔	✔	<80	10	50-200	1
MISSISSIPPI	2007				A c=0	B c corr.	C c uncorr.			✔	C	10	0	1
NEW YORK (NY)	2010	-1286	1135 (7-28)	151 (2-28)	A 0-13	B 14-27	C ≥28			✔	14	>7	0	1
MARICOPA COUNTY (AZ) (VOLUNTARY)	2011				A c=0 & g=0	B 0≤c≤1 & 1≤g≤2 c=1 & g=0	C c=2 & g≤3 c<2 & g=3	D c≥3 g≥4						2
ALBANY COUNTY (NY)	2012				Excellent c=0 & g≤8 c=1 & g≤4	Good c=0 & 9≤g≤12 c=1 & 5≤g≤8 c=2 & g≤4	Fair c=0 & g≥13 c=1 & g≥9 c=2 & 5≤g≤12 c≥3 & g≤8	Unsatis-factory c=2 & g≥13 c≥3 & g≥9		✔	Fair Unsa-tis. Req.	14-21	0	1

"Enactment" is the year (or best estimate) the restaurant grading system was established. "Total points" indicate the total points used (with cells gray when inapplicable). "Crit." and "gen. points" indicate the total number of points for critical and general violations, with point ranges for individual violations in parentheses below (c and g stand for the number of violations). The next four columns present the posted grade or sign (in the color that it appears on the sign – in the online version of this Article only), with corresponding criteria. When a jurisdiction's terminology differs, we translate violations as general or critical violations. Maricopa County, for example, uses the terms "priority violation" and "priority foundation violation." Each row of grading criteria is a disjunctive condition. For instance, Maricopa County assigns a grade of 'D' when there are three or more critical ($c \geq 3$) or four or more general violations ($g \geq 4$). "Score post." indicates whether the numerical score is posted in addition to the grade. The "reinspection" columns indicate (a) whether the first reinspection can change the grade or score; (b) the inspection result or condition that triggers such a reinspection; (c) days until that reinspection; and (d) the dollar fee for that reinspection. A "Req." in the trigger column indicates that a restaurant owner must request a reinspection. The last column indicates the minimum number of inspections required per year. In Larimer County, grades are posted only online, whereas in all other jurisdictions, grades are posted on site. The "~" sign indicates rough approximation.

Point scores for types of violations exhibit wide differences. While Georgia and San Diego both employ a 100-point scale, a critical violation can garner up to 9 points in Georgia, compared to 4 points in San Diego. North Carolina awards 2 bonus points for food safety "education credit," a minimum requirement in other jurisdictions. Divergent grade thresholds make it quite difficult to substantively understand the meaning of a grade. In Louisville, a score of 85 leads to an 'A,' while a score of 84 leads to a 'C.' The Louisville 'A' cutoff was successively lowered over the years: from 93 for 2002 to 2010, to 90 in January 2011, down to 85 in September 2011.[165] Maricopa County allows restaurants to *voluntarily* opt into grading, with a dizzying translation of critical and general violations into grades. One critical violation (given the puzzling name "priority violation") and two general violations ("priority foundation violations") result in a 'B';[166] zero critical violations and three general violations result in a 'C.' Larimer County, Colorado, uses—in addition to the state's 100-point scale—a 569-point scale for grading purposes. The county oddly explains that the 569-point scale is "based upon similar models used in

165. *See* Gil, *supra* note 40 (noting in 2002 that "[r]estaurants will earn an A for a score of 100-93"); Press Release, Louisville Metro Dep't of Pub. Health & Wellness, Public Health and Wellness To Revise Food Placard System, Aug. 25, 2011, http://www.louisvilleky.gov/Health/News/11-08-placards.htm (announcing a revised 'A' cutoff of 85); E-mail Correspondence with Gretchen Boyd, Envtl. Health Supervisor, Louisville Dep't of Pub. Health & Wellness (Mar. 23, 2012) (on file with author) (noting the change of the 'A' cutoff from 93 to 90 in 2011).

166. The new terminology comes from the 2009 model food code. *See* U.S. PUB. HEALTH SERV., FOOD & DRUG ADMIN., *supra* note 102, at x-xi.

other parts of the U.S."[167]

The nature of the disclosure also differs considerably. Albuquerque uses a green/red sticker system. Toronto uses a color-coded sticker system: green for a passing grade, yellow for significant infractions, and red for major infractions. Maricopa County has a rare letter grade of 'D.' Across jurisdictions, a 'B' grade may be posted in the colors blue, green, yellow, or black. (Denmark, not in Table 2, uses smiley faces.[168]) All jurisdictions where grading is mandatory establish some sort of reinspection system for grade adjustments.

C. Our Approach

As Table 2 underscores, the impact of grading is unlikely to be homogeneous across jurisdictions. The nature of health inspections, scoring, and disclosures differs in such sharp ways that the effects documented in Los Angeles are unlikely to hold for other jurisdictions.

This Article's approach is to examine previously unstudied jurisdictions to assess the efficacy of targeted transparency beyond the extant case study. We focus primarily on New York and San Diego. Together with Los Angeles, these comprise the three largest grading jurisdictions in the United States (see Table 1). The size of each of these jurisdictions also means that we have rich microdata from a large set of restaurants and inspections with which to examine the implementation of grading. New York has the particular advantage of having instituted grading during our observation period (in July 2010), thereby also providing us with temporal variation in grading. San Diego, on the other hand, permits us to examine the practice of grading in a system that has existed for many decades.[169]

Although we sought at the outset to design an evaluation of grading's effects on sanitation and health outcomes, our analysis of the data revealed far more fundamental concerns with each of the systems. Do grades convey *any*

167. *Restaurant Inspection Database*, LARIMER COUNTY HEALTH & ENV'T, http://www.co.larimer.co.us/food/about.asp (last visited Jan. 30, 2012) ("In addition to the traditional 100 point scoring system which has been used in the past, LCDH&E has developed its own food establishment rating system called the 'Risk Index.' This rating system is based upon similar models used in other parts of the U.S. . . . . Like golf scores, the lower the risk value, the better the sanitation level . . . . There are 569 possible value points in the risk index rating system, 530 are for critical items and 39 for non-critical items.").

168. *See Intro to Smiley System*, DANISH VETERINARY & FOOD ADMIN., http://www.findsmiley.dk/en-US/Forside.htm (last visited Apr. 16, 2012).

169. Of course, what we find in these jurisdictions may not be representative of restaurant grading elsewhere.

information at all? Are inspection scores meaningful? What effect does grading have on the regulation of food safety? Our findings suggest that proponents of targeted transparency have drastically overestimated the salutary effects of grading and failed to notice its costs.

While compiling and structuring the data (e.g., with the complex classification algorithm we developed for New York inspections) required considerable work, we relegate these details to the Appendix. More sophisticated statistical methods, which we propose in Section VII.A, may be applied, but we focus on the core findings below, which can be communicated with minimal mathematical background. We turn first to San Diego, as the findings are simpler and provide an important point of comparison for our findings in New York. Appendix D demonstrates that our results generalize to eight other jurisdictions.

III. FUDGING BY INFLATION: SAN DIEGO

We begin by sketching some brief background on San Diego's health inspection system in Section III.A. Section III.B describes the inspections data for San Diego restaurants, and Section III.C presents results.

A. Regulatory Background

California's Retail Food Code sets statewide standards for food safety in restaurants. The state code establishes substantive violations, following the 2001 FDA model food code.[170] For example, the code specifies poultry "shall be heated to a minimum internal temperature of 165°F for 15 seconds."[171] Primary enforcement responsibility falls upon local California agencies, in San Diego's case the Food and Housing Division of the County Department of Environmental Health. The agency is self-funded by permit fees, with a budget of around $6 million,[172] and is responsible for administering the food code for roughly 12,000 retail food facilities,[173] including not only conventional

170. *See* Ass'n of Food & Drug Officials, *Real Progress in Food Code Adoptions*, U.S. FOOD & DRUG ADMIN. (July 1, 2011), http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/FederalStateCooperativePrograms/UCM230336.htm.

171. CAL. HEALTH & SAFETY CODE § 114004(a)(3) (West 2012).

172. Gary W. Erbeck, *Samuel J. Crumbine Consumer Protection Award 2005 Submittal*, COUNTY OF SAN DIEGO DEP'T OF ENVTL. HEALTH 3 (Mar. 11, 2005), http://www.fpi.org/images/san%20diego%20application.pdf.

173. *See Food Facility Inspection Search*, COUNTY OF SAN DIEGO, http://www.sdcounty.ca.gov/deh/fhd/ffis/intro.html (last visited Jan. 31, 2012).

restaurants, but also any establishment serving ready-to-eat food (e.g., convenience stores, school cafeterias, and health care facilities).[174] The primary inspection vehicle is a "routine inspection," which is comprehensive and, as in Los Angeles, scored from 0 to 100 points, with 100 points indicating no violations (full compliance). Common violations include failure to abide by "holding" temperatures, dirty food-contact surfaces, improper cooling, and failure to wash hands. Violations are classified as major or minor violations, the former receiving higher point deductions. For example, failure to heat poultry to 165°F is a major violation resulting in subtraction of 4 points, while failure to wear a hair restraint is a minor violation resulting in subtraction of 1 point.[175] Limited (or "directed") inspections are unscored.[176] These are typically reinspections after a notice of violation was issued to the facility or inspections of establishments that have limited food service areas (e.g., grocery stores).

San Diego has graded a subset of food facilities since 1947.[177] Under county code, "[a]ll restaurants, bars, taverns, retail food processors, and deli markets where food is prepared will receive a grade card."[178] (Establishments that are scored and inspected, but not graded, include grocery stores, gas stations, liquor stores, and schools.) The grading system assigns letter grades of 'A,' 'B,' or 'C,' if a routine inspection resulted in 90-100, 80-89, or 79 or fewer points, respectively.[179] A 'C' is considered a failing grade and may result in penalties and permit suspension if the restaurant fails to achieve a score of at least 80 points within thiry days.[180] (The Department of Environmental Health and the Housing Division can always shut down a restaurant if it poses too large a public health risk.)

The county employs around fifty inspectors ("Registered Environmental Health Specialists"), who conduct housing and food inspections, with roughly 75-80% of time spent on the latter.[181] Inspectors are required to (1) have a

174. CAL. HEALTH & SAFETY CODE § 113789 (West 2012).

175. *See Retail Food Facility Operator's Guide*, *supra* note 113, at 6.

176. *See Food Facility Inspection Search: Directed*, COUNTY OF SAN DIEGO, http://www.sdcounty.ca.gov/deh/fhd/ffis/insp_result/directed.html (last visited Apr. 24, 2012).

177. *See* Williams & Armendariz, *supra* note 88.

178. *See Retail Food Facility Operator's Guide*, *supra* note 113, at 29.

179. SAN DIEGO COUNTY, CAL., CODE OF REG. ORDINANCES § 61.107(a) (2012).

180. *Id.* § 61.107(b)-(c); *Retail Food Facility Operator's Guide*, *supra* note 113, at 28; *Food Program*, COUNTY OF SAN DIEGO, http://www.sdcounty.ca.gov/deh/food/food.html (last visited Jan. 31, 2012).

181. *See* Williams & Armendariz, *supra* note 88; E-mail Correspondence with Bao Huynh, Supervising Envtl. Health Specialist, Food & Hous. Div., San Diego Cnty. Dep't of Envtl. Health (Apr. 11, 2012) (on file with author); *Food Facility Inspection Search*, *supra* note 173;

baccalaureate degree, with thirty semester units of basic biological, chemical, physical, or environmental science; (2) have "[o]ne . . . year of experience investigating and enforcing environmental, public health or sanitary laws and regulations" or "[s]ix . . . months as a[] . . . Trainee with the County"; and (3) pass a state civil service exam. Starting salaries range from $50,000 to $61,000.[182]

As a general matter, the county's food safety system is reputed to work well. In 2005, the Department received an award for food protection.[183] With respect to transparency and the grading system, however, performance is less clear. In 2006 to 2007, the county convened a grand jury investigation to examine why a seemingly large number of restaurants were receiving 'A's. The investigation did not examine large-scale data, but conducted a series of interviews with inspectors, health officials, and restaurateurs. Noting the ratio of then forty-eight inspectors to 12,000 establishments, the grand jury concluded that "[p]ressure is high for . . . inspectors to manage regular visits"[184] and recommended increased funding for hiring inspectors.[185] It also found "no formal means of communication for informing the public of restaurant closures and the outcome of subsequent inspections"[186] and recommended the creation of a website of inspection data.[187]

San Diego Cnty. Grand Jury 2006-2007, *"A" Grades in San Diego County Restaurants, Deserved or Not?*, COUNTY OF SAN DIEGO 3 (May 7, 2007), http://www.sdcounty.ca.gov/grandjury/reports/2006_2007/restaurantgrade.pdf.

182. *See* Erbeck, *supra* note 172, at 6; *Job Descriptions & Salaries, Environmental Health Specialist I*, COUNTY OF SAN DIEGO, http://agency.governmentjobs.com/sdcounty/default.cfm?action=viewclassspec&classSpecID=80722&agency=14088&viewOnly=yes (last visited Feb. 3, 2012).

183. *Samuel J. Crumbine Consumer Protection Award: Past Crumbine Award Winners*, FOODSERVICE PACKAGING INST., http://www.fpi.org/images/past%20crumbine%20award%20winners.pdf (last visited Jan. 31, 2012). *But see* PEACOCK, *supra* note 114, at 344 (assigning San Diego a grade of 'C' based on a qualitative survey).

184. San Diego Cnty. Grand Jury 2006-2007, *supra* note 181, at 3.

185. *Id.* at 4.

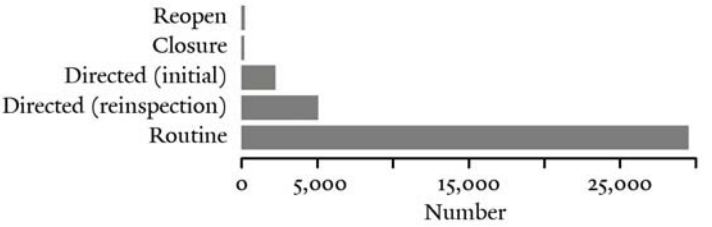
186. *Id.* at 3.

187. *Id.* at 4. The grand jury focused primarily on restaurant closures by the department, as is evident from the types of information the grand jury concluded the website should contain (i.e., restaurant name and location, date of closure, reason for closure, date reopened, and result of follow-up inspection). As we argue in Part VII, *all* inspection data should be disclosed.

B. Inspections Data

To empirically study the San Diego grading system, we downloaded and extracted into proper database format all available inspection reports from the Department's website at the end of November 2011.[188] The data include 37,040 inspections of 11,941 establishments between June 2007 and November 2011. Information includes the date, type of inspection, and score (if applicable). Figure 2 plots the distribution of types of inspections. Just under 80% of inspections are routine inspections; just under 20% are directed (unscored) inspections; and a small number of inspections are other kinds of inspections (e.g., reinspections resulting in the restaurant closing or reopening).

Figure 2.
INSPECTION TYPES IN SAN DIEGO



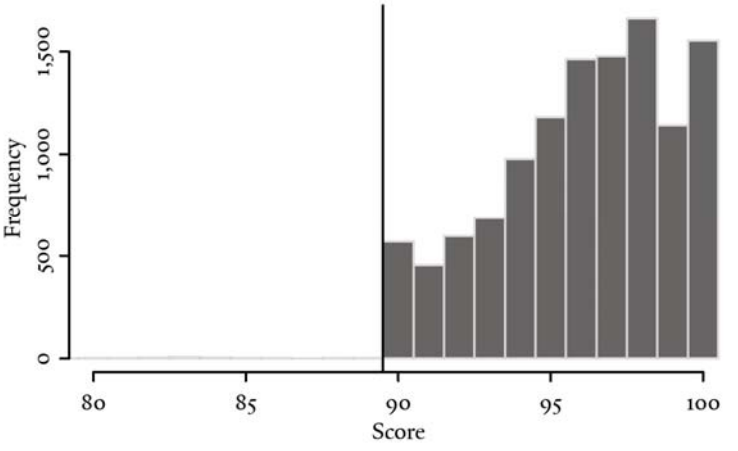
Routine inspections are scored and graded. Directed inspections are limited in scope and unscored and ungraded. Some facilities (e.g., grocery stores) may receive a routine inspection of areas where ready-to-eat food is prepared and directed inspections in the remainder of the facility, such that routine and directed inspections occur during the same inspection visit. Closures may occur across different types of inspections. Reopening inspections occur only for restaurants that have been closed.

188. *See San Diego Food Facility Inspection Search*, COUNTY OF SAN DIEGO, http://www2.sdcounty.ca.gov/ffis (last visited Jan. 31, 2012).

C. Empirical Results

1. Uniform Grade Inflation

Figure 3.
INSPECTION SCORES IN SAN DIEGO



This histogram depicts scores for 11,813 San Diego restaurants as of November 2011.

We first examine how the grading system operates in the most recent inspection cycle for restaurants. Figure 3 displays a histogram of the most recent inspection scores for San Diego restaurants from November 2011. The black vertical line at 90 points shows the threshold for receiving an 'A.' Each bar represents the number of restaurants receiving each raw score. The mean score is 96 (standard deviation = 3), but there is a sharp discontinuity at the 'A' threshold. While 703 restaurants received a score of 90, only two received a score of 89. Out of 8,941 graded restaurants, only eight received a 'B,' and none received a 'C.'[189]

If the theory of targeted transparency is to provide a signal to consumers to differentiate amongst goods, San Diego's system appears to fall short. Because 99.9% of restaurants receive an 'A,' there is little variation from a consumer's perspective in the sanitation level of restaurants.

189. Out of 11,813 scored inspections, only fifteen establishments received a score below 90.

That said, the high proportion of 'A's alone is consistent with both benign and nonbenign behavior. It may be that San Diego restaurants have responded to the grading system by improving cleanliness precisely to target the threshold of 90 points. But consider two other points. First, county law permits restaurants to pay a fee ($142 per hour) to be reinspected, and possibly regraded, within thirty days.[190] Strategic cleanups for regrading arguably are much less likely to yield general health benefits. Out of sixty-two graded restaurants that have received a score below 90, the median time to scoring above 90 points is seven days. Nearly a quarter of restaurants achieve an 'A' within one day of the original inspection, and 80% do so within a month. At any given point of time, the probability of observing a 'B' grade even for these establishments is hence extraordinarily low.[191]

Second, as the public health literature emphasizes, inspector discretion may well explain the discontinuity. Although scoring is conducted via a specific worksheet, there is discretion in which violation to cite and, in many instances, how many points to assign the violation. How would one determine, for example, whether "[f]ood contact surfaces [are] clean [and] sanitized" and, if not, whether it warrants a two- or four-point deduction?[192] Health officials report that converting scores to grades induces a form of "ethical stress[]": "operators are likely to demand that their political representatives or the courts intervene, or they may be tempted to 'encourage' inspectors toward good grades through unfortunate and unethical means."[193] Most tellingly, one San Diego inspector revealed: "Some inspectors will give out a B for an 89 . . . . I usually warn somebody at that point. It's a judgment call . . . ."[194]

We explore the role of inspector discretion more formally below.

190. SAN DIEGO COUNTY, CAL., CODE OF REG. ORDINANCES § 61.107(b) (2012); *Retail Food Facility Operator's Guide*, *supra* note 113, at 29; Dep't of Envtl. Health, *Food Facility Fee Schedule Effective August 24, 2012*, COUNTY OF SAN DIEGO, http://www.sdcounty.ca.gov/deh/food/pdf/publications_feeschedule.pdf (last visited Sept. 2, 2012); Telephone Interview with Celia Kroy, Envtl. Health Specialist & Specialist on Duty, San Diego Dep't of Envtl. Health (Jan. 19, 2012).

191. The same pattern holds for closures of restaurants. Out of sixty-seven graded restaurants that have been closed, the median time until the restaurant was reopened was the same day. Four out of five graded restaurants that are closed reopen within one day. Note that such regrading alone does not account for the discontinuity at 90. The difference in the number of restaurants just above and below the threshold of 90 points is much larger than the number of restaurants paying for reinspections.

192. *See Retail Food Facility Operator's Guide*, *supra* note 113, at 6.

193. BOEHNKE, *supra* note 78, at 24-25.

194. Ed Sylvester, *Making Sure Your Eating Places Are A-OK: Inspectors Rate S.D. Restaurants*, L.A. TIMES, May 25, 1980, at A1.

Regardless of whether restaurants are precisely targeting the threshold, the practice of grade inflation in San Diego means that its grades fail to convey to consumers any substantial heterogeneity in sanitation. Uniform 'A's at the very least appear inconsistent with the Department's justification for grading. The Department states, "local consumers and visitors quickly learn the *usefulness* of the grade in *selecting* a place to dine."[195] Like Lake Wobegon's children, San Diego's restaurants are *all* "above average."

2. Scoring Consistency

Another basic way to assess San Diego's inspection system is to compare restaurant scores over repeated routine inspections. If systematic differences in sanitation between restaurants exist, we would expect such inspection results to exhibit substantive correlation over repeat inspections. To be sure, we would not expect (or desire) complete consistency: after all, a low grade should incentivize a restaurant to clean up, and a high grade might cause a restaurant to be less vigilant. In addition, chance factors, such as when the inspector shows up and what food is being prepared, would attenuate the correlation.[196] But if grades based on the most recent inspection report are to have any meaning, they should minimally convey some substantive information about the prospective cleanliness of the establishment.

Figure 4 plots inspection scores from routine inspections for the same restaurant across the first two observed inspection cycles.[197] Each dot represents one restaurant, with the score it received in the first cycle on the *x*-axis and its score in the subsequent cycle on the *y*-axis, randomly jittered (and transparent) for visibility. The top panel plots these for the full range of observed scores from 61-100 points. Because restaurants that score below 90 points have an incentive to improve sanitation practices and are thus likely to reduce the overall correlation, the bottom panel excludes these and focuses on the 'A' range of restaurants. If sanitation measures were perfectly correlated,

195. Erbeck, *supra* note 172, at 15 (emphasis added).

196. In statistical terms, we of course expect some regression to the mean, but the correlation coefficient provides one sense of the relative weight of systematic—restaurant-specific—factors relative to stochastic factors.

197. To be precise, Figure 4 plots scores across the first two observed repeat routine inspections for scored (but not necessarily graded) establishments. Results are substantively the same for the subset of scored and graded restaurants. There are slightly more restaurants scoring below 90 than in Figure 3, which plots the most recent inspection score as of November 2011, while Figure 4 plots the first two routine inspections from 2007 onward. Because the frequency of inspections is tied to the risk of the establishment, we do not plot all pairs of inspections, which would over-represent high-risk establishments.

dots should line up on the forty-five-degree line, and the proportion of variation explained by prior scores (R^2) would equal one. We find that inspection scores exhibit substantial consistency over time. Restaurants that received a high score one year tend to receive a similar score the subsequent year; there are very few data points in the top-left and bottom-right quadrants representing restaurants flip-flopping scores across years. A one-point increase in cycle 1 is associated with a half-point increase (plus or minus 0.02 at a 95% confidence level) in cycle 2.[198] Roughly a quarter of the score variation in the second cycle is explained by score in the first cycle ($R^2 = 0.24$ for the full range and 0.27 for the 'A' range).[199] This level of consistency appears roughly comparable to that of Los Angeles restaurants.[200] Figure 5 displays more substantively the information in San Diego's scores. The left panel plots the distribution of scores in the second cycle for restaurants receiving below 95 points in cycle 1, while the right panel plots the distribution of scores in the second cycle for restaurants receiving 95 or above in cycle 1. The distributions sharply diverge. If a restaurant scored below 95 in cycle 1, it has a 47% chance of scoring a 95 or above on the next cycle, compared to an 80% chance for a restaurant scoring above 95 in cycle 1.[201] In short, a restaurant's sanitation score is informative.

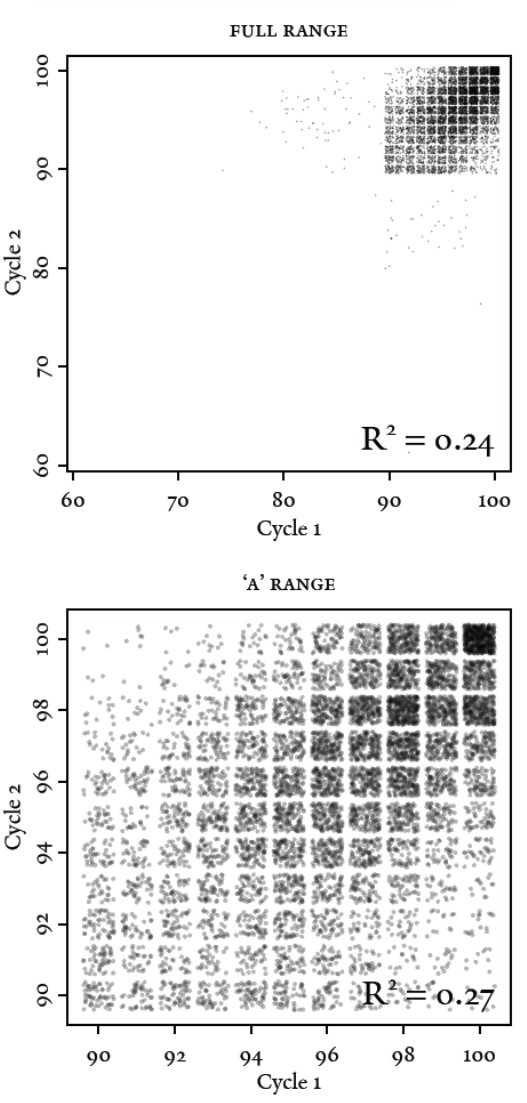
198. This is based on a simple linear least squares regression of scores in cycle 2 as the outcome and scores in cycle 1 as the main explanatory variable for the full dataset.

199. *See supra* note 198. The same model is fit to the subset of 'A'-graded restaurants.

200. *See supra* text accompanying note 143 (finding in an earlier study by Jin and Leslie that just under a quarter of the variation in restaurant inspections is explained by time-invariant restaurant-specific attributes).

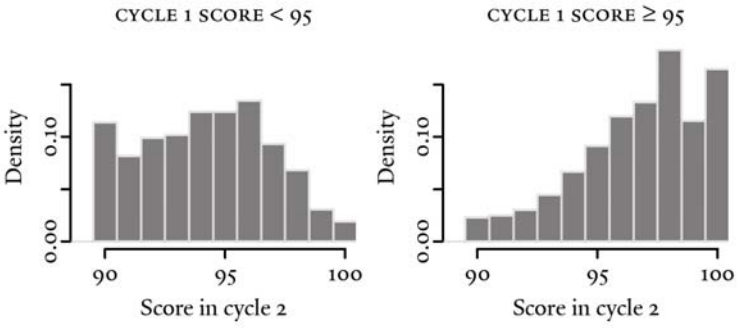
201. It is possible that anchoring bias explains the consistency in San Diego results if inspectors are aware of the previous inspection score. But the real puzzle, as we explore below, is the relative consistency in San Diego and relative inconsistency in New York. In both jurisdictions, inspectors appear to have access to prior inspection results.

Figure 4.
INSPECTION CONSISTENCY IN SAN DIEGO



Each dot represents one restaurant, with the score it received on its first routine inspection on the *x*-axis and the score from its next routine inspection on the *y*-axis. For visibility, observations are randomly jittered. The top panel depicts the full range of observed scores and the bottom panel depicts restaurants receiving 'A' grades in both cycles. If measures were perfectly correlated, dots would line up on the forty-five-degree line and R^2 would equal one. Roughly a quarter of the variation in inspection scores is predicted by prior inspection scores (see R^2 in the lower right hand corner), so inspections are measuring some degree of systematic sanitation differences amongst restaurants.

Figure 5.
PREDICTIVE POWER OF SCORES IN SAN DIEGO



The left panel depicts the score distribution in cycle 2, given that a restaurant scored below a 95 in cycle 1. The right panel depicts the score distribution in cycle 2, given that a restaurant scored 95 or above in cycle 1.

The above results paint a mixed portrait of San Diego's grading system. It is possible that grading over the course of the last sixty years—and the concordant stability in compliance expectations—might have caused San Diego restaurants to improve sharply to 'A'-levels. San Diego might then be a resounding success for targeted transparency. The sharp discontinuity at 90 and the ability to request a regrade within a day, however, call this interpretation into question. While San Diego health inspections exhibit some degree of consistency over time, without any substantive grade variation to speak of, consumers—at least currently—cannot rely on such grades to inform their restaurant choices. To understand these results better, we turn to New York.

IV. FUDGING BY NOISE: NEW YORK

We begin, again, with some regulatory background about New York's restaurant-inspection system in Section IV.A, focusing particularly on the system as it existed immediately before and after grading was instituted in July 2010. Section IV.B discusses the inspections data, with Appendices A and B detailing data integrity issues and the classification algorithm we developed to address the fact that New York fails to disclose types of inspections. Section IV.C presents results. (Appendix C shows that findings are robust to scoring changes, different types of inspections, the time period or inspection cycles examined, and the role of administrative hearings.)

A. Regulatory Background

1. Inspections 2005 to 2010

The Bureau of Food Safety and Community Sanitation (BFSCS) in the City Department of Health and Mental Hygiene (DOHMH) administers the city's food safety program.[202] The Bureau inspects thirty-two different types of facilities (e.g., senior centers, public schools, correctional institutions, apartment window guards[203]), but roughly three-quarters of its inspections are of restaurants.[204] Its 2007 budget was $11.7 million,[205] and its staff consists of roughly 180 full-time positions.[206]

The frontline employees are the health inspectors ("Public Health Sanitarians").[207] Qualifications are comparable to San Diego's. Inspectors must pass a civil service exam and possess either baccalaureate degrees with at least thirty semester credits in biological or physical sciences, or associate degrees with twelve semester credits in biological or physical sciences and five years of experience as public health technicians. Starting salaries range roughly from $40,000 to $50,000.[208]

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202. *See Food Safety and Community Sanitation*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE, http://www.nyc.gov/html/doh/html/inspect/insp.shtml (last visited Feb. 1, 2012).

203. Window guards are child-safety guards on apartment windows.

204. *See* BUREAU OF MGMT. AUDIT, OFFICE OF THE COMPTROLLER, CITY OF N.Y., AUDIT REPORT ON THE DEPARTMENT OF HEALTH & MENTAL HYGIENE OVERSIGHT OF THE CORRECTION OF HEALTH CODE VIOLATIONS AT RESTAURANTS 1 (2009) [hereinafter 2009 AUDIT]; *Office of Community Sanitation: Special Population Inspection Program*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE, http://www.nyc.gov/html/doh/html/inspect/comm-san.shtml#spip (last visited Feb. 1, 2012).

205. *See 2009 Executive Budget*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 14 (2009), http://council.nyc.gov/html/initiatives/FY09PBB_MayUpdate/051208_FY09_DOHMH.pdf.

206. *See* Glenn Collins, *Restaurant Grading Begins in New York*, N.Y. TIMES, July 27, 2010, http://www.nytimes.com/2010/07/28/nyregion/28inspect.html. When New York's Independent Budget Office (IBO) reviewed City Department of Health and Mental Hygiene (DOHMH)'s budget programmatically, it actually listed the budget for the Bureau of Food Safety and Community Sanitation (BFSCS) as $344,000 with one full-time position. Instead, IBO allocated sanitarians to "General Environmental Health." *See IBO's Programmatic Review of the 2006 Budget as of the November Financial Plan*, N.Y.C. INDEP. BUDGET OFFICE 21 (2006), http://www.ibo.nyc.ny.us/iboreports/agencyBudgets05/DOHMH%20Program%20Budget.pdf; Telephone Interview with Doug Turetsky, Chief of Staff & Commc'ns Dir., N.Y.C. Indep. Budget Office (Jan. 10, 2012).

207. *See* 2009 AUDIT, *supra* note 204, at 3.

208. *Notice of Examination: Public Health Sanitarian*, N.Y.C. DEP'T OF CITYWIDE ADMIN. SERVICES APPLICATION UNIT (2010), http://www.nyc.gov/html/dcas/downloads/pdf/noes

As in San Diego, substantive violations in New York City largely derive from the state sanitary code, with local officials bearing primary responsibility for enforcement.[209] In contrast to San Diego's longstanding grading system, however, New York's method of scoring inspections is relatively recent. New York first began to use a numerical scoring system (without grades) in March 2003,[210] the procedures for which were formalized in a rulemaking in February 2005.[211] The point scoring system, which has remained largely the same since 2005, aimed in part to "provide a more objective method of evaluating . . . public health risks."[212]

The point scoring system works as follows. Violations are classified as either "critical" or "general" violations. Critical violations are those "more likely . . . to contribute to food contamination, illness, or environmental degradation."[213] As of 2005, sixty critical violations fell into one of six substantive categories: administration, food temperature, food source, food protection, facility design, and personal hygiene. Thirty-eight general violations fell into one of seven substantive categories: vermin or garbage, food source, facility maintenance, documentation, and three tobacco-related categories. Each violation could range in severity ("condition") from I to V; the conditions determined point scores, which ranged from two to twenty-eight points per violation.

In an initial inspection—a full, unannounced sanitary inspection conducted roughly once a year—inspectors chose whether to cite a particular violation and determined the severity (or condition) of the violation. Table 3 provides examples of common violations. For example, a 2B violation for failure to hold a hot food item at or above 140°F could be assigned seven to twenty-eight points, depending primarily on the number of food items so held. "Two hot food items out of temperature," such as "8 chicken wings and cooked rice,"

/201101012000.pdf; *Public Health Sanitarian Series*, N.Y. ST. DEP'T OF HEALTH, http://www.health.ny.gov/prevention/public_health_works/careers/public_health_sanitarian.htm (last visited Feb. 1, 2012).

209. N.Y. COMP. CODES R. & REGS. tit. 10, § 14-1 (1992).

210. *See* N.Y. State Rest. Ass'n v. N.Y.C. Dep't of Health & Mental Hygiene, 798 N.Y.S.2d 711 (N.Y. Sup. Ct. 2004); *see also* Jennifer Steinhauer, *New Restaurant Rules Violated City Charter, a Judge Decides*, N.Y. TIMES, Oct. 29, 2004, http://www.nytimes.com/2004/10/29/nyregion/29restaurant.html (describing judicial decision requiring public comment before the adoption of scoring system).

211. *See* Comm'r of Health & Mental Hygiene, *Notice of Adoption of an Amendment to Title 24 of the Rules of the City of New York Adding Chapter 23 ("Food Service Establishment Inspection Procedures")*, 132 CITY REC. 883 (Feb. 18, 2005).

212. *Id.*

213. *Id.* at 884.

would constitute a 2B Condition II violation with eight points, while "[t]hree hot food items out of temperature," such as "8 chicken wings, cooked rice and roast beef," would constitute a 2B Condition III violation with nine points.[214] Failure to correct any public health hazard during the course of the inspection would result in an automatic twenty-eight points.[215]

When an inspection resulted in one or more critical violations or fourteen or more points, inspectors issued a notice of violation.[216] Each violation cited therein would carry a penalty of between $200 and $2,000.[217] An inspection resulting in twenty-eight or more points was considered a failed inspection, triggering, "whenever practicable," a "compliance inspection."[218] DOHMH policy was to conduct compliance inspections fifteen to forty-five days after the failed initial inspection.[219] Failure to remedy violations after two such compliance inspections would increase the chance of DOHMH shutting down the restaurant, although in principle a restaurant could be shut down at any time for posing a public health hazard.

The pre-2010 inspection system contained one additional carrot and stick. The carrot was a "Golden Apple" award issued to any restaurant that, among other requirements, "passed two consecutive annual inspections with no critical violations and fewer than four general violations."[220] The stick was an "Accelerated Inspection Program," which increased the frequency of initial inspections for restaurants that had failed two consecutive initial inspections.[221]

Between 2005 and 2010, DOHMH made only relatively minor scoring

214. *Inspection Scoring System for Food Service Establishments*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 11 (2005), http://www.nyc.gov/html/doh/downloads/pdf/inspect/inspect-food-safety-book.pdf.

215. *Id*. at 4.

216. 132 CITY REC. 884 (Feb. 18, 2005).

217. N.Y., N.Y. HEALTH CODE § 3.11 (2012).

218. 132 CITY REC. 884 (Feb. 18, 2005).

219. *See* 2009 AUDIT, *supra* note 204, at 9.

220. Press Release, N.Y.C. Dep't of Health & Mental Hygiene, Health Department Announces "Golden Apple" Award for Restaurants with Superior Food Safety (May 6, 2004), http://www.nyc.gov/html/doh/html/press_archive04/pr048-0506.shtml; *see* 2009 AUDIT, *supra* note 204, at 16-17. Golden Apples fell out of use after letter grading was introduced in 2010. *Compare Inspection Scoring System for Food Service Establishments*, *supra* note 214, at 8 (describing the Golden Apple initiative), *with What To Expect When You're Inspected: A Guide for Food Service Operators*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 8 (2010), http://www.nyc.gov/html/doh/downloads/pdf/rii/blue-book.pdf (never mentioning the Golden Apple).

221. 2009 AUDIT, *supra* note 204, at 5 n.2.

changes to the inspection system.[222] The only notable change, implemented in July 2009, was that DOHMH stopped scoring administrative and documentation violations.[223] Violation 1A in Table 3, for example, would still be cited, but no longer scored.

222. In December 2007, DOHMH clarified that violations of New York's ban on artificial trans-fat foods would not count for sanitation scoring purposes, although inspectors would cite establishments for such violations. *See Notice of Adoption of Amendments to Chapter 23 (Food Service Establishment Inspection Procedures) of Title 24 of the Rules of the City of New York*, 134 CITY REC. 5,085 (Dec. 27, 2007). New York similarly introduced calorie posting and food allergy disclosures for certain restaurants in 2008 and 2009, respectively. *See* Comm'r of Mental Health & Hygiene, *Notice of Adoption of a New Chapter 27 (Food Allergy Information) in Title 24 of the Rules of the City of New York*, DEP'T OF HEALTH & MENTAL HYGIENE (2009), http://www.nyc.gov/html/doh/downloads/pdf/notice/food-allergy-information.pdf; Press Release, N.Y.C. Dep't of Health & Mental Hygiene, Board of Health Votes To Require Chain Restaurants To Display Calorie Information in New York City (Jan. 22, 2008), http://www.nyc.gov/html/doh/html/pr2008/pr008-08.shtml. In October 2008, to harmonize its inspection system with state amendments, DOHMH added two violations for "reduced oxygen packaging" (a method of removing oxygen when storing food to limit *Clostridium botulinum*) and four violations to facilitate HACCP management, and amended in small part the language of four existing violations. *See* Comm'r of Health & Mental Hygiene, *Notice of Adoption of Amendments to Chapter 23 (Food Service Establishment Sanitary Inspection Procedures) of Title 24 of the Rules of the City of New York*, 135 CITY REC. 3,159 (Sept. 29, 2008).

223. *See Notice of Adoption of Amendments to Chapter 23 (Food Service Establishment Procedures) of Title 24 of the Rules of the City of New York*, 136 CITY REC. 2,645 (June 23, 2009).

Table 3.
SAMPLE VIOLATIONS IN NEW YORK (2005)

TYPE OF VIOLATION		CONDITIONS				
CRITICAL VIOLATIONS (60)		I	II	III	IV	V
Administration						
1A	Current valid permit, registration, or other authorization to operate not available.	-	-	-	-	28
Food Temperature						
2B	Hot food item not held at or above 140°F.	7	8	9	10	28
Food Source						
3D	Canned food product observed swollen, leaking, and rusted.	7	8	9	10	28
Food Protection						
4I	Food item spoiled, adulterated, contaminated, or cross-contaminated.	7	8	9	10	28
Facility Design						
5C	Food-contact surface improperly constructed or located. Unacceptable material used.	7	8	9	10	28
Personal Hygiene & Other Food Protection						
6A	Personal cleanliness inadequate. Clean outer garments, effective hair restraint not worn.	5	6	7	8	-
GENERAL VIOLATIONS (38)		I	II	III	IV	V
Vermin or Garbage						
8A	Facility not vermin proof. Harborage or conditions conducive to vermin exist.	2	3	4	5	-
Food Source						
9D	Food contact surface not properly maintained.	2	3	4	5	-
Facility Maintenance						
10A	Toilet facility not maintained and provided with toilet paper, waste receptacle, and self-closing door.	2	3	4	5	-
Documentation						
11A	Permit not conspicuously displayed.	2	-	-	-	-

"Conditions" indicates the severity of the violation and associated point value. In total, there are sixty critical violations and thirty-eight general violations.

2. The 2009 Comptroller Audit

In 2009, the City Comptroller conducted a performance audit of the restaurant-inspection system for the 2008 fiscal year.[224] The Comptroller interviewed officials and reviewed samples of fifty restaurants that were not inspected during the year, sixty-two restaurants that failed one regular inspection, thirty-nine restaurants that failed three or more consecutive inspections, and twenty-one restaurants in the Accelerated Inspections Program.[225] The Comptroller made numerous findings critical of the system, but, most relevant for our purpose, concluded that "DOHMH did not adequately track its inspectors or supervisors to ensure that inspections were being properly conducted and monitored."[226] Examining the internal DOHMH inspections database, the Comptroller found major limitations to the database. For example, "DOHMH officials provided a list of 194 inspectors," but the "database file identified 280 inspector codes,"[227] an unexplained excess of eighty-six inspectors. DOHMH's cryptic explanation for the deviation was the presence of "input errors."[228] More shocking, given that inspectors are ostensibly assigned randomly, was the variation across sixty-seven inspectors who conducted more than one hundred inspections in the year. The average inspection score was 25 points, but the audit uncovered some inspectors with average scores of 15 and others with average scores of 50.[229]

3. Letter Grading

In July 2010, as part of the Bloomberg Administration's push for government transparency and digital modernization, DOHMH instituted letter grading. (Mayor Bloomberg's slogan: "In God we trust. Everyone else, bring data."[230]) The primary change was to convert each inspection score into a letter

224. *See* 2009 AUDIT, *supra* note 204, at 1.

225. *Id.* at 4-5.

226. *Id.* at 1.

227. *Id.* at 14.

228. *Id.* at 16. DOHMH also responded that it "recognized deficiencies in its current system of OCR scanning technology that depends on handwriting recognition technology to lift." *Id.*

229. *Id.* at 13.

230. Jeremy Smerd, *Tick, Tick, Tick for Bloomie's Legacy*, CRAIN'S N.Y. BUS., Jan. 15, 2012, http://www.crainsnewyork.com/article/20120115/politics/301159963.

grade, required to be posted in a location visible to passersby.[231] In principle, the conversion was simple: fewer than 14 points resulted in an 'A'; 14-27 points resulted in a 'B'; and 28 or more points resulted in a 'C.'[232]

In practice, the implementation was more complicated. First, DOHMH introduced a system of "reinspection" for grading purposes. If an initial inspection resulted in fewer than 14 points, a restaurant received an 'A.' If, however, the restaurant scored above 14 points on the initial inspection, DOHMH scheduled a reinspection to occur roughly a month (and "no sooner than 7 days"[233]) after the initial inspection.[234] Such reinspections were, in theory, plenary inspections conducted by a new inspector, the score of which would determine the restaurant's grade.[235] For example, a restaurant scoring 20 points in the initial inspection could be issued a final grade of 'A,' 'B,' or 'C,' depending entirely on the score upon reinspection. As before, restaurants scoring 28 or more points on any inspection were, in principle, subject to compliance inspections.[236]

Second, the 2010 revision changed the timing of the inspection cycle. For any restaurant receiving 28 or more points on either the initial inspection or reinspection, "[a]n initial inspection commencing a new cycle shall be conducted 90 to 150 days after the" last full inspection.[237] For any restaurant receiving 14 to 27 points on either the initial inspection or reinspection, "[a]n initial inspection commencing a new cycle shall be conducted 150 to 210 days after the" last full inspection.[238] All remaining restaurants received initial inspections roughly once a year.[239]

231. *See* 137 CITY REC. 1608 (June 15, 2010); 137 CITY REC. 698 (Mar. 23, 2010); *see also* N.Y., N.Y. HEALTH CODE § 81.51(c) (2011).

232. 137 CITY REC. 1607 (June 15, 2010).

233. *Id.*

234. *See Restaurant Letter Grading: The First Year*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 3 (2011), http://www.nyc.gov/html/doh/downloads/pdf/rii/restaurant-grading-1-year-report.pdf (noting that reinspection occurs "about a month later"). In the interim period, restaurants were required to continue to post a prior grade, if any. *See* 137 CITY REC. 1608 (June 15, 2010).

235. In Los Angeles, such reinspections are limited in that they only examine violations cited during the initial inspection. This difference was widely contested by the New York Restaurant Association. *See, e.g.*, *Concerning Letter Grades Proposal, Hearing Before the N.Y.C. Dep't of Health & Mental Hygiene* (Feb. 5, 2010) (statement of Robert Bookman, N.Y.C. Counsel, N.Y. State Rest. Ass'n).

236. *See* 137 CITY REC. 1607 (June 15, 2010).

237. *Id.*

238. *Id.*

239. *Id.*

Third, restaurants that did not receive an 'A' upon reinspection were provided the option of posting either the final grade (of 'B' or 'C') or a "grade pending" card until a hearing in front of an administrative tribunal.[240] (In practice, most restaurants choose the latter.) Taken together, these three complications were quite favorable to restaurants. Restaurants had a second chance to achieve a higher grade, did not in fact have to disclose a poor grade until an administrative resolution, faced shorter actual disclosure periods with poor grades because of the shortened inspection cycle, and gained greater certainty as to the timing of initial inspections and reinspections.

The 2010 changes also included some minor changes to the scoring system.[241] (Appendix C.1 shows that the types of violations documented are comparable pre- and post-grading.) Yet DOHMH itself stated, "[T]he Health Department has not changed the way it conducts inspections [with

240. *Id.* at 1608. The Rules are actually unclear about the impact of administrative hearings for a notice of violation issued in the initial inspection. Notices of violation can be issued in any scored inspection, *see id.* at 1607, but a grade is required to be posted upon resolution of an administrative hearing for a reinspection, *id.* at 1608. It is unclear, for example, what ramifications an administrative hearing that reduces below 14 points an initial inspection score—which would retrospectively obviate the reinspection—has on the grade, which is supposed to be based on a reinspection when conducted. *Compare id.* at 1607 ("The Department shall issue a letter grade of 'A' to any establishment that receives fewer than 14 points on *either* the initial inspection *or* reinspection in a cycle.") (emphasis added), *with id.* at 1608 ("[I]f the establishment does not appear at the Administrative Tribunal . . . the establishment shall, on the date of the hearing, post the letter grade card provided by the Department *at the reinspection*.") (emphasis added). In June 2011, the Mayor transferred the responsibility for holding administrative hearings from the DOHMH Administrative Tribunal to the New York City Health Tribunal in the Office of Administrative Trials and Hearings (OATH). *Compare id.* (requiring adjudication by OATH, of which the New York City Health Tribunal is a component), *with* Exec. Order No. 148, Transfer of Certain Tribunals and Adjudicatory Functions Consistent with Mayor's Committee Report (June 8, 2011) (requiring adjudication by the New York City Health Tribunal).

241. For example, a 2B violation (the second entry in Table 3) was amended to allow conditions to change when the same food was out of the holding temperature in different areas. In 2005, a 2B condition II violation was found for "[t]wo hot food items out of temperature. Example: 8 chicken wings and cooked rice." *Inspection Scoring System for Food Service Establishments*, *supra* note 214, at 11. In 2010, a 2B condition II violation was found for "[t]wo hot food items out of temperature or the same type of food out of temperature in two different areas. Example: one tray of chicken wings and a pot of rice held at 115°F; or one tray of chicken wings on the steam table and one tray of chicken wings in the food preparation area held at 115°F." *What To Expect When You're Inspected: A Guide for Food Service Operators*, *supra* note 220, at 8. In addition, some "Other Critical[]" violations were deleted, as was a violation for "food intended for consumption in contact with toxic material" that duplicated other contamination violations. N.Y.C. Dep't of Health & Mental Hygiene, *Notice of Adoption of a Rule Repealing and Recodifying Chapter 23 of Title 24 of the Rules of the City of New York*, 137 CITY REC. 1606-11 (June 15, 2010).

grading]."[242]

The timing of the intervention was sharp. In the beginning of July 2010, restaurant inspections slowed to a halt as inspectors underwent training for the new regime. Every restaurant inspected after July 26, 2010[243] would receive a full initial inspection for grading purposes, although it would take over a year to complete the first grading inspection for all New York restaurants.[244]

4. Internal Assessment

After the first year of grading, DOHMH released a triumphant assessment.[245] First, based on a survey of 502 respondents, it reported that 70% of New Yorkers have noticed grades in restaurant windows and that 88% of those who noticed them consider the grades when deciding where to eat (a stretch in interpretation).[246] Relatedly, Zagat reported that only 1% of respondents (albeit in a convenience sample) would eat at a 'C'-graded restaurant.[247] Second, the report concluded that grading "Has Contributed to

242. *Letter Grading for Sanitary Inspections: What It Means for Restaurants and Consumers*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 2 (June 2010), http://www.nyc.gov/html/oath/downloads/pdf/restaurant-grading-faq.pdf [hereinafter *Grading: What It Means*].

243. Technically, the rules were published on June 15, 2010, and became effective July 15, 2010. *See* 137 CITY REC. 1,606 (June 15, 2010); Comm'r of Health & Mental Hygiene, *Notice of Adoption of Amendments to Chapter 23 of Title 24 of the Rules of the City of New York*, DEP'T OF HEALTH & MENTAL HYGIENE 1 (2010), http://www.nyc.gov/html/doh/downloads/pdf/notice/2010/notice-chap-23-title-24-the-rules-of-nyc-correction.pdf (noting effective date of July 15, 2010). Grading's implementation, however, did not begin until July 27, 2010. *See How We Score and Grade*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 1 (2012), http://www.nyc.gov/html/doh/downloads/pdf/rii/how-we-score-grade.pdf (noting that "[i]nspections before July 27, 2010" are ungraded).

244. *See Grading: What It Means*, *supra* note 242, at 2.

245. *See Restaurant Letter Grading: The First Year*, *supra* note 234.

246. *See id.* at 1. The report, problematically, does not disclose the underlying survey instrument. Upon obtaining the survey instrument, the interpretation is arguably imprecise. The 88% figure is the sum of 36% who "always," 29% who "most of the time," and 23% who "some of the time" "consider the letter grades," assuming the respondent has seen the grades (true of 70% of respondents). *See* Baruch Coll., Sch. of Pub. Affairs, NYC DOHMH Restaurant Program Evaluation Poll (July 2011) (unpublished survey) (on file with author). A more accurate statement would be that six of ten New Yorkers have seen and consider the letter grades at least *some of the time*. *See id.*

247. Christie Rotondo & Rich Schapiro, *New Yorkers Won't Eat at a Restaurant with a 'C' Grade from Health Department, Zagat Survey Says*, N.Y. DAILY NEWS, Oct. 5, 2011, http://articles.nydailynews.com/2011-10-05/entertainment/30261644_1_zagat-le-bernardin-c-rated.

Significant Improvements in Restaurants' Food Safety Practices."[248] For example, DOHMH touted that 69% of restaurants have achieved 'A's,[249] a fact that by itself says little about the impact of grades. Third, DOHMH reported that restaurants "improve between their initial and re-inspections," noting, for example, that 38% of restaurants scoring between 14 and 27 points in the initial inspection end up receiving an 'A' in the reinspection.[250] What this glosses over is that 39% of restaurants receive an 'A' in the initial inspection.[251] The process could be entirely random, with a two-fifths chance of an 'A' in any inspection. Fourth, DOHMH reported that restaurant training has increased and that inspectors have conducted unannounced inspections for grade card posting compliance, with over one thousand violations cited.[252] The existence of these violations, however, also suggests that restaurants are flouting the posting requirement. None of this DOHMH evidence amounts to a plausible assessment of the grading system.[253]

B. Inspections Data

To study the grading system more rigorously, we use a publicly available dataset from December 2011, which contains inspection results for all existing restaurants in New York. (Our data analysis actually began with a dataset from July 2011, but for simplicity of exposition, we focus on this most recent version.) The primitive units are 495,568 violations (or nonviolations where an inspection resulted in no citations). Each unit contains information about the restaurant, permit number, inspection date and time, violation codes, action taken by DOHMH, numerical score, and grade assigned. Using the date and permit number, we restructure this data to the inspection level,[254] creating a dataset with 126,938 scored inspections for 23,153 restaurants.

248. *See Restaurant Letter Grading: The First Year*, *supra* note 234, at 2.

249. *Id.* at 2.

250. *Id.* at 3.

251. *Id.*

252. *Id.* at 5.

253. DOHMH's 18 month report, *Restaurant Grading in New York City at 18 Months*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE (2012), http://www.nyc.gov/html/doh/downloads/pdf/rii/restaurant-grading-18-month-report.pdf, similarly reports only superficial claims that are difficult to understand or replicate.

254. Most compliance inspections are recorded as unscored in the dataset. For the analysis of compliance inspections, we of course include these in our analysis. For seventy-four restaurant-inspection dates, action codes and scores are not homogeneous. We omit these restaurants from our analysis.

DOHMH deserves much credit for making this data available. Most jurisdictions have websites that allow users to look up individual restaurants (as we did to download the San Diego data), but the full microdata are rarely available in direct, machine-readable format (see Table 1).

That said, the DOHMH data have distinct limitations. First, DOHMH omits information for restaurants that are no longer in existence. Given that the restaurant market is quite dynamic, with the best studies suggesting that approximately one-third of restaurants fail within one year and two-thirds within three years,[255] this means that we have much less information from the early years of the observation period. Second, although our microdata in principle cover the same inspections as the data DOHMH makes available online, they do not include the type of inspection conducted (e.g., initial inspection, reinspection, compliance inspection). Third, the online data appear to be locked from access outside of the Greater New York area. California residents (or researchers), for example, cannot access the inspection-specific data online.[256] This makes it difficult to augment our existing microdata with the type of inspection by automatically querying the online site. We solve this problem by developing a finely tuned classification algorithm that leverages information in the New York City Rules and DOHMH policy to classify inspection types (spelled out in detail in Appendix B). For a random (cross-validation[257]) sample of five hundred inspections coded manually from the online data, our algorithm classifies 97% of inspections correctly.

Fourth, the reason it does not appear possible to classify inspections perfectly is that there are a number of internal inconsistencies within the DOHMH data. In some instances, for example, the letter grade is inconsistent with the numerical score. Appendix A more comprehensively documents data integrity issues we have uncovered, which are severe but limited enough in scope so as not to affect our findings. Last, none of the DOHMH data clearly represent whether an administrative hearing occurred and, if so, whether the score was reduced at the hearing. As best as we are able to determine, DOHMH simply overwrites the score, grade, or both. (Changes in how DOHMH accounted for hearings may explain some of the internal inconsistencies of Appendix A.) We examine the effect of administrative

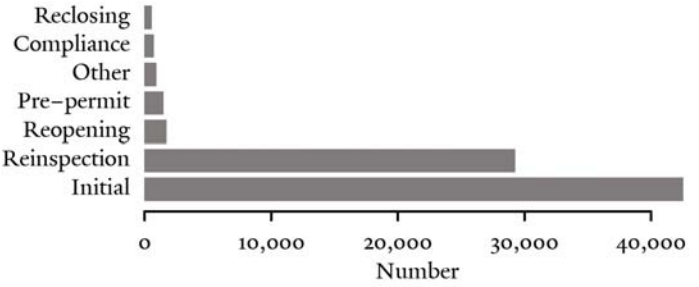
255. *See* H.G. Parsa et al., *Why Restaurants Fail*, 46 CORNELL HOTEL & RESTAURANT ADMIN. Q. 304, 309 & ex. 1 (2005).

256. We attempted to access the inspection-specific data from multiple California-based machines on multiple operating systems on multiple days and with multiple browsers. The Chief Technology Officer at Stanford Law School was not able to solve the problem.

257. By cross-validation, we mean that this sample of five hundred inspections was not used to develop the classification algorithm.

hearings in Appendix C.3, by using multiple versions of the dataset we obtained privately from January 2010 to January 2012. These multiple versions enable us to track how an inspection is recorded before and after an administrative hearing, as differences in how the same inspection is represented across versions are most plausibly attributable to hearings.

Figure 6.
INSPECTION TYPES IN NEW YORK



The vast majority of scored inspections are initial inspections and reinspections.

Figure 6 plots the distribution of types of scored inspections from our classification algorithm. For the moment, these data exclude unscored compliance inspections (the bulk of compliance inspections), which we return to in Part VI. The vast majority of scored inspections are either initial inspections or reinspections.[258]

258. For completeness, the other kinds of inspections are as follows. After a restaurant is shut down, it must undergo an inspection to reopen. If such an inspection is successful, it counts as a "reopening inspection," triggering a subsequent initial inspection; if not, it counts as a "reclosing inspection," keeping the restaurant closed. "Pre-permit inspections" are conducted for start-up restaurants prior to operation, and are followed by an initial inspection. To be precise, we classify as an initial inspection an initial operational pre-permit inspection, because the subsequent inspection typically is a reinspection (e.g., Aunt Rosie's Coffee Shop and Diner). We classify as a pre-permit inspection an initial nonoperational pre-permit inspection, because the subsequent inspection is typically an initial inspection (e.g., Crown Fried Chicken, 3486 Broadway).

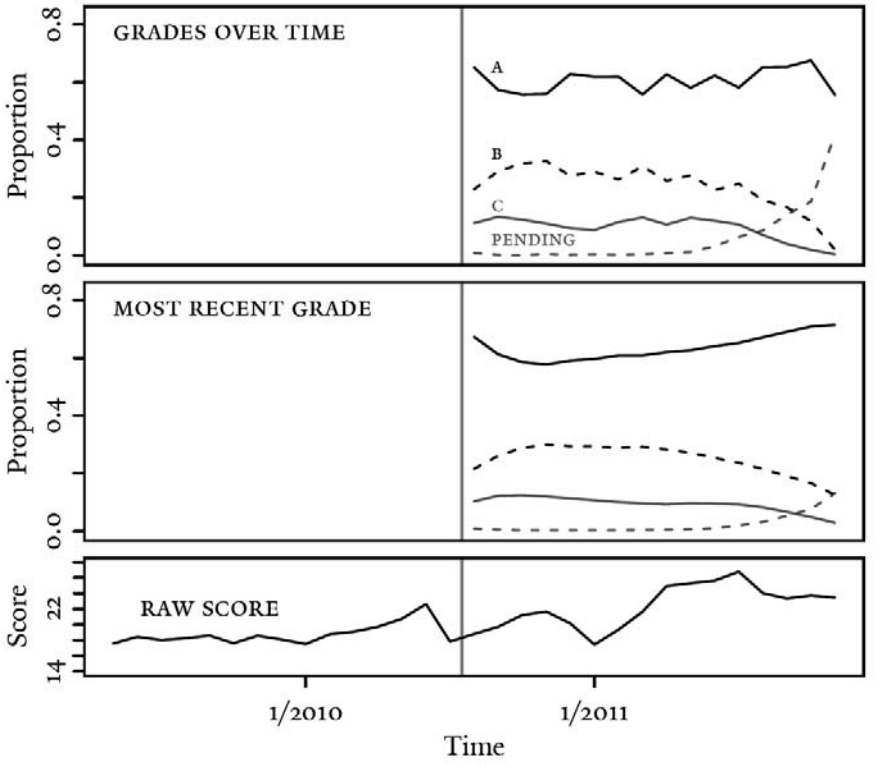
C. Empirical Results

1. Grade Variation

Unlike San Diego, New York exhibits considerable variation in grades. Roughly 61% of restaurants inspected each month receive 'A's. The mean score across all inspections is 19 points (standard deviation = 15). Figure 7 plots the proportion of restaurants with specific grades assigned in each month's inspections in the top panel (i.e., the "flow" of grades), the overall proportion of restaurants with each grade (based on the most recent grade) in the middle panel (i.e., the "stock" of grades), and the raw score in the bottom panel. The *x*-axis represents the month of the inspection and the *y*-axis represents the score or proportion of restaurants with a specific grade. The proportion of 'A's assigned in any given month (the flow) remains stable across time. The proportion of restaurants with grades pending spikes upward in the last months of the observation period, due to pending administrative hearings. Virtually no restaurants that were inspected in December 2011 actually posted grade signs of 'B' or 'C,' as indicated by the dip in the dashed black and solid gray lines. This simple time trend illustrates how the "grade pending" option makes the system more palatable to restaurateurs. Most consumers arguably do not know how to interpret a "grade pending" sign. The delay for a hearing and faster pace of inspections for low-graded restaurants mean that grades of 'B' or 'C' are posted for only short durations.

Despite the fact that the proportion of restaurants receiving 'A's in any given month (the flow) is roughly constant, the stock of 'A's (from the most recent grade) increases over time, as depicted in the middle panel. This stock-flow difference may be mechanistically driven—even with no general improvement in sanitation practices and random scoring. Because the inspection cycle is shortened for lower-scoring restaurants and more protracted for higher-scoring restaurants, the stock of 'A's will increase over time, even under random scoring.

Figure 7.
RESTAURANT GRADES OVER TIME IN NEW YORK



Pending grades are issued when (1) neither the initial inspection nor the reinspection resulted in an 'A,' and (2) an administrative appeal of the inspection is pending. These pending grades are converted to grades once the appeal is resolved.

Moreover, while DOHMH proudly cites over one thousand violations for failure to comply with grade posting,[259] such violations also suggest that disclosure can be evaded. Figure 8 shows one example of formal compliance with posting requirements that likely avoids informing consumers of the health inspection result. Writes one commenter on the *New York Times* website:

> Helpful tip to restaurant owners who happen to get C grade [sic] whether they deserve them or not: the bright orange C letter grade signs fade rapidly in direct sunlight so while you have your grade

259. *See Restaurant Letter Grading: The First Year*, *supra* note 234, at 5.

pending signs posted—take your C letter grade home and hang it in direct sunlight, in about 7 days it will be very faded.[260]

The *New York Daily News* reported that several pizzerias, a bagel store, and a Dunkin' Donuts franchise registered as supermarkets or wholesalers, which fall under the jurisdiction of the state Department of Agriculture, to evade grading requirements.[261]

Notwithstanding these forms of selective disclosure, New York restaurants exhibit genuine grade disparities. On that measure, New York appears to provide more meaningful information to consumers than San Diego.

Figure 8.
DISCRETIONARY GRADE DISCLOSURE[262]

This restaurant was assigned a 'B' grade and posted the grade card at the door as specified, at least formally, by the New York City Rules. Photo by Zach Seward for the *Wall Street Journal*, reprinted with photographer's permission.

260. daniel, Comment to McCabe, *supra* note 70 (Jan. 21, 2011, 10:49 AM), http://fivethirtyeight.blogs.nytimes.com/2011/01/19/grading-new-york-restaurants-whats-in-an-a/?comments#permid=6.

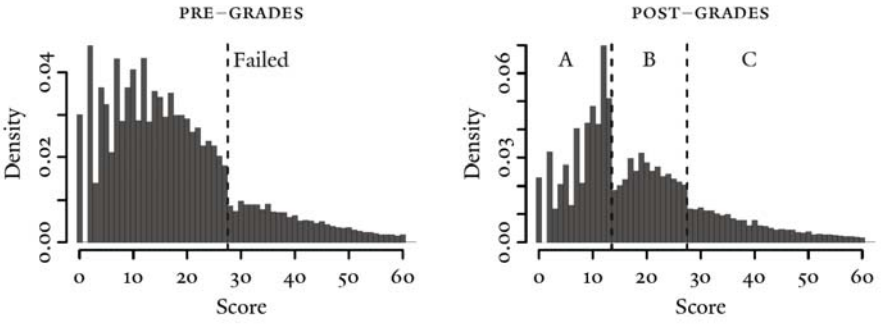
261. *See* Reuven Blau & Simone Weichselbaum, *How Eateries Avoid Health Dept. Letter Grades*, N.Y. DAILY NEWS, Jan. 9, 2012, http://articles.nydailynews.com/2012-01-09/news/30605668_1_letter-grades-andrew-rigic-restaurants.

262. Aaron Rutkoff, *Restaurant Makes Best Out of 'B' Grade*, WALL ST. J.: METROPOLIS (Sept. 17, 2010, 4:04 PM), http://blogs.wsj.com/metropolis/2010/09/17/restaurant-makes-the-best-of-b-grade.

2. Grading Changes Scoring

How have inspections changed with the onset of grading? Figure 9 plots the distribution of all inspection scores pre-grading on the left panel and post-grading on the right panel. The dashed line on the left panel indicates the threshold for failing a health inspection, while the dashed lines on the right panel represent the grading thresholds. Most strikingly, sharp discontinuities exist at each of the thresholds. Prior to grading, 1,424 inspections resulted in a score of 13, and 1,784 inspections resulted in a score of 14. After grading, 3,923 inspections resulted in a score of 13, and 1,416 inspections resulted in a score of 14 (p-value for the difference in proportions < 0.0001).[263]

Figure 9.
INSPECTION SCORES IN NEW YORK



These histograms depict inspection scores for all scored inspections before grading in the left panel and after grading in the right panel. The threshold of 28 points in the pre-grading period resulted in compliance inspections that could lead to a shutdown. The threshold of 14 points in the post-grading period determined the difference between an 'A' and 'B' grade. The threshold of 28 points could continue to result in compliance inspections, but also resulted in a 'C' grade. The thresholds exhibit sharp discontinuities.

Given the slight scoring changes and reinspection system first introduced in 2010, we now examine scoring and violations over more fine-grained time periods, using our classification algorithm to classify types of inspections in the post-grading period. Figure 10 plots sequences of histograms as time proceeds

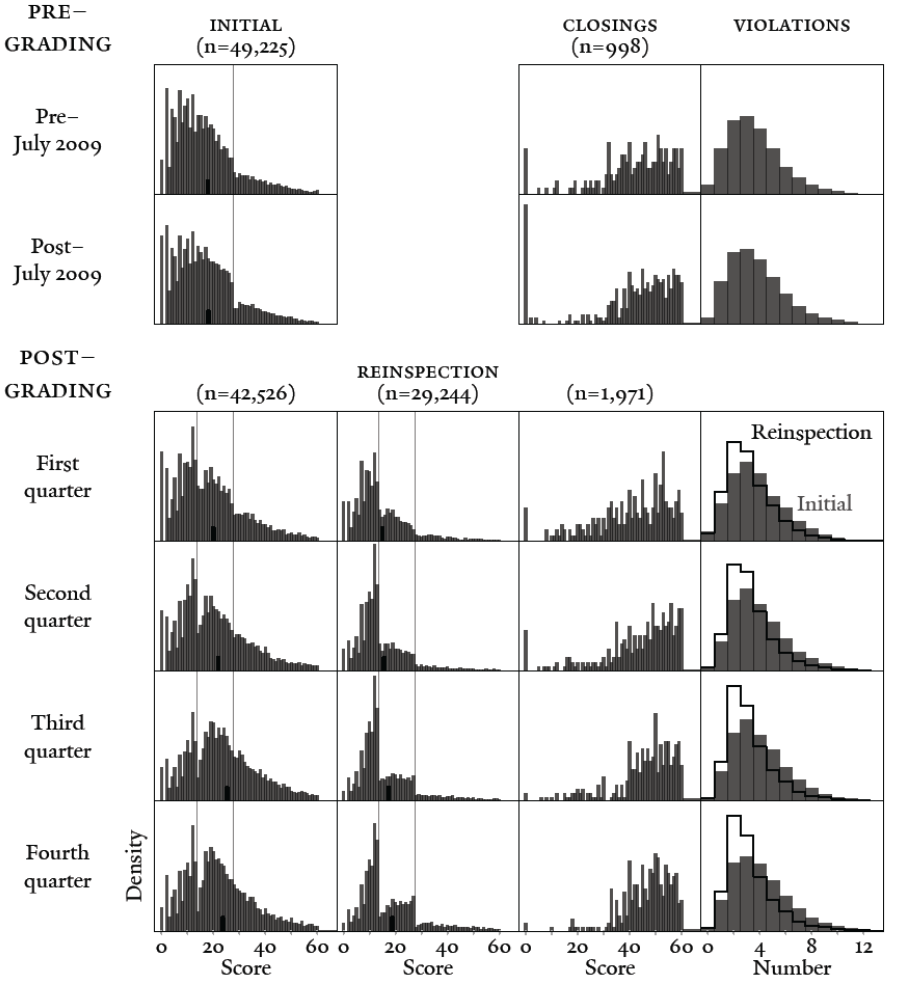
263. The p-value is calculated from a Fisher's exact test applied to a two-by-two contingency table with rows representing scores of 13 and 14 and columns representing the pre- and post-grading periods.

across rows: the pre-grading period is split between the period before and after July 2009 (when DOHMH dropped documentation and administrative violations), and the post-grading period is divided into quarters containing roughly an equal number of inspections. The columns represent initial inspections, reinspections in the post-grading period, inspections resulting in closures, and counts of violations. The gray vertical lines indicate thresholds (for failure pre-July 2010 and grades post-July 2010) and the short black dashes represent averages.

Several trends emerge. First, scoring during the pre-grading period and first post-grading period appears comparable, which suggests that changes in the scoring system had little immediate impact on the conduct of inspections. Second, as time progresses over the quarters, we observe considerable shifts in the distribution of scores in both the initial inspections and reinspections. The discontinuity at 14 points emerges for both, but much more sharply for reinspections. Reinspections, which typically happen within a month, are disproportionately responsible for the shift toward borderline 'A's and 'B's. Third, the number of violations cited in initial inspections (the gray histograms in the right column) also appears comparable over time, but reinspections generally result in fewer violations.[264] Last, the scores of inspections resulting in closure of the restaurant cluster sharply to the right, as we might expect. (A considerable number of inspections result in a score of 0, which may result from inspectors shutting down the restaurant without formally tallying the score.)

264. The difference of roughly 0.6 violations is statistically significant (p-value from t-test < 0.0001).

Figure 10.
EVOLUTION OF THE GRADING SYSTEM IN NEW YORK



The top two rows depict inspection scores prior to the grading system. The bottom four rows depict inspection scores as time progresses from the first to the fourth quarter of the post-grading period. The first three columns correspond to different types of inspections: initial inspections that start a scoring cycle in the first column, reinspections for grading purposes in the post-grading period in the second column, and inspections resulting in DOHMH closing the restaurant in the third column. DOHMH can shut down a restaurant for "serious and persistent violations or uncorrected public health hazards"[265] even when its score does not exceed 28. The last

265. 137 CITY REC. 1607 (June 15, 2010).

column presents the number of violations for initial inspections and reinspections. Vertical gray lines indicate applicable thresholds: (1) 28 points for a failed inspection pre-grading or a 'C'-grade post-grading and (2) 14 points for an 'A'-grade post-grading. Short black dashes indicate the average score for the period and type of inspection.

As with San Diego, from this data alone, it is not possible to infer whether the system is working effectively. The discontinuity observed at the threshold between 'A' and 'B' grades, for example, may result from restaurants targeting the threshold by cleaning up just enough to achieve a better grade. If anything, however, average scores are *increasing* over time (see the black dashes in Figure 10), suggesting no general improvement.

3. Scoring Inconsistency

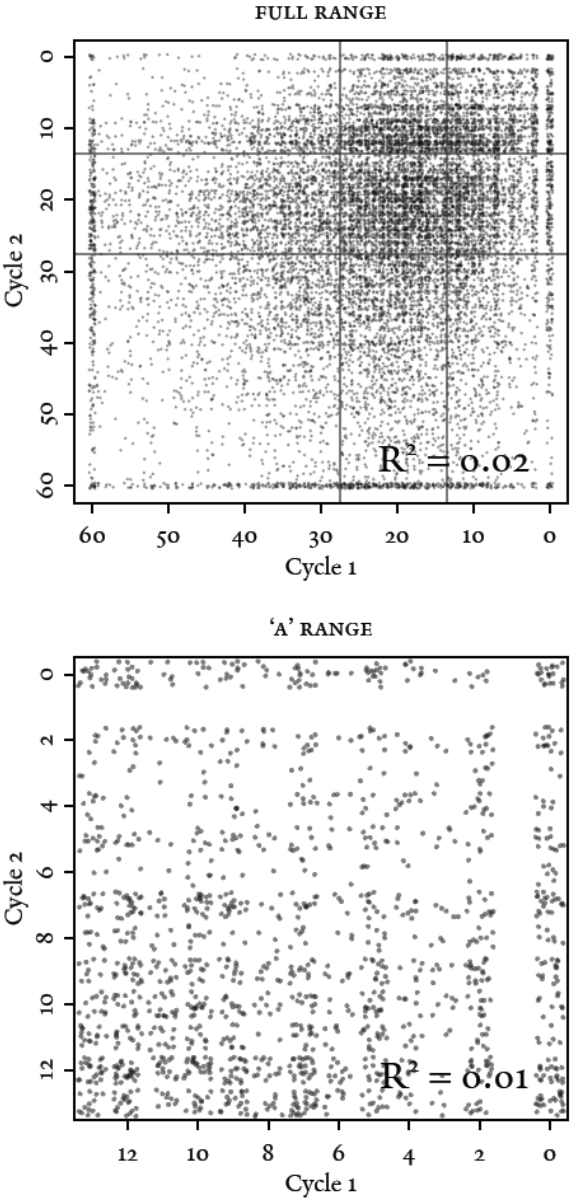
If New York is unlike San Diego in that it has actual grade variation, how does it perform in the consistency of scores? One requirement of targeted transparency is that the underlying information content must be meaningful. To examine this, we compare initial inspections across inspection cycles in the post-grading period. Initial inspections are the closest to random inspections because their timing is the least predictable and are therefore most likely to provide an unbiased measurement of restaurant sanitation.[266] As DOHMH states, inspections across cycles "are an indicator of restaurants' typical food safety practices."[267] (For robustness, Appendix C.2 shows that the lack of consistency persists regardless of the type of inspection examined.)

Figure 11 plots the score of the first post-grading initial inspection on the *x*-axis against the subsequent initial inspection on the *y*-axis. Because the post-grading period is only 1.5 years long, we observe 14,552 restaurants (roughly 63% of the sample) undergo multiple initial inspections. Each dot (randomly jittered for visibility) represents one restaurant. Unlike in Figure 4 for San Diego, the mass of data looks essentially random. Roughly 25% of the variation in San Diego inspection scores can be explained by the previous cycle's scores, but prior scores in New York explain less than 2% of score variation. Of course, restaurants scoring poorly have an incentive to improve for subsequent inspections. To account for this, the bottom panel focuses on the subset of restaurants that received an 'A' in both initial inspections. Again, there is no substantively meaningful correlation across the cycles.

266. *See* Hatfield & Seiver, *supra* note 118, at 23 ("[T]he re-inspection grade is less likely to be an unbiased indication of ongoing operations.").

267. *Restaurant Letter Grading: The First Year*, *supra* note 234, at 4.

Figure 11.
LACK OF CONSISTENCY IN NEW YORK



Each dot represents the score a restaurant received in the first initial inspection after grading was instituted on the *x*-axis and the subsequent initial inspection on the *y*-axis. For visibility, observations are randomly jittered. The top panel depicts the range of observed scores (censored at 60) and the bottom panel depicts restaurants receiving 'A'

grades in both cycles. Less than 2% of the variation in inspection scores is predicted by prior inspection scores (see R^2s in the lower right hand corners). Unlike in San Diego, inspections do not appear to measure meaningful systematic sanitation differences amongst restaurants.

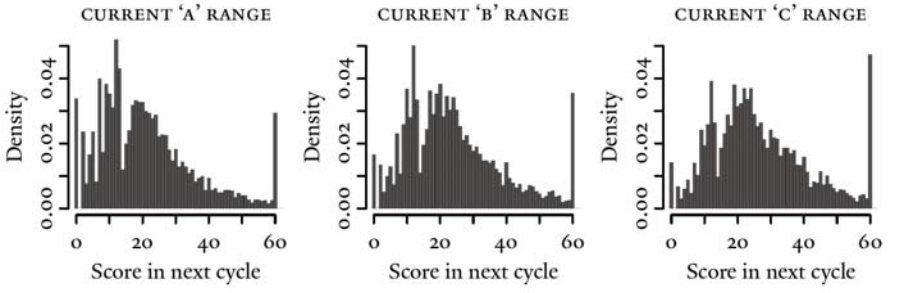
It doesn't take long to discover the lack of consistency upon sampling individual restaurants on the DOHMH site. Per Se, a three-star Michelin-rated restaurant, received 23 points on its first post-grading initial inspection, 8 points (and an 'A') on the reinspection, and 41 points on the next initial inspection.[268] Mamoun's Falafel, a popular, hole-in-the-wall falafel shop in Greenwich Village, received 59 points on its first post-grading initial inspection, 5 points (and an 'A') on its reinspection, 16 points on its subsequent initial inspection, 9 points (and an 'A') on the reinspection, 27 points on its third initial inspection, and 26 points (grade pending) on the reinspection.

The considerable noise in New York inspection scores—particularly when compared to their relative consistency in San Diego—means that grades are not particularly good predictors of future inspection scores. A 10-point increase in one initial cycle is associated with a statistically significant 1.4-to-1.7-point increase (at 95% confidence) in the subsequent initial cycle. Figure 12 illustrates what this substantively means, plotting the distribution of scores in the subsequent initial cycle given an initial inspection in the 'A,' 'B,' or 'C' range. If a restaurant receives a score in the 'A' range, it has a 37% chance of getting an 'A' the next time around; a 'B'-range restaurant has a 27% chance, and a 'C'-range restaurant has a 20% chance. To be sure, repeat initial inspections do exhibit *some* degree of correlation, but grades as disclosed provide customers a false sense of certainty about the restaurant's current sanitation practice.[269] Unlike in San Diego, the distributions (particularly in the 'A' and 'B' panels) exhibit strong similarities.

268. After the first draft of this Article, the *New York Post* reported that the manager of Per Se, whose owner has ties to Mayor Bloomberg, called DOHMH to improve the sanitation score of an inspection outside our observation period. *See* David Seifman, *'A-Rated' Assist for 'Connected' Eatery Following Violations: Se What? 'Connected' Eatery's Grade Bump*, N.Y. POST, Mar. 3, 2012, http://www.nypost.com/p/news/local/manhattan/rated_assist_T4QQe1SEBqiiqH02fLltrI.

269. For some discussion of the limits of R^2 as a measure of substantive consistency, see Daniel E. Ho, *Reconciling Punitive Damages Evidence*, 166 J. INSTITUTIONAL & THEORETICAL ECON. 27 (2010).

Figure 12.
LACK OF PREDICTIVE POWER IN NEW YORK



Each panel depicts cycle 2 scores given the restaurant grade in cycle 1. For example, the left panel depicts the score distribution in cycle 2, given that a restaurant received an 'A' in cycle 1. Although there are shifts, the distributions are not sharply distinguishable from a substantive perspective. For visibility, scores are censored at 60.

V. EXPLAINING THE SCORING DIVERGENCE

What explains the sharp differences in inspector scoring practices between San Diego and New York? After all, the inspections systems share some considerable similarities: both (1) follow the FDA model food code (as do many jurisdictions); (2) employ a point scoring system for substantively comparable violations with reinspections for grading purposes; (3) engage in similar hiring practices for health inspectors; (4) operate in relatively diverse restaurant markets; and (5) visit establishments at comparable frequencies.[270] There are of course other factors that may explain the difference, such as greater dynamism in New York's restaurant market, the shorter amount of time its system has been in place, and the penalties the two jurisdictions impose for poor performance (which we address in Appendix D).

We explore one alternative explanation. Perhaps targeted transparency has emphasized the demand side of information but ignored the supply side. Put differently, targeted transparency prescribes simplifying information to enable

270. The average number of days between scored inspections for an establishment is 151 (standard deviation = 139) in New York and 184 (standard deviation = 116) in San Diego. Although Table 1 indicates that the minimum number of annual inspections is one in New York and two in San Diego, those minima refer to the number of inspections for the lowest-risk types of establishments.

consumers to act in a sophisticated way, but perhaps New York fails in simplifying the inspection process sufficiently to enable *inspectors* to score in a consistent way. Differences in the way inspectors conduct on-site visits might explain the noisiness in the New York data.

To investigate this possibility, we studied in detail the inspection processes, documentation, and scoring worksheets used in San Diego and New York. Our goal was to formalize how each jurisdiction might treat the same underlying behavior or condition. We used our materials to map 115 New York violations[271] to fifty-two San Diego violations, allowing for any kind of mapping (e.g., one New York violation might match several San Diego violations). In some instances, the matches were straightforward. For example, San Diego's violation of "returned and reservice of food"[272] matched New York's violation of "unprotected food re-served."[273] Other instances, however, required more detailed parsing of the materials. "Food handler training" in San Diego,[274] for example, requires that any employee in contact with food have a valid food handler's card. New York's requirement of a food protection certificate, however, applies only to supervisors,[275] and therefore is not a substantive match.

Figure 13 presents the results from this comparison, focusing on scored violations that are cited at least once. The rows represent scored violations and are sorted by the frequency of citation in New York (plotted on the left panel). Each square represents point values that can be assigned to that violation. Gray squares are general (or minor) violations, and black squares denote critical (or major) violations. For example, the top row in the New York scoring panel represents a violation for improper maintenance of a non-food-contact surface. In New York, this 10F violation is a general violation, denoted by the gray boxes, and may be assigned 2, 3, 4, or 5 points. The lines connect New York's violations to a comparable San Diego violation. For example, the horizontal line in the top row matches New York's 10F violation to San Diego's #33 violation for an unclean non-food-contact surface, which is a minor violation scored at one point.

271. One hundred fifteen is more than the number of violations noted in the caption of Table 3 primarily because of unscored, administrative violations added since 2005.

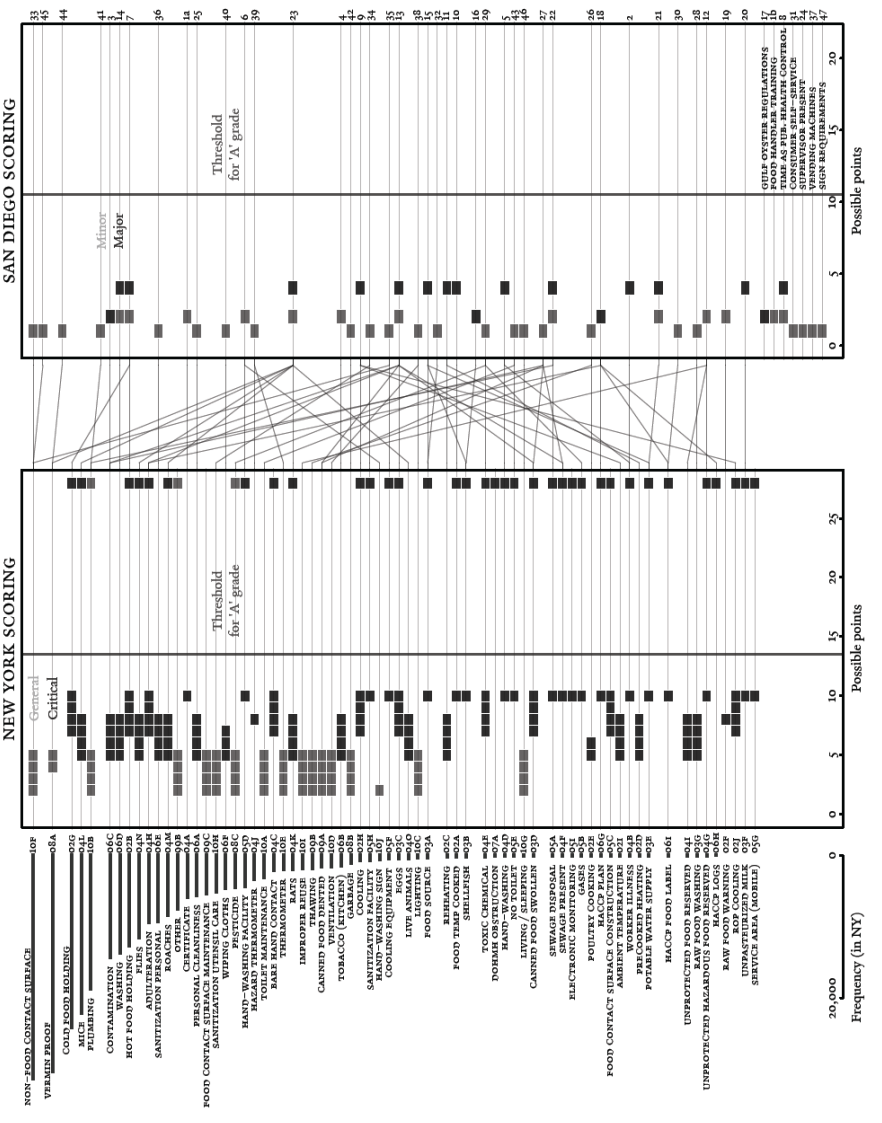
272. *Retail Food Facility Operator's Guide*, *supra* note 113, at 12.

273. *What To Expect When You're Inspected: A Guide for Food Service Operators*, *supra* note 220, at 13.

274. *Retail Food Facility Operator's Guide*, *supra* note 113, at 8.

275. *What To Expect When You're Inspected: A Guide for Food Service Operators*, *supra* note 220, at 12.

Figure 13.
SCORING IN NEW YORK AND SAN DIEGO



The left panel depicts the frequency of violations, based on New York data in the post-grading period. For example, improper construction of a non-food-contact surface is the most frequently cited violation. The "New York Scoring" and "San Diego Scoring" panels depict the points that an inspector can assign to such violations in New York and San Diego, respectively. For example, a New York inspector can assign 2, 3, 4, or 5 points for improper maintenance of a non-food-contact surface violation, while a San Diego inspector can assign 1 point. Black indicates a "critical" or "major" violation and gray indicates a "general" or "minor" violation. The vertical lines represent the thresholds for an 'A' grade in the two jurisdictions. The light gray lines connecting these panels match up substantive violations. New York disaggregates classes of violations more finely than San Diego and uses a much wider point range (relative to the grade threshold) for most violations. Both factors arguably increase inspector discretion.

Two findings emerge from Figure 13. First, New York inspectors have a larger set of violations to score. While New York inspectors can cite sixty-eight possible scored violations, San Diego inspectors can only cite forty-eight. This does not mean, however, that San Diego inspectors *ignore* underlying behavior that is cited in New York. Most New York violations can in fact be mapped to a San Diego violation, as indicated by the connecting lines between the panels. The difference, instead, is that New York disaggregates classes of violations more finely, as can be seen by the fact that a single violation in San Diego is often mapped to multiple New York violations. For example, a violation of "[n]o rodents, insects, birds or animals" receives either 2 or 4 points in San Diego.[276] New York, however, records separate violations for (1) "[e]vidence of rats or live rats," (2) "[e]vidence of mice or live mice," (3) "[l]ive roaches," and (4) "filth flies," each of which can be scored 5, 6, 7, 8, or 28 points, depending on the amount of evidence.[277] Thirty "fresh mice droppings in one area" result in 6 points, but thirty-one mice droppings result in 7 points.[278] Other "[l]ive animal" violations are assigned 5, 6, 7, or 8, but never 28, points.[279]

Second, New York inspectors retain much more discretion in the potential range of point scores for the same underlying violation. For instance, general violations for plumbing not being "properly installed or maintained" (10B), pesticide use "not in accordance with label or applicable laws" (8C), or simply "other" issues (99B) can carry anywhere from 2 to 28 points.[280] In principle,

276. *Retail Food Facility Operator's Guide*, *supra* note 113, at 6.

277. *What To Expect When You're Inspected: A Guide for Food Service Operators*, *supra* note 220, at 14-15; *see Inspection Scoring System for Food Service Establishments*, *supra* note 214, at 3.

278. *What To Expect When You're Inspected: A Guide for Food Service Operators*, *supra* note 220, at 14.

279. *Id*. at 15.

280. *Id*. at 21, 20, 23.

condition levels are meant to capture the severity of a violation;[281] in practice, they afford more discretion to inspectors, thereby potentially undermining the goal of numerical scoring to make the inspection process more objective. Relative to respective 'A'-grade thresholds (the vertical lines), New York inspectors have much more discretion than San Diego's to amass violation points.[282]

Could such differences in the inspection score sheet matter? There are several reasons to think so. First, New York inspectors do not appear to be specializing exclusively in restaurant health inspections. In the 2009 audit, the Comptroller found that only sixty-seven inspectors (out of some 160 at the time) actually conducted more than one hundred restaurant inspections per year.[283] Second, given the salary levels, it may not be easy to retain talented inspectors, leading to turnover in staffing. Third, the inspection score sheet may uniquely matter for the twenty new inspectors hired by New York after the grading system. Each of these new hires would have little prior experience scoring inspections, thereby exacerbating variability across inspectors. Fourth, supervision, as the Comptroller's audit showed, is lackadaisical.[284] Given the sheer number of inspections, New York's scoring system may be too ambitious to induce any consistency across inspectors. Fifth, because the scoring system was only introduced in 2003, inspectors have at most eight years of experience with the system. Last, the design of inspection worksheets appears to matter elsewhere. In Santa Clara County, for example, one inspector inflated swaths of Palo Alto restaurant scores by accidentally checking off major and minor violation boxes for the same underlying violation. That inspector in Santa Clara County reported 442 major infractions; another inspector reported none.[285]

It is of course possible that other differences in institutions (e.g., the degree to which inspectors specialize in food safety) – not the design of the inspection scoring process – explain the divergence between San Diego and New York. Los Angeles, however, uses scoring comparable to San Diego and exhibits similar consistency across inspections, but its inspectors specialize to an even lesser degree than those of San Diego (240 individuals functioning as the

281. *See* McSwane et al., *supra* note 127, at 344 (discussing proposals to change the 100-point score worksheet of the 1976 model food code to allow for weighting by severity of violations).

282. This remains the case even if we ignore point values of 28, which, one might argue, simply represent the ability that most jurisdictions have to shut down an establishment for a serious public health hazard.

283. *See* 2009 AUDIT, *supra* note 204, at 13-14.

284. *Id.*

285. *See* Steve Johnson, *Errors in Food Safety Checkups Inspections; Variations in Restaurant Infractions Due to Lack of Uniform Standards*, SAN JOSE MERCURY NEWS, Aug. 20, 2000, at 1A.

equivalent of 106 full-time employees). Until designs are tested, we will not know for sure. Nonetheless, the substantive comparison of the scoring process (and evidence across these jurisdictions) suggests that there may be such a thing as too much information, not only on the disclosure side, but also on the production side.

VI. INTENDED AND UNINTENDED EFFECTS

We return now to New York. Its implementation of grades during our observation period allows us to potentially assess some effects of grading (subject to the caveats in Section II.A). Section VI.A focuses on grading's intended effects, namely on the risk of foodborne illnesses. While we find no evidence of intended health benefits, Section VI.B provides evidence of an unintended cost in resource allocation.

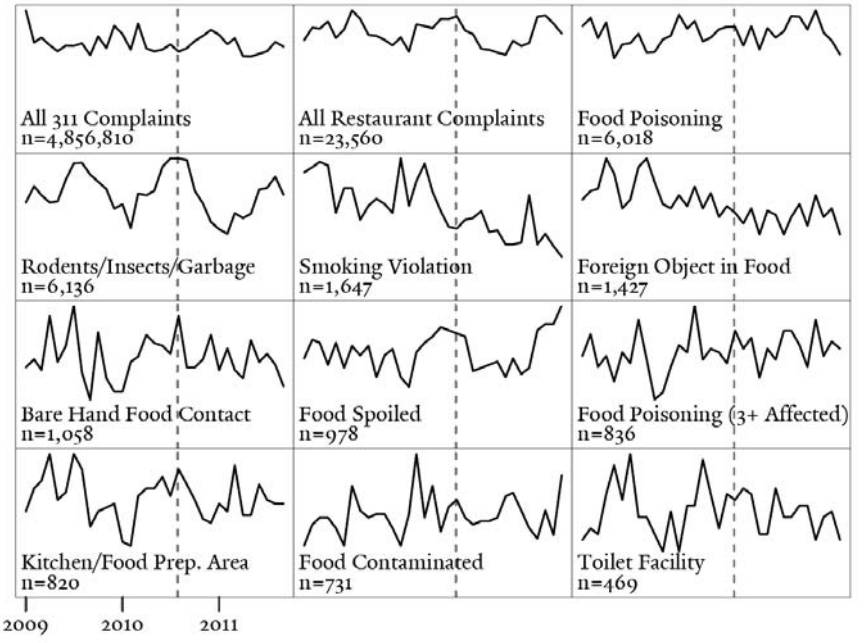
A. Health Outcomes

The ultimate goal of restaurant grading is to reduce the risk of foodborne illness. The prevalence of foodborne illness from restaurant consumption, however, is extraordinarily difficult to measure.[286] Most instances of food poisoning do not result in formal complaints, news stories, or hospitalizations. Moreover, the source of food poisoning may be difficult to trace. We here explore several indicators of food poisoning to assess the impact (if any) of the grading system on public health outcomes.[287] The indicators are imperfect, but if the health benefits are anywhere near as large as the 20% reduction in hospitalizations reported for Los Angeles, we should nevertheless expect to detect some effect.

286. The Centers for Disease Control and Prevention estimates that there are roughly 48 million cases of foodborne illness each year, but only 128,000 hospitalizations (less than 0.3% of cases). *See CDC Estimates of Foodborne Illness in the United States*, CENTERS FOR DISEASE CONTROL & PREVENTION (Feb. 2011), http://www.cdc.gov/foodborneburden/PDFs/FACTSHEET_A_FINDINGS_updated4-13.pdf; *see also* Ctrs. for Disease Control & Prevention, *Surveillance for Foodborne Disease Outbreaks—United States, 2006*, 58 MORBIDITY & MORTALITY WKLY. REP. 609, 614 (2009) ("[O]nly approximately half of the [1,270] reported outbreaks [of foodborne illness] in 2006 had a confirmed etiology . . . ."); Paul S. Mead et al., *Food-Related Illness and Death in the United States*, 5 EMERGING INFECTIOUS DISEASES 607, 609 (1999) (discussing factors complicating the surveillance of foodborne illness, including underreporting).

287. We did not examine hospitalization data, which are available only via a protracted and costly information request. Hospitalizations are an imperfect measure of food poisoning incidence because only a very small number of cases of food poisoning result in hospitalization, and diagnoses cannot be readily traced to restaurants. *See* sources cited *supra* note 286. Constructing a credible control group to New York City is not straightforward.

Figure 14.
CALL COMPLAINTS OVER TIME



Each panel depicts counts of 311 call complaints on the *y*-axes against months on the *x*-axes. The dashed, vertical gray lines indicate the onset of restaurant grading. The top left panel presents all complaints. The second top panel presents all restaurant complaints. The remaining panels present any restaurant complaints made over 450 times during the observation period.

First, we focus on 311 call data. New York's 311 phone line is a centralized information phone line for city agencies and services. During our observation period, it also served as the official route by which to report restaurant complaints, including food poisoning, to DOHMH. DOHMH itself has used complaints as a measure of performance.[288] If there were substantial improvements in sanitation, we would expect 311 calls to drop with the onset of grading.[289] But this is not the case. Figure 14 plots time series from 2009 to 2011

288. *See The Mayor's Management Report: Preliminary Fiscal 2012*, CITY OF N.Y. 3-4 (Feb. 2012), http://www.nyc.gov/html/ops/downloads/pdf/mmr/0212_mmr.pdf (citing decreases in child-care and pest-control complaints as evidence of departmental performance).

289. Of course, grading might also heighten consumer awareness of sanitation conditions or DOHMH's existence, which might increase 311 calls. It is possible that the constant rate of

of types of 311 calls, with the gray vertical line indicating the onset of grading. The top left panel plots all 4.8 million 311 calls, the volume of which is stable during these years. The second panel in the top row plots the time series for all restaurant complaints, over 23,000 total. Each subsequent panel plots a type of complaint that was lodged at least five hundred times and is related to restaurant sanitation (e.g., food poisoning, rodents, bare-hand contact with food). The grading intervention has little association with the volume of any of these calls.

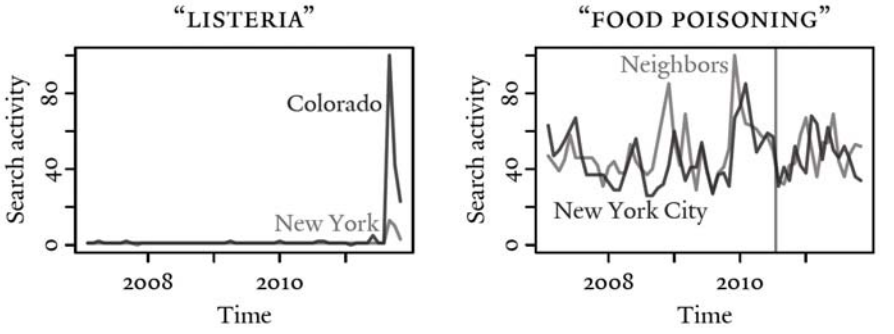
Second, we examine Google search trends, which have been documented to reflect general public health outcomes both temporally and geographically.[290] If grading has a sharp effect, it should manifest itself in the search volume for food poisoning. For most cases, consumers may be more likely to search online for home remedies than to check themselves into a hospital. Moreover, such search data allow us to leverage both temporal and geographic differences (a difference-in-differences design). The left panel of Figure 15 demonstrates that search activity can reflect foodborne outbreaks. Beginning in July 2011, for example, there was an outbreak of listeria tied to contaminated cantaloupes. The search for "listeria" spiked in late 2011 and did so, as we would expect, more sharply in Colorado—the origin of the contaminated cantaloupes—than in New York. (Cantaloupes are of course shipped across state lines, so we would not expect search activity in New York to remain entirely unaffected.) The right panel plots search activity for "food poisoning" in New York in dark gray and neighboring metropolitan areas without grading systems (Albany-Schenectady-Troy, Rochester, and New Jersey) in light gray. The curves are indistinguishable both before and after the implementation of grading (p-value = 0.098 for, if anything, a positive effect),[291] providing little evidence of a benefit in public health outcomes.

calls is thereby consistent with a sharp increase in sanitary conditions. Grading may also cause consumers to substitute, for example from 'B'-grade to 'A'-grade restaurants, which might relatively increase complaints in high-grade establishments and decrease complaints in low-grade establishments.

290. *See* Jeremy Ginsberg et al., *Detecting Influenza Epidemics Using Search Engine Query Data*, 457 NATURE 1012, 1012 (2009) ("Because the relative frequency of certain queries is highly correlated with the percentage of physician visits in which a patient presents with influenza-like symptoms, we can accurately estimate the current level of weekly influenza activity in each region of the United States, with a reporting lag of about one day."); Camille Pelat et al., Letter to the Editor, *More Diseases Tracked by Using Google Trends*, 15 EMERGING INFECTIOUS DISEASES 1327, 1328 (2009) ("[F]or each of 3 infectious diseases, 1 well-chosen query was sufficient to provide time series of searches highly correlated with incidence."); Ari Seifter et al., *The Utility of "Google Trends" for Epidemiological Research: Lyme Disease as an Example*, 4 GEOSPATIAL HEALTH 135, 135 (2010) ("Google Trends . . . approximate[s] certain trends previously identified in the epidemiology of Lyme disease.").

291. This p-value is from a standard difference-in-differences least squares regression model with search volume as the dependent variable and region fixed-effects, a post-July 2010 indicator,

Figure 15.
INTERNET SEARCH ACTIVITY



The *x*-axes represent months and the *y*-axes represent volume, standardized so that 100 represents the maximum and 0 represents the minimum volume. The left panel presents time trends for New York (light gray) and Colorado (dark gray) for the word "listeria" to demonstrate that search activity can meaningfully reflect public health problems. The spike in late 2011 corresponds to the listeria outbreaks stemming from Colorado cantaloupes. The right panel presents search activity for "food poisoning" in New York City (dark gray) and neighboring metropolitan areas from Albany-Schenectady-Troy, Rochester, and New Jersey (light gray).

In short, we find no evidence based on these indicators of positive health effects. Over the long run, such benefits may still materialize, but the evidence does not corroborate DOHMH's own claims of the program's benefits in the first year,[292] nor the rapid and large effects for Los Angeles.[293] Perhaps this is not surprising—after all, the grades themselves do not convey meaningful information that would enable consumers to choose between establishments based on the degree of health risk.

and an interaction term for New York City and post-July 2010. The coefficient on the latter, an estimate of the treatment effect, is an increase in search volume of six units, plus or minus eight at a 95% confidence level.

292. *See Restaurant Letter Grading: The First Year*, *supra* note 234, at 2 ("Grading has contributed to significant improvements in restaurants' food safety practices.").

293. *See* Jin & Leslie, *supra* note 34, at 426 (detecting sharp public health benefits within one year of letter grading in Los Angeles).

B. Perverse Resource Allocation

While the evidence of the impact on health outcomes is weak, it turns out that grading has one strong effect, namely on the internal allocation of agency resources. One of the primary changes in the inspection system in 2010 was the introduction of reinspections solely for grading purposes. Most of the reinspections center around the 'A' threshold of 14 points (for example, the modal reinspection scores are just under 14 points in the reinspection column in Figure 10). Prior to grading, the primary on-site visits to restaurants following an initial inspection were compliance inspections. These focused, by law, on restaurants scoring worse than the 'C' threshold of 28 points.[294] While compliance inspections still formally exist for restaurants scoring above 28 points,[295] we find startling evidence that grading displaced agency resources away from compliance inspections (generally at worse-scoring restaurants) to reinspections (generally at better-scoring restaurants).[296]

The left panel of Figure 16 plots the proportion of all inspections that are compliance inspections over time. Each dot represents the proportion in one month, weighted by the total number of inspections in that month, with 95% confidence intervals. (The light gray curves plot the 95% confidence interval from a generalized additive model.) Prior to grading, 8-15% of all inspections were compliance inspections. After grading, that proportion dropped sharply to less than 5% of all inspections. The right panel plots the proportion of reinspections, which increased sharply to adjudicate grade disputes. Unlike compliance inspections, however, 58% of these reinspections are of restaurants initially in the 'B' range.[297] Grading thereby causes inspection resources to be shifted toward higher-scoring 'B'-range restaurants and away from lower-scoring 'C'-range restaurants. As far as we're aware, no proponent or opponent of restaurant grading has articulated this concern. In a world where most health departments fall short of the FDA recommendation of a

294. 132 CITY REC. 884 (Feb. 18, 2005).

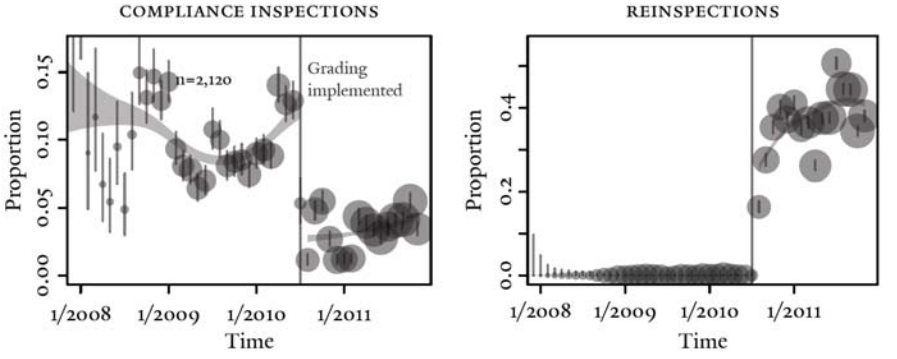
295. 137 CITY REC. 1607 (June 15, 2010).

296. The public health evidence on the relationship between sanitation scores and health risks is inconclusive. *Compare* Irwin et al., *supra* note 128 (finding sanitation scores to be predictive of foodborne illness), *with* Jones et al., *supra* note 115, at 688 (finding *no* statistically significant association between sanitation scores and foodborne illness). Given this inconclusiveness, there is no obvious way to assess the differential risk from an 'A' to a 'B' to a 'C' restaurant. In the Irwin study, the point at which risk for foodborne illness increases is an "unsatisfactory" inspection, suggesting that there may be a threshold at worse-scoring ranges of the score.

297. This proportion is of all reinspections following an initial inspection for which the initial inspection resulted in a score of 14 or more points.

minimum of two inspections per year (see last column of Table 2),[298] resource allocation matters.

Figure 16.
GRADING EFFECTS ON AGENCY RESOURCE ALLOCATION



The *x*-axis represents months, and the *y*-axis represents the proportion of all inspections. Each dot represents the proportion of that month's inspections that were compliance inspections (left panel) or reinspections (right panel), sized proportionally to the number of inspections, with a vertical bar indicating a 95% confidence interval. The vertical gray line represents the onset of restaurant grading, after which resources shift sharply from compliance inspections (at the failure threshold of 28 points) to reinspections (at grading thresholds). The light gray curves represent the predicted (pointwise) 95% confidence interval from a generalized additive model allowing for smoothened trends before and after grading, with a sharp break for July 27, 2010.

Several caveats should be mentioned here. First, recall that New York also sought to hire twenty new inspectors with the onset of grading. The combined effect of adding a reinspection system and twenty new inspectors may be that the total number of inspections at initially 'C'-range restaurants may not change as sharply as the left panel of Figure 16 suggests.[299] However, we should distinguish between reforms that impose grading—virtually always accompanied by a reinspection system—and those that step up enforcement resources. Adding

298. U.S. PUB. HEALTH SERV., FOOD & DRUG ADMIN., *supra* note 102, at 204.

299. This inference is complicated because of the inconsistency of scores. Ideally, we would calculate the average frequency at which a 'C' restaurant is inspected under the pre-2010 and post-2010 systems. But the populations of pre-2010 and post-2010 'C'-range restaurants are not perfectly comparable, because (1) restaurants that received a 'C' on a post-2010 initial inspection and a 'B' upon reinspection would have been a 'C'-range restaurants before grading, and (2) some pre-2010 'B'-range restaurants might have received 'C'-range scores had they been reinspected.

grading alone draws inspection resources from somewhere else.

Second, recall that the 2010 reforms also accelerated the inspection cycle for low-scoring restaurants. One might argue that there is simply less of a need for compliance inspections post-2010 because reinspections take the place of the first compliance inspections, and the next initial inspection comes sooner for some restaurants.[300] Before 2010, however, DOHMH already had in place an "Accelerated Inspection Program" that increased the frequency of inspections for high-risk restaurants.[301] Unfortunately, the program policy is not spelled out in sufficient detail to understand the exact impact of the 2010 reforms. Moreover, compliance inspections pre-2010 were conducted fifteen to forty-five days after a failed initial inspection and repeated every fifteen to forty-five days until the restaurant came into compliance.[302] Post-2010, reinspections occur within roughly thirty days of the initial inspection,[303] and the next initial inspection does not occur until ninety to 150 days later, even for the highest-risk restaurants scoring 28 or more points on any inspection.[304] Reinspections alone thereby cannot fully compensate for compliance inspections.

Third, DOHMH also deploys inspection resources solely to monitor proper posting of grades.[305] These resources, again, must be drawn from somewhere.

Last, the redistributive shift is further complicated by the fact that the underlying inspection scores are quite noisy. If the difference between an initially 'B'-range and 'C'-range restaurant is not meaningful, then the reallocation of enforcement resources may not matter either. (Though recall from Figure 10 that shutdowns of restaurants certainly take place at worse-scoring ranges; distinctions at the 'B'-threshold may be much less meaningful than distinctions at higher ranges.) Taking the inspection system on its own terms, however, grading focuses resources on generally cleaner restaurants.

Although targeted transparency is often billed as a cheap regulatory tool, grading in fact has concrete costs. In New York's case, two of every three initial inspections require a plenary reinspection,[306] and the majority of these

300. Along similar lines, perhaps the penalty of decreased customers is so much sharper upon receipt of a 'C' grade that there is no need to conduct compliance inspections.

301. 2009 AUDIT, *supra* note 204, at 5 & n.2.

302. *See id.* at 9.

303. *See Restaurant Letter Grading: The First Year*, *supra* note 234, at 3.

304. *See* 137 CITY REC. 1607 (June 15, 2010).

305. *See Restaurant Letter Grading: The First Year*, *supra* note 234, at 5 ("Inspectors also conduct targeted, unannounced inspections for card posting compliance at restaurants required to be posting B or C cards.").

306. *Id.* at 3.

reinspections are of initially 'B'-range restaurants. In retrospect, the resource shift may appear obvious. To provide a kind of safety valve to restaurants, grading was introduced in tandem with reinspections. The political economy of grade reform may well explain the design of reinspections, but reform comes at a previously unrecognized institutional cost. Viewed in light of these costs, the discontinuity of scores around the 'A' threshold may, counterintuitively, constitute a positive development. Inspectors may be compensating for the cost of grade resolution, assigning 'A's to borderline restaurants so as not to waste inspection resources on establishments that, at least subjectively, do not pose grave public health threats.

One of DOHMH's responses to the 2009 audit was that it would begin "in July 2010 to post letter grades at all restaurants *and* further increase inspections of poorer performing restaurants."[307] The conjunctive here actually masks a tradeoff.

VII. IMPLICATIONS

A. Design Matters

How do we design a better grading system? We now articulate policy implications of our study that may apply to grading jurisdictions specifically and inspection systems generally.

First, our study underscores the need for transparency about transparency. The availability of rich inspection microdata empowers information intermediaries to rigorously examine how well food safety programs function and to convey that information more persuasively to consumers.[308] As Sam Issacharoff argues, "What is needed is a regulatory regime that would promote a market for intermediaries."[309] The Obama Administration's emphasis on microdata disclosure potentially facilitates such intermediation.[310] Indeed, the brunt of this Article can be considered a form of information intermediation that sheds light on restaurant grades. New York—one of only several major metropolitan areas that makes microdata readily available (see Table 1)—is a

307. 2009 AUDIT, *supra* note 204, at 6 (emphasis added) (quoting DOHMH officials).

308. For example, scorecard.org uses toxicity reports to convey health hazards more meaningfully to consumers. *See* SCORECARD: THE POLLUTION INFORMATION SITE, http://scorecard.goodguide.com (last visited Feb. 2, 2012).

309. Issacharoff, *supra* note 12, at 66; *see also* FUNG ET AL., *supra* note 12, at 122-26 (discussing the importance of information intermediaries).

310. Memorandum from Sunstein, *supra* note 21.

model jurisdiction in that sense. All jurisdictions should follow New York's lead and release full health-inspection data in machine-readable form. The disclosure should be comprehensive, including inspector identification codes, specific violations and point scores, types of violations, and data from restaurants that no longer exist. Even New York falls short of this goal, making it much more difficult to comprehensively assess its grading system.

The benefits of wholesale disclosure extend beyond policy evaluation. Wholesale disclosures empower intermediaries to deliver information to consumers in more direct and effective ways. Inspection microdata, for example, would enable Yelp, a website that aggregates information about ratings of local businesses reaching roughly 66 million unique visitors per month,[311] to include health inspection data in its restaurant characteristics. Similarly, the website Scorecard compiles data from over four hundred government and scientific websites to provide environmental information about localities.[312] Disclosure of real property records by state and local government agencies empowers intermediaries like Zillow, a website that uses fine-grained information on 100 million homes,[313] to deliver simplified, useful information, such as local home-value trends that are based on housing-price models, directly to home buyers. Smart phones permit dissemination to the immediate time and place of decisionmaking.

Second, inspection criteria should be simplified to reduce variability across inspectors. The same behavioral insight of simplifying information for *consumption* should also apply to information *generation*. New York, for example, could adopt a scoring worksheet closer to San Diego's, which would likely increase consistency across inspections. Ideally, agencies would conduct experiments to choose violation items and to determine the optimal level of inspection worksheet complexity.[314] A complementary approach would be to conduct *more frequent*, but shorter, inspections of a *random subset* of violations (weighted by risk). Such an approach might enable more objective measurement because inspectors could focus on a smaller set of more easily measurable

311. *See About Us*, YELP, http://www.yelp.com/about (last visited Apr. 8, 2012) ("Yelp had an average of approximately 66 million monthly unique visitors in Q4 2011.").

312. *See About Scorecard: Scorecard's Data Sources*, SCORECARD: THE POLLUTION INFORMATION SITE, http://scorecard.goodguide.com/about/txt/data.html (last visited Apr. 8, 2012).

313. *See What is Zillow?*, ZILLOW, http://www.zillow.com/corp/About.htm (last visited Apr. 8, 2012).

314. For an inadvertent experiment and discussion of how to do scale equating to bridge distinct forms, see Daniel E. Ho & Timothy H. Shapiro, *Evaluating Course Evaluations: An Empirical Analysis of a Quasi-Experiment at the Stanford Law School, 2000-2007*, 58 J. LEGAL EDUC. 388 (2008).

violations (e.g., food temperature of three randomly chosen items) and restaurateurs would have little time to clean up during the inspection. Removing inspector discretion by design (i.e., by random selection of objectively measurable indicators) may greatly improve the accuracy of inspection scores. Modern survey measurement relies on the same principle: random sampling of respondents removes surveyors' discretion to choose respondents.[315]

Overly complex criteria appear to undermine inspections in other regulatory fields. As John and Valerie Braithwaite convincingly demonstrate, the complexity and specificity of criteria plague the consistency of nursing home inspections.[316] Similarly, inspections by the Mine Safety and Health Administration (MSHA) and the Nuclear Regulatory Commission (NRC), which have no formalized score sheets[317] despite a large number of possible violations,[318] are subject to sharp criticisms of inconsistency.[319] The Braithwaites argue that simplification in particular promotes consistency by

315. Quota sampling, for example, in which surveyors chose respondents within subsets of covariates (age, race, gender), infamously introduced substantial bias. *See* DAVID FREEDMAN, ROBERT PISANI & ROGER PURVES, STATISTICS 337-39 (4th ed. 2007).

316. *See* John Braithwaite & Valerie Braithwaite, *The Politics of Legalism: Rules Versus Standards in Nursing-Home Regulation*, 4 SOC. & LEGAL STUD. 307, 317 (1995) ("Reliable ratings of the quality of care in nursing homes are possible when professional raters use a limited number of criteria; *but* when raters use the large number of specific American regulations as their criteria, reliability is lost.").

317. *See NRC Inspection Manual Chapter 2690: Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations and for 10 CFR Part 71 Transportation Packagings*, NUCLEAR REG. COMMISSION 9-10 (Mar. 9, 2012), http://pbadupws.nrc.gov/docs/ML1203/ML120390415.pdf; E-mail from Rodney M. Brown, Mine Safety & Health Admin., to Mridula Raman (Mar. 26, 2012) (on file with author).

318. For mining safety, see 30 C.F.R. §§ 1-104 (2012). The regulations therein "aim to regulate all aspects of miner's [sic] safety and health." Jay Lapat & James P. Notter, *Inspecting the Mine Inspector: Why the Discretionary Function Exception Does Not Bar Government Liability for Negligent Mine Inspections*, 23 HOFSTRA LAB. & EMP. L.J. 413, 416 (2006). For regulations concerning spent nuclear fuel storage, see 10 C.F.R. § 72 (2012).

319. *See* Office of the Inspector Gen., *Audit Report: Audit of NRC's Oversight of Independent Spent Fuel Storage Installations Safety*, NUCLEAR REG. COMMISSION 6-15 (Mar. 19, 2011), http://www.nrc.gov/reading-rm/doc-collections/insp-gen/2011/oig-11-a-12.pdf (NRC); Austin Hoffman, *South Dakota's Mining Controversy*, KELOLAND.COM (May 13, 2011, 9:58 PM), http://www.keloland.com/news/eyeonkeloland/NewsDetail6403.cfm?Id=115187 (MSHA); *Lawmakers Express Concern and Seek Answers Regarding MSHA Enforcement*, NEB. CONCRETE & AGGREGATES ASS'N NEWSL. (Dec. 2011), http://www.nebrconcagg.com/assets/Newsletters/December2011/Dec11news_final%20low%20res.pdf (MSHA); John Thune, *Inconsistent Mine Inspections Harm SD Businesses, Job Creation*, JOHN THUNE: U.S. SENATOR – S.D. (May 13, 2011), http://www.thune.senate.gov/public/index.cfm/2011/5/inconsistent-mine-inspections-harm-sd-businesses-job-creation (MSHA).

fostering deliberation and a form of peer review among inspectors.[320] Our findings corroborate that simplification on the information-supply side may improve inspections in other regulatory areas.

While our evidence suggests that reforms would reduce the impact of the inspector lottery, the major remaining limitation lies in inspection resources. Without sufficient supervision and training of inspectors,[321] it may not be possible to achieve satisfactory uniformity across inspections. From that perspective, the more difficult policy decision may be whether to increase the budgets and salaries of health departments.

Third, inspections should take place at truly random intervals to eliminate short-term changes taken solely in anticipation of the inspection.[322] A pernicious feature of existing regimes is the relative predictability of when inspections will occur. In San Diego and Los Angeles, restaurants can pay for a next-day reinspection. In New York, the July 2010 reforms spelled out in concrete terms when to expect inspectors—seven days to roughly a month for reinspection, and ninety to 150 days for the next initial inspection for restaurants receiving 28 or more points.[323] Such certainty enables restaurateurs to devote resources to a temporary cleanup in advance of the inspection. Greater randomness would make such strategic cleanups far more difficult. Increasing the randomness in timing of inspections takes real political will, but making inspection scoring more consistent may reduce restaurant hostility toward grades, making such reform more feasible.

320. *See* Braithwaite & Braithwaite, *supra* note 316, at 319-22.

321. *See* Michelle Cotterchio et al., *Effect of a Manager Training Program on Sanitary Conditions in Restaurants*, 113 PUB. HEALTH REP. 353 (1998) (finding that manager training and certification programs may lead to better sanitary conditions in restaurants).

322. Of course, there are different forms of randomness. A simple rule would be that an inspector could appear for the next inspection in a random interval between one and 365 days after an inspection has occurred. Stratified randomization to account for the risk of an establishment is also possible. For example, an inspector could appear in a random interval between one and 182 days for "high-risk" restaurants (however defined) and 183 and 365 days for "low-risk restaurants" (however defined). For some discussion of randomization to reduce behavioral biases in the election context, see generally Daniel E. Ho & Kosuke Imai, *Estimating Causal Effects of Ballot Order from a Randomized Natural Experiment: The California Alphabet Lottery, 1978-2002*, 72 PUB. OPINION Q. 216 (2008), which shows that cognitive limitations that lead voters to be affected by ballot order can be overcome by randomization and rotation of ballot order across districts; and Daniel E. Ho & Kosuke Imai, *Randomization Inference with Natural Experiments: An Analysis of Ballot Effects in the 2003 California Recall Election*, 101 J. AM. STAT. ASS'N 888 (2006), which shows the same.

323. *See* 137 CITY REC. 1607 (June 15, 2010); *How We Score and Grade*, *supra* note 243 ("An inspector goes back to the restaurant unannounced, *typically within a month* . . . ." (emphasis added)).

Fourth, to battle grade inflation, jurisdictions like San Diego should consider changing the thresholds for letter grades to generate meaningful distinctions. For instance, if San Diego employed a threshold of 95 points to receive an 'A,' consumers would receive more information about the relative risk of establishments. At minimum, the overall proportions of restaurants receiving each grade should be disclosed on the grade placard.

Last, health departments (or information intermediaries armed with more comprehensive data) should apply well-known statistical adjustments for differences across inspectors and inspections.[324] The intuition behind such models is that good scores by tough inspectors are more meaningful than good scores by easy inspectors. Statistical models can adjust for inter-inspector differences so that the numerical score is comparable across restaurants, regardless of what the grade threshold may be. (Insights from such models could also be applied to adjust for the time of the day.) Moreover, any disclosure to consumers should convey *uncertainty* in the scores.[325] For example, one simple proposal would be to disclose the (model-based) probability that a restaurant would receive an 'A' if inspected on a future day. Such adjustments would appropriately tailor the strength of the disclosure to the consumer by the uncertainty in distinguishing sanitation levels of restaurants. New York's grades aim to cure an information deficit but, if anything, may overcompensate by creating a false sense of certainty.

B. Retargeting Transparency

Beyond these specific design elements, this Article raises profound questions about mandated disclosure and targeted transparency. First, given that the poster child of targeted transparency is itself susceptible to ineffective implementation, this study raises questions about the design of disclosure policies far beyond food safety. It calls into question the design, implementation, and administration of

324. *See, e.g.*, EXPLANATORY ITEM RESPONSE MODELS: A GENERALIZED LINEAR AND NONLINEAR APPROACH (Paul De Boeck & Mark Wilson eds., 2004); *cf.* Michael Peress & Arthur Spirling, *Scaling the Critics: Uncovering the Latent Dimensions of Movie Criticism with an Item Response Approach*, 105 J. AM. STAT. ASS'N 71 (2010). Applying item response theory, for example, inter-rater adjustments could be applied to account for differences across inspectors, while differential item functioning could be applied to test for the timing of the inspection.

325. *See* Daniel E. Ho & Kevin M. Quinn, *Improving the Presentation and Interpretation of Online Ratings Data with Model-Based Figures*, 62 AM. STATISTICIAN 279, 279 (2008) (observing that current practice in online ratings fails to incorporate statistical uncertainty).

disclosure in a myriad of regulatory areas.[326]

Second, while behaviorally informed regulation is an extraordinarily promising approach, the contextual nature of behavioral effects also makes it difficult to extend findings from one arena to the next. Nudges are contextually dependent. A yellow 'C' grade, for example, may have quite different effects from a red 'C.' New York already had a means of publicly indicating positive sanitation results prior to July 2010—the Golden Apple—but one that apparently did not function effectively. What our findings underscore, then, is the increasingly recognized need to evaluate empirically the efficacy of such design elements, with field experimentation being the most credible assessment tool.[327] Fortunately, the changing evidentiary base of government, combined with the increasing availability of rich microdata about and from administrative agencies, facilitates the systematic assessment, understanding, and, ultimately, improvement of the regulatory state in ways previously unimaginable.[328]

Third, nudges cannot compensate for underlying problems in regulatory design. Slapping a grade onto a score from a faulty inspection system provides the imprimatur of transparency, without a public health basis. If the simplified grade or score is merely a proxy (that is, if it reflects but does not directly measure the concept of interest, namely the risk of foodborne illness), it can be

326. *Cf.* Ben-Shahar & Schneider, *supra* note 12, at 743 (arguing that mandated disclosure generally fails across substantive areas, but that restaurant letter grading is one effective example).

327. *See* Michael Abramowicz, Ian Ayres & Yair Listokin, *Randomizing Law*, 159 U. PA. L. REV. 929 (2011); Gary King et al., *A "Politically Robust" Experimental Design for Public Policy Evaluation, with Application to the Mexican Universal Health Insurance Program*, 26 J. POL'Y ANALYSIS & MGMT. 479 (2007); Christine Jolls, *Review of Draft 2011 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities*, OFFICE OF MGMT. & BUDGET (2011), http://www.whitehouse.gov/sites/default/files/omb/inforeg/2011_cb/comments/jolls.pdf (calling for experimental assessment of regulatory policy changes).

328. *See, e.g.*, FUNG ET AL., *supra* note 12, at 170-82; David Bollier, *The Promise and Peril of Big Data*, ASPEN INST. (2010), http://www.aspeninstitute.org/sites/default/files/content/docs/pubs/The_Promise_and_Peril_of_Big_Data.pdf; *Data Mining: Federal Efforts Cover a Wide Range of Uses*, U.S. GEN. ACCT. OFFICE (2004), http://www.gao.gov/new.items/d04548.pdf; Daniel C. Esty & Reece Rushing, *Governing by the Numbers: The Promise of Data-Driven Policymaking in the Information Age*, CTR. FOR AM. PROGRESS (2007), http://www.americanprogress.org/wp-content/uploads/issues/2007/04/pdf/data_driven_policy_report.pdf; Daniel E. Ho, Big Data, Small Tax Gap? Detecting Cash-Only Tax Evasion in Manhattan Restaurants (Nov. 8, 2011) (unpublished paper) (on file with author); Gary King, Albert J. Weatherhead III Univ. Professor, Harvard Univ., Horizons in Political Science Talk at the Harvard University Government Department: The Social Science Data Revolution (Mar. 30, 2011).

strategically gamed by restaurants and inspectors, thereby losing validity.[329]

Fourth, the broader desirability of grading (and nudging) depends on a normative theory of the regulatory regime. Is the purpose of such systems, for example, to identify sanitation outliers? In that respect, San Diego's system actually performs far better than New York's: a 'B' is truly informative and heightens the expected penalty of noncompliance. Or is the purpose of the system to incentivize restaurants to improve across the board? In that case, we might favor more grade discrimination between restaurants, as in New York. Given fixed resources, however, the latter comes at a considerable cost—a reinspection system for grade resolution, which is part of every mandatory grading jurisdiction we have examined.

Last, our findings also point to the political economy constraints of regulation. Disclosures, like bureaucracies, are "not designed to be effective."[330] The lurking political economy explanation for grade reform may be that it simultaneously allows an administration to visibly and publicly claim credit for transparency, while providing sufficient assurances for the regulated industry to contain grading's impact in practice.[331]

CONCLUSION

Targeted transparency remains one of the most promising regulatory approaches of this generation. As the rare instance in which disclosure can broadly affect behavior, it has the possibility to transform mandated disclosure into a genuine tool for empowering cognitively constrained consumers.

This Article has shown, however, that even the perceived paragon of targeted transparency can be seriously flawed in implementation. Our examination of over 700,000 inspections in San Diego, New York, and eight other jurisdictions shows that grades can be uninformative and costly. Targeted transparency cannot solve or avoid the core issues of administrative

329. This is known by some as "Goodhart's Law." *See generally* Sanjai Bhagat, Brian Bolton & Roberta Romano, *The Promise and Peril of Corporate Governance Indices*, 108 COLUM. L. REV. 1803 (2008) (analyzing the difficulties of summarizing corporate governance practice in one index); Esty & Rushing, *supra* note 328, at 38-39 (discussing how data-driven governance can improve decisionmaking but noting the risk that scorecards can "misdirect attention and incentives").

330. Terry M. Moe, *The Politics of Bureaucratic Structure*, *in* CAN THE GOVERNMENT GOVERN? 267, 267 (John E. Chubb & Paul E. Peterson eds., 1989) ("American public bureaucracy is not designed to be effective.").

331. *See* FUNG ET AL., *supra* note 12, at 106-26 (discussing the sustainability of targeted transparency given the political context).

law—the institutional design of inspection agencies, the development of administrable rules and standards, and the accountability and oversight of expert agents. Without these elements in place, health inspections cannot generate meaningful information, and targeted transparency risks turning into a facile mantra of regulatory reform.[332]

To quote the "nudger in chief": "[D]isclosure may greatly alarm people . . . without giving them any useful information at all."[333]

332. *See* Jerry L. Mashaw, *Reinventing Government and Regulatory Reform: Studies in the Neglect and Abuse of Administrative Law*, 57 U. PITT. L. REV. 405 (1996) (discussing the deep tensions between regulatory reform efforts and principles of administrative law).

333. CASS R. SUNSTEIN, LAWS OF FEAR: BEYOND THE PRECAUTIONARY PRINCIPLE 123 (2005).

APPENDIX

Appendix A documents integrity issues that affect the DOHMH data. Appendix B spells out the details of the classification algorithm that uses our substantive knowledge of the DOHMH inspections system to classify inspection types. In a cross-validation test, it classified 97% of inspections correctly, with the 3% classification error largely attributable to underlying errors in the DOHMH data. Appendix C shows that types of violations are comparable before and after grading and that the consistency findings for New York remain the same when examining other types of inspections, adjusting for administrative hearings, and replicating the analysis exclusively from DOHMH website data. Appendix D shows that evidence from eight other jurisdictions confirms our findings above. Appendix E provides sources used to compile the information about jurisdictional differences in health inspections and sanitation grading in Table 1 and Table 2.

A. DOHMH Data Integrity

This Appendix reports in more detail the data integrity issues we discovered to affect DOHMH data. Table 4 summarizes major issues and also provides, where possible, the number of inspections affected. Although these inconsistencies might ultimately be explained—for example, by unobserved score changes after administrative hearings or unobserved changes in database conventions—the data that DOHMH has made available do not allow us to do so. We divide our discussion into errors that can be assessed (1) by using solely the December 2011 version of the dataset ("December Version"); (2) by comparing the December Version and the DOHMH website; and (3) by comparing how the same inspection was represented over six versions of the dataset from January 2010, July 2011, August 2011, October 2011, December 2011, and January 2012. Each of these versions covers inspections starting from at least 2007.

1. December Version

More than 6,000 inspections appear to violate DOHMH's inspection and grading procedures. Most commonly, an inspection has a grade that is inconsistent with its score (Table 4, row A). For example, the October 5, 2011, inspection at Ohiyo i-Cafe has a score of 12, but a 'B' grade. Over 550 inspections assign a grade but no score (Table 4, row D). The score and action code may also diverge. In 315 instances, an action code of 'B,' for example, which in principle indicates that no violations were cited, accompanies a

positive score (Table 4, row G). Several inspections have an action code of '8,' which is not, to our knowledge, a valid code (Table 4, row I). One possible explanation for such invalid action codes is transcription and data entry errors, which the 2009 Comptroller's audit also found to be significant.[334] We also detect over 1,600 inspections for which an initial inspection with a score of 13 or lower is followed by a reinspection (Table 4, row B).[335]

Table 4.
DOHMH DATA INTEGRITY ISSUES

ISSUE		AFFECTED UNITS
A.	Grade inconsistent with score	4,363
B.	Reinspection follows initial score < 14	~1,647
C.	Inspection grade changes more than twice over datasets	914
D.	Graded inspection without score	556
E.	Score changes more than twice over datasets	552
F.	Grade worsens over datasets	368
G.	Positive score but 'B' action code	315
H.	Multiple entries for same inspection	~38
I.	Action code of '8'	18
J.	Website score differs from dataset score	?
K.	Website unscored but dataset score is 0	?
L.	Consecutive reinspections	?

Data integrity issues encountered in an audit of six versions of the DOHMH dataset (from January 2010, July 2011, August 2011, October 2011, December 2011, and January 2012) and online website data. Although these errors are small relative to the total number of inspections, they suggest that DOHMH has not properly designed the database. The second column provides an estimate of the number of affected units, where a "?" indicates that an estimate is not possible without direct access to DOHMH's underlying database.

2. December Version and DOHMH Site

Even more concerning is that the December Version exhibits numerous discrepancies from the DOHMH website, despite the fact that we checked the

334. *See* 2009 AUDIT, *supra* note 204, at 14.

335. To estimate the frequency, we report the number of inspections with an action code of 'P' (indicating that a reinspection was scheduled) and a score below 14.

website against a dataset downloaded less than one month earlier. Unscored inspections on the website sometimes have a score of 0 in the December Version (Table 4, row K). Scored inspections that received 0 violation points on the website have missing scores in the December Version. The numerical scores can also diverge. The December 23, 2010, reinspection at Jenni Coffee Shop Corp., for instance, has a score of 22 on the website but a score of 0 in the December Version.

DOHMH also does not clearly distinguish between inspections. On rare occasions, restaurants are inspected more than once on the same day, but neither the website nor the December Version can distinguish between multiple inspections, and multiple (false) entries for the same inspection. On the website, for instance, Manatus Restaurant is listed as having two inspections on May 5, 2010, both with a score of 25 and five violations; the December Version also records two inspections on that day, one with 23 points and five violations and one with 25 points and no violations. As another example, each of the violations at Imperial Bakery's July 5, 2011, inspection is listed twice in the December Version. Outright duplication, however, appears to be rare. In thirty-eight instances, a restaurant appears to be cited twice for the same violation at a single inspection.

Finally, in several instances, a restaurant is listed on the website as having received two consecutive reinspections (Table 4, row L), which contradicts the New York City Rules.[336] Piadina Restaurant, for example, received graded reinspections on September 7, 2011, and September 28, 2011, with no other inspections occurring in between.

3. Comparison of Five Versions

Although our analysis relies primarily on the December Version, we collected additional versions of the DOHMH data from January 2010, July 2011, August 2011, October 2011, and January 2012. (Because DOHMH systematically deletes restaurants from the most recent releases of the dataset, these versions are necessary to reconstruct a comprehensive version of the DOHMH data.) Comparing these different versions uncovers several thousand

336. *See* 137 CITY REC. 1607 (June 15, 2010) (defining an "inspection cycle" as a series of inspections "consisting of at least an initial inspection and including, if triggered by the initial or any subsequent inspections within that cycle, *a* reinspection" and defining a "reinspection" as an "inspection conducted for the purpose of grading following receipt of a score of 14 or more points on an initial inspection" (emphasis added)); *id.* (providing that when there is an increased risk to public health the Department may "inspect[] an establishment and treat[] that inspection as the initial inspection in a new cycle").

instances where a score changed after an administrative hearing. However, we also discovered cases where there were more than two changes in the score or grade across different versions (Table 4, rows C, E, and F). The August 24, 2009, inspection at Vernisazh Restaurant, for example, had scores of 59 in January 2010, 28 in July 2011, 11 in August 2011, and 28 again in December 2011. An inspection sometimes also has a *worse* grade in a more recent version of the data, which, as far as we understand, cannot happen due to an administrative hearing. The grade for the October 15, 2011, inspection at Mi Colombia Bakery changes from an 'A' in the December Version to a 'C' in January 2012, even though the score (8) is the same. An employee of Mi Colombia claimed that the grade was still pending.

In sum, although New York is a model jurisdiction in making the inspection microdata available, the database exhibits an array of internal errors. While these are disturbing, their number is small relative to the size of the database, and therefore unlikely to explain our general findings. They do, however, provide an additional reason to question the reliability of grading in New York.

B. Classification Algorithm

Our algorithm for classifying types of health inspections formalizes the inferences one would draw from the descriptions and information in the database and the Rules of the City of New York. We focus on scored inspections in the post-grading period and use the following pieces of information: (1) the date sequence of inspections for a given restaurant; (2) "action codes" recorded by inspectors; (3) the grade assigned (if any) during an inspection; (4) the score assigned during an inspection and on prior inspections; and (5) the date an establishment enters the data. The DOHMH website distinguishes between graded, ungraded, and unscored inspections. Graded inspections are either "[i]nitial inspections that result in an A" or "re-inspections that result in a grade of A, B or C."[337] Ungraded inspections are "scored but not graded" and include "[i]nitial inspections that result in more than 13 points," "inspections at new, not-yet-opened restaurants," and inspections "at restaurants the Department closed that are being considered for

337. Inspection type descriptions can be found on the DOHMH inspection information page for any New York restaurant. *See, e.g.*, *Restaurant Inspection Information*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE, http://a816-restaurantinspection.nyc.gov (last visited Sept. 2, 2012) (enter "1001 NIGHTS CAFE" in the "Restaurant Name" field, click "List Results," click on the first result, and move the mouse over the question mark next to "Graded," "Ungraded," or "Unscored" to bring up a description of that inspection type).

re-opening."[338]

The algorithm is somewhat complex, but can be sketched out, from the simplest to most complex decisions, as follows. First, we classify as a reopening inspection any inspection with the action code 'O' or the current grade 'P,' both of which denote that DOHMH reopened the establishment after a DOHMH-ordered shutdown.[339] Second, we classify as a reclosing inspection any inspection with the action code 'W,' indicating that DOHMH decided not to reopen an establishment that it ordered shut down.

Third, to classify compliance inspections, we use the Rules of the City of New York, which provide that DOHMH "may . . . also conduct a compliance inspection after any inspection that results in a score of 28 points or more."[340] DOHMH clarifies in a brochure that a "restaurant that receives 28 or more points on a re-inspection will receive a 'compliance inspection' roughly 30 days after the re-inspection" and that DOHMH "will continue to conduct compliance inspections roughly every 30 days until the restaurant scores under 28 points or is closed by the Department."[341] Because a new cycle is mandated to start "90 to 150 days after the final inspection of the cycle at an establishment that receives a score of 28 or more points on its initial inspection or reinspection,"[342] the compliance inspection after sixty days effectively becomes an initial inspection. We therefore classify as a compliance inspection (1) any inspection following a graded inspection when (a) the restaurant received a score of 28 or above in one of its last two scored inspections, (b) the current inspection occurs within sixty days of the last inspection, and (c) the last inspection was not an initial inspection; and (2) any inspection following an ungraded inspection that is (a) not graded and does not result in a shutdown (in which case it would be a reinspection), (b) does not follow a reopening (or reclosing) inspection, and (c) occurs less than sixty days after the last inspection and the restaurant received a score of 28 or above in one of its last two scored inspections.

338. *Id.*

339. The action code 'O' appears to indicate that the restaurant reopened, while the current grade 'P' indicates a placeholder for a grade during a reopening inspection.

340. 137 CITY REC. 1607 (June 15, 2010).

341. *Grading: What It Means*, *supra* note 242, at 3. This statement conflicts to some degree with New York's rules, which indicate that compliance inspections may be performed after "any inspection" that results in a score of 28 points or more. 137 CITY REC. 1607 (June 15, 2010). Moreover, the DOHMH website and database do not record scores for the large bulk of compliance inspections, leading one to wonder how it is that the Department makes the judgment that the restaurant has scored below 28 points.

342. 137 CITY REC. 1607 (June 15, 2010).

Fourth, we classify as an initial inspection (1) the first inspection occurring after July 26, 2010 (as the Department used a sharp date cutoff to begin initial inspections for grading purposes); (2) an inspection that occurs after a reopening inspection;[343] (3) an inspection occurring after a graded inspection if the inspection is not a compliance inspection; and (4) an inspection occurring after an ungraded inspection that is (a) not graded and does not result in a shutdown, (b) does not follow a reopening (or reclosing) inspection, and (c) is not a compliance inspection.

Fifth, we classify as a reinspection an inspection that occurs after an ungraded initial inspection and is graded or results in a shutdown. Lastly, an inspection occurring after an ungraded inspection that is neither a reinspection, nor a compliance inspection, nor occurs after a shutdown, is classified as an initial inspection following a pre-permit inspection if it is the first appearance of the restaurant in the dataset. For our purposes, we equate initial operational pre-permit inspections with initial inspections, as the subsequent inspection is typically termed a reinspection by DOHMH (e.g., the March 21, 2011, and April 27, 2011, inspections at Aunt Rosie's Coffee Shop and Diner). An initial nonoperational pre-permit inspection, on the other hand, counts as a pre-permit inspection for our purposes, as the subsequent inspection appears to be termed an initial inspection (e.g., the March 25, 2011, and June 21, 2011, inspections at Bad Horse Pizza).

For unscored inspections (used to examine the shift from compliance inspections to reinspections), the classification is simpler. Compliance inspections are unscored inspections, unless DOHMH separately reports administrative violations when a scored inspection has been performed on the same day.[344]

Table 5 reports the results from a cross-validation sample (i.e., a random sample hand-coded from the DOHMH website). Importantly, the sample was randomly drawn and not used to develop the algorithm. The classification accuracy is 97%. As best as we can tell, the small number of misclassifications stems from errors and inconsistencies in the DOHMH database that are not

343. *Id.* ("An initial inspection commencing a new cycle shall be conducted within 60 to 120 days of reopening for an establishment that is authorized by the Department to reopen following a Department closure that occurs on an initial inspection or reinspection of that establishment.").

344. The DOHMH website describes unscored inspections as ones involving "prohibiting smoking or the use of artificial trans fats or laws requiring certain chain restaurants to post calorie information." *Restaurant Inspection Information*, *supra* note 337 (following the same instructions). Even when a full sanitary inspection is conducted, these administrative violations are separately noted in the unscored category.

reducible and in fact appear to violate the Rules of the City of New York. Two misclassifications, for example, stem from back-to-back ungraded initial inspections. Three misclassifications stem from ungraded reinspections. In another instance, an inspection is unscored on the DOHMH website, but receives a score of 0 in the data file.

Table 5.
CROSS-VALIDATION OF INSPECTION CLASSIFICATIONS

		TRUE TYPE					
		INITIAL	REINSPECT.	PRE-PERM.	REOPEN.	RECLOS.	COMPL.
CLASSIFIED TYPE	INITIAL	**263**	5	4	0	0	1
	REINSPECT.	3	**200**	0	0	0	1
	PRE-PERM.	0	0	**8**	0	0	0
	REOPEN.	0	0	0	**8**	0	0
	RECLOS.	0	0	0	0	**4**	0
	COMPL.	0	0	0	0	0	**1**
	OTHER	2	1	0	0	0	0

Cross-validation of the classification algorithm for scored inspections in the post-grading period. The rows represent the classification of 501 randomly sampled cases by our algorithm. The columns represent the true type, as hand-coded from the DOHMH site. The sample was a true cross-validation sample (i.e., not used to develop the algorithm). Ninety-seven percent of inspections are correctly classified in this sample, as represented by the bolded diagonal numbers.

C. Robustness

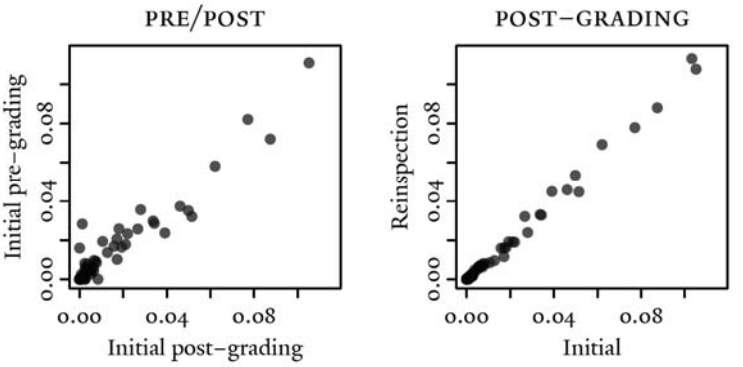
1. Types of Violations

Here we show that the few changes in violation codes over time do not affect our findings. To assess the potential impact of these changes, we remap violations from all pre-grading periods into their post-grading violation codes.[345] The left panel of Figure 17 plots the proportion of each type of

345. For example, we remap a 1A violation to an 18A violation. *See* Bureau of Food Safety & Cmty. Sanitation, *Self-Inspection Worksheet for Food Service Establishments*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE 4 (2010), http://www.nyc.gov/html/doh/downloads/pdf/rii/self-inspection-worksheet.pdf; *Inspection Scoring System for Food Service Establishments*, *supra* note 214, at app. 23B.

violation in the pre-grading period on the *y*-axis and in the post-grading period on the *x*-axis. Although there are some slight differences, the panel shows that the system has by and large remained stable in terms of the overall distribution of violations cited. The right panel plots the use of violation codes in initial inspections and in reinspections, showing that the types of violations cited in these types of inspections are also comparable.

Figure 17.
SUBSTANTIVE COMPARABILITY OF VIOLATIONS



The left panel plots the proportion of violation codes issued in initial inspections post-grading on the *x*-axis and for the pre-grading period on the *y*-axis. The right panel plots the proportion of violation codes for initial inspections on the *x*-axis and reinspections on the *y*-axis. The scoring changes from grading minimally affected the distribution of types of violations found. Dots are plotted with gray transparency for visibility.

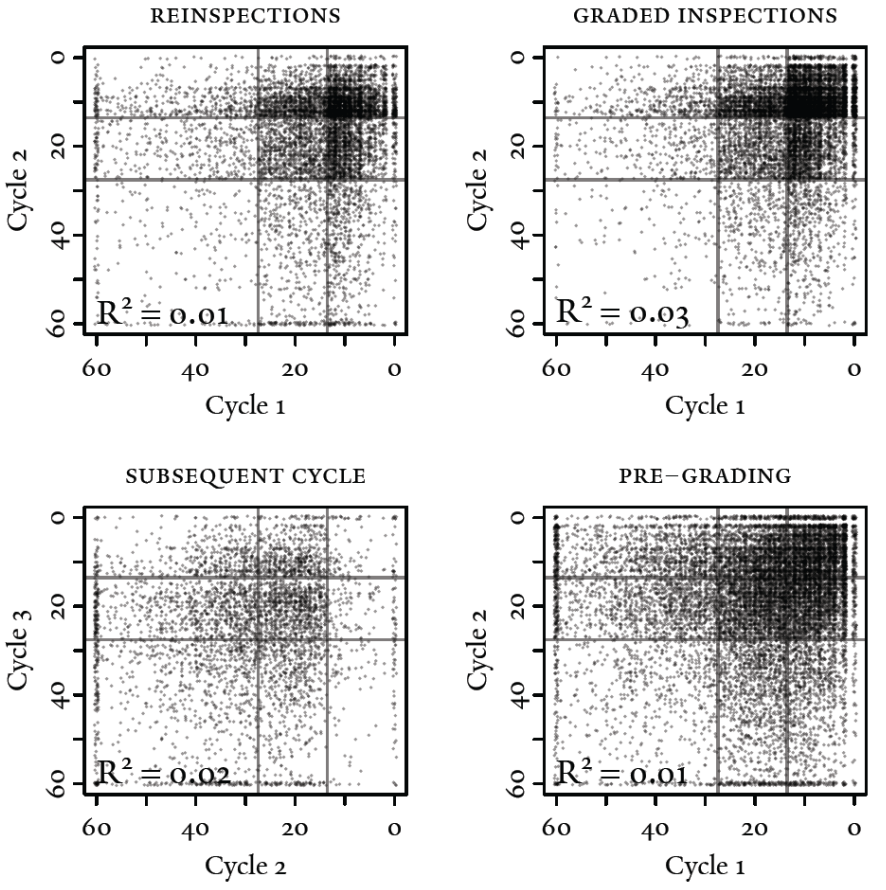
2. Consistency in Other Types of Inspections

We focus above on initial inspections across inspection cycles, as these are closest to random inspections. Several alternative explanations, however, might exist. First, perhaps the initial inspection serves no purpose other than that akin to an audit lottery—i.e., randomly generating a real inspection in the form of the reinspection.[346] In that case, we might want to focus on reinspections

346. *See* McSwane et al., *supra* note 127, at 344 ("[M]any jurisdictions advocated using the inspection as a screening device to identify high-risk operations and those requiring closer scrutiny.").

across cycles. The top-left panel of Figure 18 shows that the same lack of consistency persists when we focus on reinspections. Second, perhaps what matters is whether the graded inspection (which could be an initial inspection or a reinspection) is informative about the subsequent graded inspection, even if reinspections are predictable from the restaurant's perspective. The top-right panel of Figure 18 shows the same lack of consistency across graded inspections.

Figure 18.
LACK OF CONSISTENCY IN OTHER INSPECTIONS



Each dot represents the score a specific restaurant received in the first inspection cycle on the *x*-axis and in the subsequent inspection cycle on the *y*-axis. The first panel plots reinspection scores for restaurants that received reinspections in subsequent cycles; the second panel plots inspections resulting in a grade; the third panel plots the second and third inspection cycles after grading began; and the fourth panel plots initial inspections in the pre-grading period. For visibility, observations are randomly jittered and censored at sixty.

Third, perhaps the lack of consistency is simply a short-term finding. Both inspectors and restaurants may require several cycles to learn about the grading system, which would then induce some correlation across cycles. If true, this of course means that grades in the first few periods are essentially meaningless, which would contradict Jin and Leslie's finding that effects are realized within one year.[347] Moreover, the bottom-left and bottom-right panels of Figure 18 show that the lack of consistency persists across the second and third post-grading cycles and across cycles in the pre-grading period.

Lastly, grading may have beneficial effects even if the inspection scores are uninformative. Grading may cause restaurateurs and consumers to be more conscientious of sanitation practices in a way not manifested in inspection scores. Alternatively, perhaps the real signal is not the grade that a restaurant posts, but whether or not it complies with the posting requirement. Customers could use the posting itself (regardless of its content) as a signal of restaurant quality. These conjectures do not appear borne out by the findings of Section VI.A. To some extent they cannot be directly tested with the data at hand, but in any case they are also divorced from the concept of targeted transparency.

3. Administrative Hearings

How do administrative hearings affect the inspection system? On the one hand, hearings might be the root cause of inconsistencies. Differences across administrative law judges, for example, might create or exacerbate inconsistencies, in which case we would falsely attribute inconsistencies to inspectors. On the other hand, the hearing process might regularize outcomes. Administrative law judges, who, after all, observe inspections from multiple inspectors, might grant relief whenever an inspection appears to deviate from overall patterns. If so, the underlying inspection scores should exhibit even less consistency than we document above, as the scores in our data are largely post-hearing scores.

Unfortunately, New York does not disclose the results of hearings. From the December 2011 data, we do not directly observe whether a hearing occurred (or whether the notice of violation was settled before a hearing), or whether

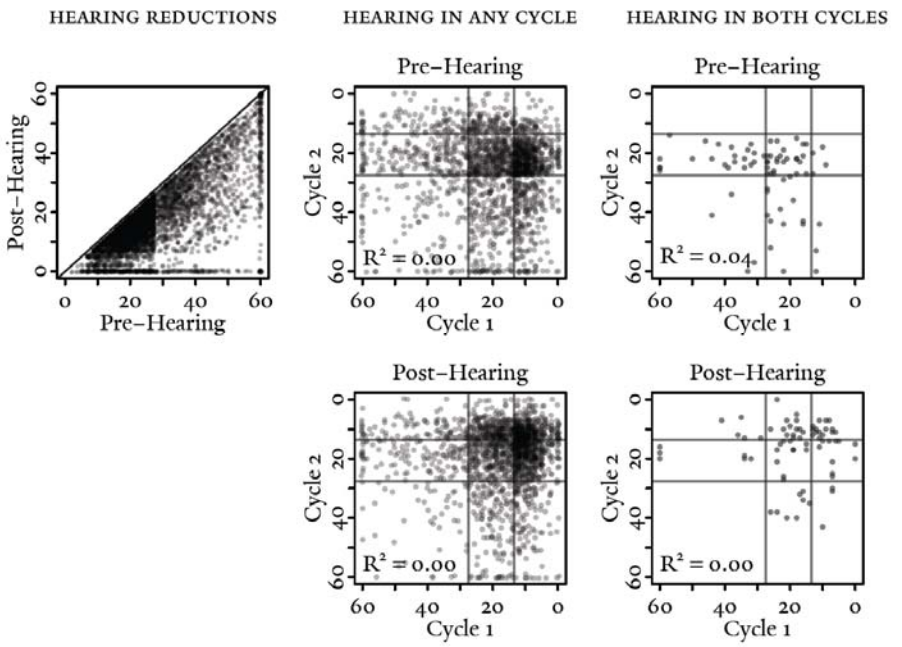
347. *See* Jin & Leslie, *supra* note 34, at 426.

the score in the dataset represents a reduced score from a hearing favorable to the restaurant or the score assigned by an inspector. To solve this, we compare multiple versions of the dataset (from January 2010 to January 2012), which we privately obtained. Each version contains the then-current scores, a subset of which would be pending a hearing. If a hearing reduced the score, a subsequent version of the dataset would contain that reduced score.[348] As a result, for a subset of over six thousand inspections (roughly 5% of our inspections) we can separately identify the score assigned by an inspector and the reduced score assigned by the administrative law judge. Although we cannot infer the overall success rate of appeals (our data provide a lower bound), we can examine whether hearings reduce or exacerbate inconsistencies.[349]

348. It is possible that some of the scoring changes stem from data-entry errors that are corrected over time. DOHMH provides no documentation for such changes. Because scoring reductions in the post-grading period stem overwhelmingly from restaurants with grades pending, our best assessment is that these reductions are the results of hearings. In a subset of cases, DOHMH reports online that "[n]o violations were recorded . . . *or* violations cited were dismissed at an administrative hearing." *E.g.*, *Restaurant Inspection Information*, *supra* note 337 (search "Bella Napoli," click on "List Results," then click on the Bella Napoli associated with "150 West 49 Street Manhattan, 10019," and select the entry for "08/08/2011") (emphasis added).

349. The Bloomberg Administration reports that "83% of grades are unchanged between inspection and hearing." *Restaurant Letter Grading: The First Year*, *supra* note 234, at 2. But a larger proportion of inspections may be subject to score changes that reduce fees, but do not change the ultimate grade.

Figure 19.
THE ROLE OF ADMINISTRATIVE HEARINGS



The top-left panel plots the point reduction in administrative hearings of any inspection resulting in a reduction. The panels in the middle column plot reinspection scores across cycles for any restaurant that successfully appealed its score from at least one of the reinspections, with pre-hearing scores on the top and post-hearing scores on the bottom. The right column plots reinspection scores across cycles for any restaurant that successfully appealed its scores from two subsequent reinspections. Observations are censored at sixty for visibility. These results suggest that hearings do not account for the lack of consistency. Hearings improve scores for a small subset of restaurants, but the underlying inspections (pre-hearing) exhibit even less consistency than inspections without appeals or point reductions.

The top-left panel of Figure 19 plots the pre-hearing score assigned by an inspector on the *x*-axis and the post-hearing score on the *y*-axis for all inspections that we observe as resulting in a point reduction. The average score reduction (given a successful claim) is roughly 10 points (standard deviation = 9). A considerable number of hearings result in the dismissal of all violations. In 117 hearings, for example, the score was reduced from above 27 to 0. In the post-grading period, as one might expect, score reductions overwhelmingly occur for reinspections. The two panels in the middle column plot the correlation of reinspection scores (in the post-grading period) for the

subset of restaurants for which the score was reduced at least once. The top panel represents restaurant scores pre-hearing and the bottom panel represents restaurant scores post-hearing. If the correlation were more strongly positive for the pre-hearing (top) data, it would suggest that administrative law judges exacerbate inconsistencies. If the correlation were more strongly positive for the post-hearing (bottom) data, it would suggest that administrative law judges reduce inconsistencies. Although the correlation for this subset of restaurants is weaker, there is no appreciable difference in the consistency pre-hearing or post-hearing. Administrative hearings, in that sense, appear to have no impact on the general noisiness of inspection scores.

One challenge to the findings in the middle column is that restaurateurs *choose* whether to proceed with a hearing. Some may do so only when the score exceeds a certain threshold. The correlation in the middle panel then might be plotting a successful hearing in one cycle against the score in a cycle where the restaurateur chose not to proceed with a hearing. To account for this, the two panels in the right column focus on ninety-two restaurants that have successfully secured reductions of scores from reinspections across two inspection cycles. If anything, it appears that there is a negative correlation in the pre-hearing scores (in the top-right panel), which becomes indistinguishable from zero for the post-hearing scores (bottom-right panel). This provides some (albeit weak) evidence that hearings eliminate certain outliers. Without observing choices made by restaurateurs and administrative law judges more directly, we cannot definitively say much about the role of hearings except for the following: hearings alone do not account for New York's inconsistency of scoring.

4. Random Sample from the DOHMH Website

The DOHMH microdata may differ from what DOHMH releases on its website. In particular, the microdata lack information on the types of inspections. To examine the sensitivity of our results to the classification algorithm and other potential differences between the microdata and the website, we replicated our basic analysis on a random sample of restaurants exclusively using information from the website.

To do this, we proceeded in three steps. First, we retrieved the population of all 25,182 New York restaurants via a blank search in each borough. These searches were conducted from February 21, 2012, to February 24, 2012. Second, we randomly sampled restaurants from this set. Third, if a restaurant received at least two initial inspections in the post-grading period, we recorded scores from the first two initial inspections. As before, we treat operational pre-permit inspections—but not nonoperational pre-permit inspections—as initial

inspections.

Our initial sample size was 686. Two of these corresponded to restaurants that were marked as closed, which we excluded. Five duplicates, resulting from changes in the database during the data collection process, were omitted. Of the remaining 679 restaurants, 516 (76.0%) record at least two initial inspections. Applying the same analysis, we find that roughly 2% of the variation in the second initial inspection score is explained by the first (R^2 = 0.02). In sum, these results are identical to our analysis based on the microdata.

D. Corroborating Evidence from Eight Other Jurisdictions

To examine how representative San Diego and New York are, we collected data on restaurant inspections from eight other jurisdictions: North Carolina, South Carolina, Louisville, El Paso, Austin, Seattle, Chicago, and Florida.[350] These data comprise 434,418 routine inspections for 114,141 restaurants, ranging from 2008 to December 2011. Although there are small differences between these jurisdictions, the basic features of the inspection systems are comparable. We therefore apply the same analysis to each of these jurisdictions.

Figures 20 to 22 present the results. Figure 20 presents data from the three grading jurisdictions: North Carolina, South Carolina, and Louisville. The first row of panels presents the score distribution, with the 'A' threshold plotted as a gray vertical line. Each jurisdiction exhibits sharp discontinuities at the threshold. Most compelling is the case of Louisville, which changed its threshold from ninety-three to ninety in 2011. The discontinuities track this change in threshold directly. The second and third rows of panels present the consistency of scores across routine inspections, with the third row magnifying the 'A' range. (The formal name and method of reinspection differ across these jurisdictions, so we focus only on the inspections closest to routine inspections.) The levels of consistency in South Carolina and Louisville are comparable to that in San Diego, with North Carolina exhibiting even higher consistency (R^2 is between 0.44 to 0.47). Grade inflation characterizes each of these jurisdictions: 99%, 97%, and 94% of restaurants receive 'A's in North Carolina, South Carolina, and Louisville, respectively.

Figure 21 presents analogous findings for three jurisdictions that score but do not grade: El Paso, Austin, and Seattle. These jurisdictions provide a relevant comparison group to assess the potential effect of grading on the score

350. The North Carolina data represent thirty-six of one hundred counties in the state. The South Carolina data include only the last two inspections.

distribution. Unlike in grading jurisdictions, there is little evidence of discontinuities at the closure or reinspection thresholds. Consistency, however, is comparable to grading jurisdictions other than New York: prior scores predict roughly 0.09 to 0.46 of variation in scores. Lastly, Figure 22 presents results from Chicago and Florida, which neither score nor grade. As there is no formal scoring, we present counts of violations, which exhibit no discontinuities and some degree of consistency. No jurisdiction exhibits as much inconsistency as New York.

To assess the impact of scoring complexity, we also examined the scoring worksheets of each jurisdiction. All of the jurisdictions have scoring worksheets that are dramatically simpler than New York's, as measured by the number of violations and possible point ranges. Indeed, the only jurisdiction that comes close to New York's level of inconsistency is Florida, and Florida has over one thousand possible violations[351] (scored on handheld personal digital assistants[352]), although the score sheet lists only sixty-eight.[353]

One other conjecture that these additional data allow us to examine is about the role of penalties. New York's penalty scheme, which generates over $30 million for the city each year,[354] may provide an incentive for inspectors to generate violations, thereby potentially driving the inconsistency. We examined evidence for the imposition of penalties across these jurisdictions, which we find to be mixed. While Chicago and Florida seem to have stronger penalty systems[355] and relatively lower consistency, for example, Seattle officials "seldom use civil penalties"[356] with comparable levels of consistency. In addition, jurisdictions may collect revenues from delinquent restaurants through other means: Austin, San Diego, and Seattle all charge for

351. *See Food Violation Reference*, FLA. DEP'T OF BUS. & PROF. REG., http://www.myfloridalicense.com/dbpr/hr/documents/foodreference.xls (last visited Feb. 28, 2012).

352. *See Long Range Program Plan: Fiscal Year 2012-2013 Through 2016-2017*, FLA. DEP'T OF BUS. & PROF. REG. 25 (Sept. 30, 2011), http://floridafiscalportal.state.fl.us/PDFDoc.aspx?ID=6142.

353. *See Food Service Inspection Report*, FLA. DEP'T OF BUS. & PROF. REG. (Oct. 1, 2009), http://www.myfloridalicense.com/dbpr/hr/forms/documents/5022_015.pdf.

354. *See* Jana Kasperkevic, *Those Health Grades You See on New York Restaurants Have Been a Windfall for the City*, BUS. INSIDER, Mar. 26, 2012, http://articles.businessinsider.com/2012-03-26/news/31238524_1_restaurant-grade-cards-fines.

355. *See* FLA. STAT. § 381.0061 (2011); CHI., ILL., BD. OF HEALTH R. & REGS. § 108 (2012).

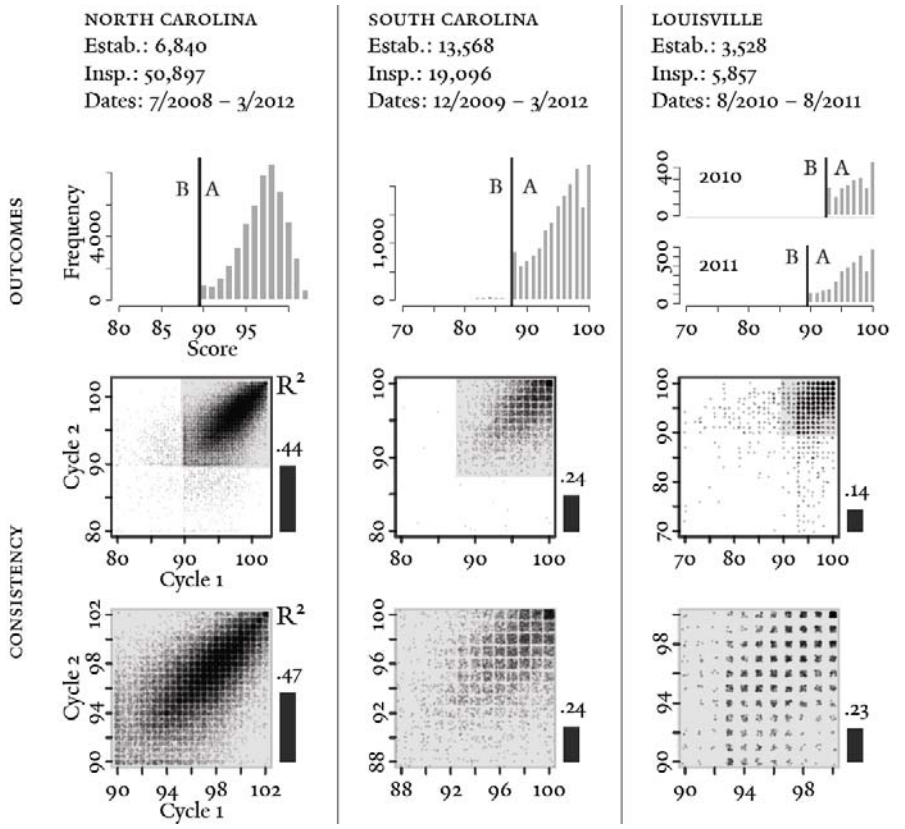
356. Phuong Cat Le, *Restaurant Inspections Skipped, Fines for Infractions Infrequent*, SEATTLE POST-INTELLIGENCER, July 8, 2004, http://www.seattlepi.com/local/article/Restaurant-inspections-skipped-fines-for-1149005.php.

reinspections, for example.[357] The distinction between penalties and fees is not always clear. As penalty structures are a major component of institutional design, however, their relationship with inspection outcomes warrants further exploration in the future.

In sum, the evidence from other jurisdictions corroborates our evidence from San Diego and New York. Grading is associated with sharp discontinuities and grade inflation. New York remains the only jurisdiction with meaningful variation in grades, but its scores are less informative than the scores in any other jurisdiction.

357. *See* Dep't of Envtl. Health, *supra* note 190; Envtl. Health Serv., *Food Protection Fees*, AUSTINTEXAS.GOV (2012), http://www.austintexas.gov/sites/default/files/files/Health/Environmental/fees_2012.pdf; *Food Protection Program Service Fees-2012*, PUBLIC HEALTH—SEATTLE & KING COUNTY (2012), http://www.kingcounty.gov/healthservices/health/ehs/~/media/health/publichealth/documents/ehs/2012FoodProtectionFees.ashx.

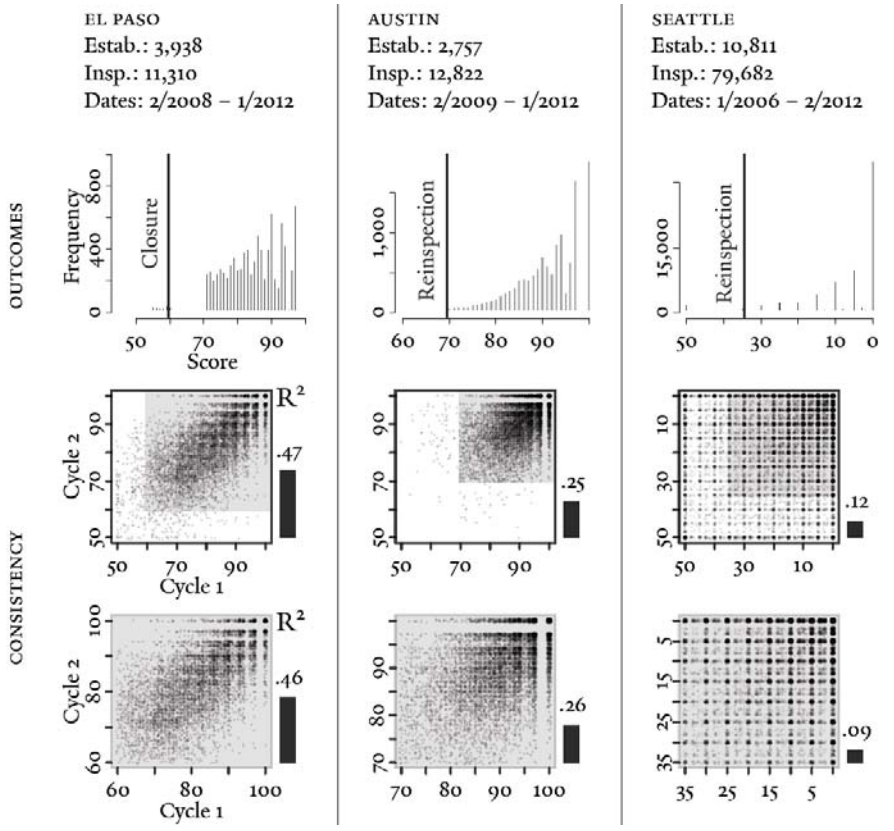
Figure 20.
RESULTS FROM ADDITIONAL JURISDICTIONS THAT SCORE AND GRADE



Each column corresponds to a jurisdiction that scores and grades restaurants. The top row summarizes the data for each jurisdiction, listing the number of establishments, number of inspections, and date range. The second row presents histograms of raw inspection scores. The third and fourth rows depict the consistency of routine inspections from one cycle to the next, with the fourth row focusing on inspections in the top grade range. The adjacent bars represent the R^2 for each of the plots. There are discontinuities at each grade threshold. Across all three jurisdictions, few restaurants receive grades below an 'A'.

Figure 21.

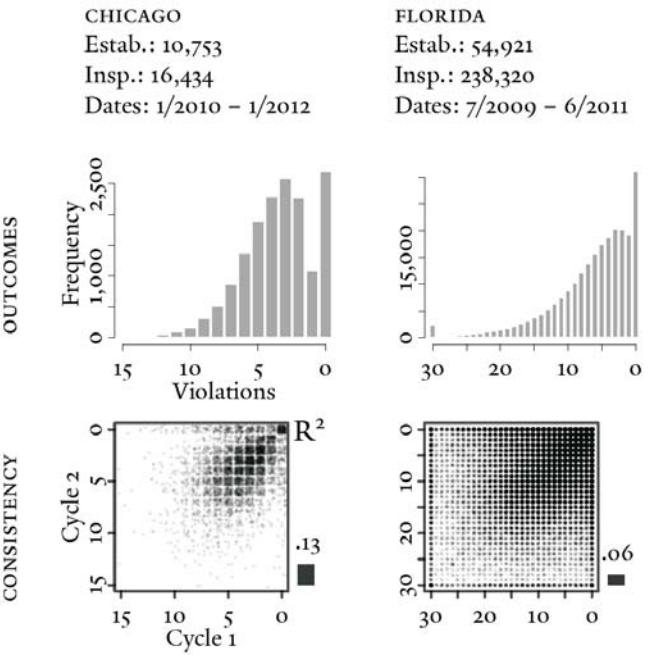
RESULTS FROM ADDITIONAL JURISDICTIONS THAT SCORE BUT DO NOT GRADE



Each column corresponds to a jurisdiction that scores inspections but does not issue grades. The top row summarizes the data for each jurisdiction, listing the number of establishments, number of inspections, and date range. The second row presents histograms of raw inspection scores. The third and fourth rows depict the consistency of routine inspections from one cycle to the next, with the fourth row focusing on inspections that score above the threshold for closure or reinspection. The adjacent bars represent the R^2 for each of the plots.

Figure 22.

RESULTS FROM ADDITIONAL JURISDICTIONS THAT NEITHER SCORE NOR GRADE



Each column corresponds to a jurisdiction that neither scores nor assigns grades. The top row summarizes the data for each jurisdiction, listing the number of establishments, number of inspections, and date range. The second row presents histograms of violations counted at inspections in each jurisdiction. The third row depicts the consistency of routine inspections from one cycle to the next. The axes represent violation counts. The adjacent bars represent the R^2 for each of the plots.

E. Sources for Tables 1 & 2

The following documents the sources relied upon to compile Table 1 and Table 2. For shorthand, we place in parentheticals the cell(s) that the citation supports, with the following legend:

TABLE 1	TABLE 2
1a: Regulatory jurisdiction	2a: Enactment
1b: Establishments	2b: Total points
1c: Inspectors	2c: Crit. points
1d: Min. inspections	2d: Gen. points
1e: Public grading	2e: Posted sign (with color)
1f: Public posting	2f: Score post.
1g: Point system	2g: Reinspection: Exists
1h: Total points	2h: Reinspection: Trigger
1i: Follow-up threshold	2i: Reinspection: Days
1j: Information online	2j: Reinspection: Fee
	2k: Min. inspections

For example, the first entry for Albany ("Albany County Bd. of Health Res. No. 155 (2012) (2a)") indicates that the date of enactment in Table 2 stems from a health resolution by the Albany County Board of Health, made effective July 1, 2012.

SITE	SOURCE
Albany County	Albany Cnty. Bd. of Health, Res. No. 155 (N.Y. 2011), http://blog.timesunion.com/tablehopping/files/2012/01/albanyco-inspection-resolution.pdf (2a); Barnes, *supra* note 43 (2a, 2e, 2f, 2g, 2i); Telephone Interview with Marianne Stone, Assoc. Pub. Health Sanitarian, Cmty. Health & Food Prot., Envtl. Health Servs., Albany Cnty. Health Dep't (Jan. 24, 2012) (2j); Telephone Interview with Marianne Stone (Sept. 26, 2012) (2g - confirming that restaurants can receive a new grade upon reinspection); Albany Cnty. Dep't of Health, *About the Inspection Process*, ALBANYCOUNTY.COM, http://www.albanycounty.com/departments/health/restaurantinspections/default.asp?id=1413 (last visited Apr. 9, 2012) (2h, 2k).
Albuquerque	Valerie Santillanes, *Restaurants Must Make the Grade*, ALBUQUERQUE J., Nov. 28, 1998, at A1 (2a - this is the earliest record we have found mentioning the red and green stickers); *Restaurant Inspection Results*, CITY OF ALBUQUERQUE, http://www.cabq.gov/environmentalhealth/food-safety/restaurant-inspection-results (last visited Oct. 1, 2012) (2e, 2g, 2k); Telephone Interview with Susan Spring, Field Operations Officer, Albuquerque Envtl. Health Dep't (Sept. 26, 2012) (2e - noting that a restaurant can improve its rating upon reinspection; noting also that Albuquerque has recently adopted a 100-point scoring system); ALBUQUERQUE, N.M., CODE OF ORDINANCES § 9-6-1-6(F)(2) (2012) (2h, 2i); *id.* § 9-6-1-12(B)(9) (2j); Telephone Interview with Joe Anguiano, Supervisor, Consumer Health Prot. Div., Albuquerque Envtl. Health Dep't (Apr. 24, 2012) (2j - clarifying that the reinspection fee is for a second follow-up inspection, which must be requested by the establishment); ALBUQUERQUE, N.M., CODE OF ORDINANCES § 9-6-1-12(B)(9) (2012) (2j); ALBUQUERQUE, N.M., CODE OF ORDINANCES § 9-6-1-6(A) (2k).
Allegheny County	Telephone Interview with Dave Allen, Supervisor, Allegheny Cnty., Pa., Health Dep't Food Safety Div. (Jan. 19, 2012) (2a - indicating that the placard system began around 1994, 2g, 2j); Bruce Dixon, *Don't Worry, Our Food Is Safe: Allegheny County Has an Excellent System of Restaurant Inspection*, PITTSBURGH POST-GAZETTE, Mar. 30, 2012, http://www.post-gazette.com/stories/opinion/perspectives/dont-worry-our-food-is-safe-314639 (2a - indicating that the placard system has been used for about 20 years); *Restaurant Search in Allegheny County*, ALLEGHENY COUNTY HEALTH DEP'T, http://webapps.achd.net/Restaurant (last visited Apr. 9, 2012) (2e); ALLEGHENY COUNTY, PA., HEALTH DEP'T R. & REGS., art. III, § 335.1(A)-(B) (2002) (2e, 2i); Telephone Interview with Donna Scharding, Envtl. Health Supervisor, Allegheny Cnty. Health Dep't (Sept. 26, 2012) (2h, 2j - indicating that reinspections are triggered by critical violations and confirming that there is no fee for reinspections); Patricia Sabatini, *Little Bite Put in Restaurant Inspections*, PITTSBURGH POST-GAZETTE, Dec. 28, 2008, http://www.post-gazette.com/stories/sectionfront/life/little-bite-put-in-restaurant-inspections-626775 (2k).
Atlanta	GA. COMP. R. & REGS. 290-5-14-.01 (2012) (1a - noting that the "Health Authority" may be the Georgia Department of Human Resources or the "County Board of Health acting as its agent"); *Food Services*, FULTONCOUNTYGA.GOV, http://www.fultoncountyga.gov/environmental-health/3724-food-services (last visited Apr. 9, 2012) (1b); Telephone Interview with Barney Harmon, Supervisor, Fulton Cnty. Envtl. Health (Apr. 6, 2012) (1c - stating that there are fourteen inspectors assigned to food safety who conduct food and tourist accommodation inspections) (*but cf.* Klein & DeWaal, *supra* note 65, at 11 (noting 24 inspectors)); *2012 Proposed Budget*, FULTONCOUNTYGA.GOV 121 (2012), http://www.fultoncountyga.gov/images/stories/FY2012_Proposed_Budget.pdf (1c - listing 7,843 food service inspections per year and 314 tourist accommodation inspections annually suggests food constitutes 96% of inspections); GA. COMP. R. & REGS. 290-5-14.10 (2012) (1d, 1e, 1f, 1g, 1h, 1i); *Fulton County Public Health Inspection Page*, DIGITAL HEALTH DEP'T, http://ga.state.gegov.com/georgia/search.cfm?county=Fulton (last visited Apr. 9, 2012) (1j).

SITE	SOURCE
Austin	*Health & Human Servs. Food Protection*, AUSTINTEXAS.GOV, http://www.austintexas.gov/department/food-protection (1a, 1b); Caylor Ballinger, *Food Safety a Priority: Inspections Data Going Online in January*, EL PASO TIMES, July 8, 2010, http://www.elpasotimes.com/news/ci_15461742 (last visited Feb. 29, 2012) (1c - noting the number of inspectors in Austin); Telephone Interview with Inspector on Duty, Food Prot., Health & Human Servs., Austin Dep't of Health (Apr. 6, 2012) (1c - suggesting that 80% of time is spent on food establishments, confirming 25 inspectors); YELP, http://www.yelp.com/austin (enter the key term in "Search for" box; repeat for other search terms; to restrict to "Driving (5 mi.)," check that option under "Distance" in the filters section) (1c - searching for "food," "swimming pools," and "child care & day care" in Austin, TX, suggesting that "food" makes up 93.8% of establishments); 25 TEX. ADMIN. CODE § 229.171(*l*)(2)(c) (2006) (1d - minimum inspections); *id.* § 229.171(h) (2006) (1d, 1i - "When the total cumulative demerit value of an establishment exceeds 30 demerits . . . [o]ne or more reinspections shall be conducted . . . ."); Telephone Interview with Sabrina Vidaurri, Rest. Inspector, Austin Health Dep't (Jan. 26, 2012) (1e, 1f); AUSTIN, TEX., CITY CODE § 10-3-2(C) (2012) (1g - "[E]xcept as provided in Section 10-3-124 (*Dogs Permitted in Outdoor Dining Areas*), the City adopts the Texas Administrative Code Title 25, Part 1, Chapter 229, Subchapters K (*Texas Food Establishment Rules*) . . . ."); *id.* § 10-3-153 (1h); *Texas Retail Food Establishment Inspection Report*, TEX. DEP'T OF ST. HEALTH SERVS. (2006), http://www.dshs.state.tx.us/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=8589953691 (1g, 1h); *Restaurant Inspection Scores*, DATA.AUSTINTEXAS.GOV, https://data.austintexas.gov/dataset/Restaurant-Inspection-Scores/ecmv-9xxi? (last visited Apr. 9, 2012) (1j).
Baltimore	*Food Control Section*, BALT. CITY HEALTH DEP'T, http://www.baltimorehealth.org/foodcontrol.html (last visited Apr. 9, 2012) (1a, 1b); Klein & DeWaal, *supra* note 65, at 13 (1b, 1c); Telephone Interview with Tanya Taylor, Envtl. Sanitarian, Food Control Section, Envtl. Inspection Servs. Program, Balt. City Health Dep't (Apr. 12, 2012) (1c - confirming 14 full-time food inspectors); Dep't of Audits, *Performance Audit Report: City of Baltimore Health Department Division of Environmental Health Bureau of Food Control*, BALT. CITY COMPTROLLER'S OFFICE 9 (Feb. 2005), http://www.comptroller.baltimorecity.gov/Audits%20Info/Audit%20Reports/FOOD%20CONTROL%20REPORT.pdf (1d - noting that low-risk facilities are required to be inspected on a bi-annual basis); Telephone Interview with representative at the Balt. City Health Dep't, Envtl. Health Div. (Jan. 26, 2012) (1f - verifying that there is no mandated posting of inspection results); *Recent Food Establishment Closures*, BALT. CITY HEALTH DEP'T, http://www.baltimorehealth.org/foodclosures.html (last visited Apr. 9, 2012) (1j - providing monthly reports that list information relating only to closed restaurants).
Boston	*Health Division – Frequently Asked Questions*, CITYOFBOSTON.GOV, http://www.cityofboston.gov/isd/health/faq.asp (last visited Apr. 9, 2012) (1a, 1d - noting that "[f]ood service establishments are inspected at least once per year"); Klein & DeWaal, *supra* note 65, at 14 (1b, 1c); Office of Budget Mgmt., *FY12 Adopted Budget Vol. 3, Environment & Energy Cabinet*, CITYOFBOSTON.GOV 238, 243 (2011), http://www.cityofboston.gov/Images_Documents/10%20Environment%20%26%20Energy%20Cabinet%20A_tcm3-24789.pdf (1c - presenting a budget for eighteen Health Inspectors whose job is to inspect restaurants, caterers, health clubs, massage practitioners, and recreational camps); *Data Boston*, CITYOFBOSTON.GOV, http://www.cityofboston.gov/doit/databoston (last visited Feb. 21, 2012) (1c - noting 2,066 restaurants, 79 seasonal pools, 101 year-round pools, and 27 recreational camps, to estimate that food is 93% of inspections); Telephone Interview with Bos. Inspectional Servs. Dep't, Health Div. (Apr. 5, 2012) (1c - confirming that inspectors do not specialize in food inspections); Telephone Interview with representative at Bos. Inspectional Serv. Dep't, Health Div. (Apr. 13, 2012) (1c - verifying only 17 inspectors are actually employed); Telephone Interview with representative at the Bos. Pub. Health Comm'n (Jan. 26, 2012) (1f); *Mayor's Food Court – Establishment Search*, CITYOFBOSTON.GOV, http://www.cityofboston.gov/isd/health/mfc/search.asp (last visited Apr. 9, 2012) (1j).

SITE	SOURCE
Charlotte	N.C. GEN. STAT § 130A-34(a) (2011) (1a - giving county health departments the responsibility to provide public health services); *Welcome to the Digital Health Department*, MECKLENBURG COUNTY HEALTH DEP'T, http://mecklenburg.digitalhealthdepartment.com (last visited May 28, 2012) (1b - adding up the number of restaurants and "mobile food units", 1c - noting that restaurants and mobile food carts make up 55.4% of establishments inspected, 1j); *Registered Sanitation Training and Authorization System*, N.C. DEP'T OF ENVTL. & NAT. RESOURCES, http://apps.bluelizard.com/rstas (last visited Apr. 6, 2012) (1c - noting 66 active EHSs assigned to Mecklenburg County); Envtl. Health Div., Dept. of Health & Human Servs., *Staff Contact Information*, CATAWBA COUNTY, N.C., http://www.catawbacountync.gov/Environmentalhealth/staffcontacts.asp (last visited Apr. 6, 2012) (1c - noting that only half of inspectors in Catawba County are assigned to Food & Lodging; the same ratio suggests 33 food and lodging inspectors in Mecklenburg County, yielding an FTE estimate of 18 based on the 55.4% figure cited above); Telephone Interview with representative at Mecklenburg Cnty. Envtl. Health Servs. (Apr. 5, 2012) (1c - confirming that inspectors do not specialize in food inspections); 10A N.C. ADMIN. CODE 46 .0213(a)(1) (2010) (1d); 15A N.C. ADMIN. CODE 18A .2660 (2012) (1e, 1f); 15A N.C. ADMIN. CODE 18A .2662 (1g); Div. of Envtl. Health, *Food Service Establishment Inspection*, N.C. DEP'T OF ENV'T & NAT. RESOURCES, http://charmeck.org/mecklenburg/county/HealthDepartment/EnvironmentalHealth/Programs-Services/FoodserviceandFacilities/Documents/DENR4007.pdf (1h); Mike Baker, Assoc. Press, *Some Restaurants Get Questionable 'A' Grade*, SALISBURY POST (N.C.), Feb. 27, 2011, http://www.salisburypost.com/News/022711-Restaurant-inspections-story-from-AP-qcd (1i - "The inspector can return within 10 days to make sure the critical violation is fixed . . . .")
Chicago	*Food Protection Division—Food Inspection Reporting System*, CITY OF CHI., http://webapps.cityofchicago.org/healthinspection/General_Info.jsp (last visited Apr. 9, 2012) (1a, 1d); Klein & DeWaal, *supra* note 65, at 15 (1b); Telephone Interview with Patrick O'Connor, Supervisor, Food Prot. Div., Chi. Dep't of Pub. Health (Apr. 12, 2012) (1c - noting 27 field inspectors, 15 of whom also perform pool inspections, and 8 supervisors, and estimating that 90% of inspectors' time is spent on food; the FTE calculation further assumes that supervisors spend 5% of their time conducting field inspections); CHI., ILL., MUN. CODE § 7-42-010(b) (2011) (1f); *Food Protection Division—Food Inspection Reporting System*, CITY OF CHI. http://webapps.cityofchicago.org/healthinspection/inspection.jsp (last visited Feb. 17, 2012) (1j); *Food Inspections*, CITY OF CHI. DATA PORTAL, https://data.cityofchicago.org/Health-Human-Services/Food-Inspections/4ijn-s7e5 (last visited Sept. 24, 2012) (1j - providing inspection data).
El Paso	Dep't of Pub. Health, *Food Inspection Program*, CITY OF EL PASO, http://www.elpasotexas.gov/health/food.asp (last visited Apr. 9, 2012) (1a); Caylor Ballinger, *Food Safety a Priority: Inspections Data Going Online in January*, EL PASO TIMES, July 8, 2010 (1b, 1c - noting eighteen inspectors doing food inspections, 1d); Telephone Interview with David Sublasky, City Of El Paso Dep't of Pub. Health, Dev. Assistance Ctr. (Mar. 19, 2012) (1c - verifying that inspectors specialize in food inspections); *Disclaimer*, CITY OF EL PASO DEP'T OF PUB. HEALTH, http://www.elpasotexas.gov/health/establishment_inspection_disclaimer.asp (last visited Feb. 15, 2012) (1g); Jennifer Shubinski, *Food Inspections Fall Behind; 12 County Food Inspectors Monitor 6,000 Eateries*, EL PASO TIMES, July 7, 2002, at 1A (1h); Aaron Bracamontes, *How Safe Is Your Food? Search Food Establishment Inspections*, EL PASO TIMES, Nov. 14, 2011, http://www.elpasotimes.com/ci_19215166 (1i); *Food Establishment Inspections*, CITY OF EL PASO DEP'T OF PUB. HEALTH, http://www.elpasotexas.gov/health/establishment_inspection.asp (last visited Apr. 9, 2012) (1j).

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Georgia	*Interpretation Manual for the Rules and Regulations Food Service Chapter* 290-5-14, GA. DEP'T OF PUB. HEALTH, at vii (2011), http://health.state.ga.us/pdfs/environmental/Food/Rules/FinalFSInterpretationManual.pdf (2a); Press Release, Ga. Dep't of Human Servs., Effective December 1: New Food Service Regulations (Nov. 30, 2007) (on file with author) (2a); GA. DEP'T OF CMTY. HEALTH, DIVISION OF PUBLIC HEALTH FOOD SERVICE ESTABLISHMENT INSPECTION REPORT (2009) (2b, 2c, 2d); GA. COMP. R. & REGS. 290-5-14-.10 (2011) (2c, 2d, 2e, 2f, 2g, 2h, 2i, 2k); Telephone Interview with representative at Ga. Dep't of Pub. Health, Envtl. Health Div. (Sept. 26, 2012) (2j - noting the fee for a reinspeection varies by county, and estimating a range of $50-200).
Houston	Dep't of Health & Human Servs., *General Information*, CITY OF HOUS., http://houston.tx.gegov.com/media/index.cfm (last visited Apr. 9, 2012) (1a, 1b); Telephone Interview with Bom Hsu, Supervisor, Bureau of Consumer Health Servs., Hous. Dep't of Health & Human Servs. (Apr. 12, 2012) (1c - explaining that 37 individuals conduct inspections, of whom 3 are supervisors, 10 conduct pre-opening inspections of food establishments and other businesses, 1 primarily trains food operation managers, and 4 also conduct pool inspections during the summer; FTE estimates assume these 18 individuals on average spend half to two-thirds of their time on food inspections); HOUS., TEX., CODE OF ORDINANCES § 20-20(a), (c) (2011) (1d, 1f); Dep't of Health & Human Servs., *Search*, CITY OF HOUS., http://houston.tx.gegov.com/media/search.cfm (last visited Feb. 3, 2012) (1j). Despite adopting the Texas Food Establishment Rules, HOUS., TEX., CODE OF ORDINANCES § 20-17, Houston does not use a 100-point system when inspecting its restaurants. The Department of Health and Human Services uses an internal point system in which it rates restaurants on a scale of 1 to 5. These ratings are not made public. Telephone Interview with representative at Hous. Dep't of Health & Human Servs. (Apr. 9, 2012).
Larimer County	Sonja Bisbee, *Inspections End in Low Scores for Local Eateries*, FORT COLLINS COLORADOAN, July 11, 1999, at 1A (2a - providing the earliest record we have found of this system); Telephone Interview with Jim Devore, Inspector Supervisor, Larimer Cnty. Dep't of Health & Env't, Envtl. Health Servs. Div. (Jan. 19, 2012) (2a - suggesting that this system began in 1999 or 2000); Dep't of Health & Env't, *Food Inspection Form*, LARIMER COUNTY, http://larimer.org/food/violation.asp (last visited Apr. 9, 2012) (2b, 2c, 2d); Dep't of Health & Env't, *Ratings*, LARIMER COUNTY, http://larimer.org/food/asp/scoring.htm (last visited Apr. 9, 2012) (2e); Telephone Interview with Jim Devore (Sept. 26, 2012) (2e - confirming that follow-up inspections are to ensure compliance and cannot change rating); Telephone Interview with Katie Sall, Inspector, Larimer Cnty. Dep't of Health & Env't, Envtl. Health Servs. Div (Jan. 19, 2012) (2g, 2h, 2i, 2j); Dep't of Health & Env't, *Food Safety Program*, LARIMER COUNTY, http://www.larimer.org/health/ehs/food.asp (last visited Apr. 9, 2012) (2k).

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Las Vegas/ Southern Nevada	Mary I. Hahn, Letter to the Editor, 62 J. ENVTL. HEALTH 27, 31 (2000) (2a); *Food Establishment Inspection Report*, S. NEV. HEALTH DIST. (2010), http://www.southernnevadahealthdistrict.org/download/eh/fe-inspection-report.pdf (2b, 2c, 2d - for the purposes of this Article, "critical" and "major" violations are grouped together as "critical violations," 2e); S. NEV. FOOD ESTABLISHMENT REGS. 8-303.11 (2012) (2e, 2f, 2g, 2h, 2i); S. NEV. FOOD ESTABLISHMENT REGS. 8-301.11(B) (2012) (2i); Telephone Interview with representative at Food Operations in Food & Beverage Establishments, S. Nev. Health Dist. (Jan. 19, 2012) (2f); Envtl. Health Div., *Permit & Plan Review Fee Schedule*, S. NEV. HEALTH DIST. (2010), http://www.southernnevadahealthdistrict.org/download/eh/eh-fee-schedule.pdf (2j - listing the fee for a reinspection that results from a downgrade to a 'C'); *Restaurant Inspections*, S. NEV. HEALTH DIST., http://www.cchd.org/restaurants/index.php (last visited June 3, 2012) (2k).
Los Angeles	Envtl. Health, *Retail Food Inspection Guide*, L.A. COUNTY DEP'T OF PUB. HEALTH 3, 11, 13 (May 2011), http://publichealth.lacounty.gov/eh/docs/RetailFoodInspectionGuide.pdf (1a, 1g, 1h, 2c, 2d - for the purposes of this report, "Section I" and "Section II" violations are considered "critical violations" and "Section III" violations are considered "minor violations"); *Food Facility (Restaurant/Market) Rating*, L.A. COUNTY DEP'T OF PUB. HEALTH, http://lapublichealth.org/rating (last visited Apr. 9, 2012) (2a - noting that "[t]he cities of Long Beach, Pasadena and Vernon inspect their own retail food facilities", 1j); L.A. COUNTY, CAL., CODE § 11.02.030 (2012) (1a); Jin & Leslie, *supra* note 34, at 415 (1b); Anna Chow, *Protecting the Health of Residents Every Day*, CAL. COUNTIES, Sept.-Oct. 2009, at 18, 18 (1c - noting about 240 field inspectors); *2009-2010 Annual Report: Creating a Healthier LA County*, L.A. COUNTY DEP'T OF PUB. HEALTH 29 (2010), http://www.lapublichealth.org/docs/annualreportFY09-10-3MB-L.pdf (1c - noting that roughly 55,000 of about 125,000 total inspections were of restaurants); Telephone Interview with representative at L.A. Cnty. Dep't of Pub. Health, Envtl. Health, Food Establishments & Events Dist. (Mar. 19, 2012) (1c - confirming that inspectors do not just conduct food inspections); Telephone Interview with Okey, Envtl. Health Specialist and Supervisor, L.A. Cnty. Dep't of Pub. Health (Jan. 13, 2012) (1d, 1i, 2h, 2i, 2k - noting that reinspections depend on which violations were cited, not the number of points, 2i, 2h); L.A. COUNTY, CAL., CODE OF ORDINANCES §§ 8.04.225, 339, 645 (2011) (1e, 2e, 2g); Telephone Interview with a Senior Inspector, L.A. Cnty. Dep't of Pub. Health (Sept. 26, 2012) (2g, 2h, 2i - noting that a restaurant owner dissatisfied with his/her initial grade may request a reinspection within three days of the routine inspection; the owner must pay the appropriate fee within ten days of this request, and the restaurant will then receive a reinspection within ten days of the payment); L.A. COUNTY, CAL., CODE OF ORDINANCES § 8.04.752(A) (1f); L.A. COUNTY, CAL., ORDINANCE 97-0071 (1998) (2a, 2b); Fung et al., *Restaurant Hygiene Grades*, THE TRANSPARENCY POLICY PROJECT, http://www.transparencypolicy.net/assets/ex.rest.jpg (2e); L.A. COUNTY, CAL., CODE OF ORDINANCES § 8.04.720 (2011) (2j).

SITE	SOURCE
Louisville	*Restaurant and Food Service Inspection Scores*, LOUISVILLEKY.GOV, http://www.louisvilleky.gov/Health/RestaurantInspectionScores.htm (last visited Sept. 25, 2012) (1a - noting that "[i]nspections are conducted by the Louisville Metro Department of Public Health & Wellness Food Hygiene Program"); *Louisville/Jefferson County Merger*, LOUISVILLEKY.GOV, http://www.louisvilleky.gov/yourgovernment/merger.htm (last visited Sept. 25, 2012) (1a - describing consolidation of Louisville and Jefferson County); *Open Data Portal* to *Restaurant Inspection Data*, LOUISVILLEKY.GOV, http://portal.louisvilleky.gov/dataset/restaurant-inspection-data (last visited Oct. 30, 2012) (1b - based on the number of unique name/address combinations in the data, 1j); E-mail from Gretchen Boyd, Envtl. Health Supervisor, Louisville Dep't of Pub. Health & Wellness (Mar. 23, 2012) (on file with author) (1c - confirming 13 full-time inspectors assigned to food hygiene); Telephone Interview with Gretchen Boyd, Envtl. Health Supervisor, Louisville Dep't of Pub. Health & Wellness (Apr. 13, 2012) (1c - indicating that there are actually 14 inspectors assigned to Food Protection but 2 split their time between food and lead inspections); Gil, *supra* note 40 (1d, 2a, 2k); *About Restaurant Establishment Scores*, LOUISVILLEKY.GOV, http://www.louisvilleky.gov/Health/aboutinspectionscores.htm (last visited Apr. 9, 2012) (1e, 1i, 2e, 2f, 2g, 2h, 2i); LOUISVILLE & JEFFERSON COUNTY, KY., BD. OF HEALTH SANITARY CODE 400.03 (1996) (1f); Cabinet for Health & Family Servs., *Food Establishment Inspection Report*, DEP'T FOR PUB. HEALTH, COMMONWEALTH OF KY. (2009), http://chfs.ky.gov/NR/rdonlyres/94EB0338-C083-46E5-89CF-E7C67E6730F3/0/NEWDFS208RETAILFOODINSPECTIONFORMRevised01082010.pdf (1g, 1h, 2b, 2c, 2d); Ken Neuhauser, *Making the Grade; Restaurants Adjust to New Health Inspection Ratings*, COURIER-J., July 25, 2011, at A1 (2e - noting immediate closure for restaurants scoring below 60); Rick Howlett, *Health Department Revising Restaurant Ratings*, WFPL NEWS, Aug. 25, 2011, http://archives.wfpl.org/2011/08/25/health-department-revising-restaurant-ratings (2f - noting accompanying image of sample grade card includes field for score); Telephone Interview with an inspector, Food Hygiene Program, Louisville Metro. Dep't of Pub. Health (Jan. 20, 2012) (2j).
Miami/Dade County (FL)	Div. of Hotels & Rests., *Public Food Service and Lodging Inspections*, FLA. DEP'T OF BUS. & PROF. REG., http://www.myfloridalicense.com/dbpr/hr/inspections.html (last visited Apr. 9, 2012) (1a); Div. of Htoels & Rests., *Restaurants/Food Service Public Records*, FLA. DEP'T OF BUS. & PROF. REG., http://www.myfloridalicense.com/dbpr/sto/file_download/public-records-food-service.html (last visited Feb. 15, 2012) (1b - based on unique license numbers between Jan. 1, 2011 and Jan. 1, 2012; 1c - finding the ratio of unique addresses in Dade County and Monroe County to help calculate FTE, 1j); E-mail from Carlos M. Lezcano, Dist. Manager, Div. of Hotels & Rests., Miami Region, Fla. Dep't of Bus. & Prof. Regulation (Jan. 20, 2012) (on file with author) (1c - confirming 26 sanitarians to inspect restaurants, caterers, hotels, and motels); Div. of Hotels & Rests., *Annual Report 2010-2011*, FLA. DEP'T OF BUS. & PROF. REG. 11-12 (2011), http://www.myfloridalicense.com/dbpr/hr/reports/annualreports/documents/ar2010_11.pdf (1c - determining that "public food service inspections" were 76% of all inspections); FLA. ADMIN. CODE ANN. R. 61C-1.002(8)(d)(1) (2012) (1d); Telephone Interview with Call Ctr., Div. of Hotels & Rests., Fla. Dep't of Bus. & Prof. Regulation (Jan. 26, 2012) (1f - verifying that inspection results do not have to be posted inside the establishment).

SITE	SOURCE
Milwaukee	Health Dep't, *Food Establishment Inspection Reporting System*, CITY OF MILWAUKEE, http://itmdapps.ci.mil.wi.us/cehri/search.jsp (last visited Apr. 9, 2012) (1a); Klein & DeWaal, *supra* note 65, at 20 (1b, 1c - noting 17 inspectors); Telephone Interview with Envtl. Health Specialist II, Disease Control & Envtl. Health Div., Milwaukee Health Dep't (Apr. 12, 2012) (1c - noting 16 current inspectors, 14 in food and 2 in weights and measures, with 2 of the food inspectors also inspecting tattoo and piercing parlors, and explaining that food inspectors also inspect surveillance and crime prevention systems; FTE estimates assume these inspectors collectively spend 50-80% of their time on food.); *Frequently Asked Questions*, CITY OF MILWAUKEE HEALTH DEP'T, http://itmdapps.ci.mil.wi.us/cehri/faq.jsp#types_inspections (last visited Apr. 9, 2012) (1d); Telephone Interview with Julie Tranetzki, Envtl. Health Specialist, Disease Control & Envtl. Health Div., City of Milwaukee Health Dep't (Jan. 26, 2012) (1f - verifying that inspection reports do not have to be posted); *Search*, CITY OF MILWAUKEE HEALTH DEP'T, http://itmdapps.ci.mil.wi.us/cehri/search_by.jsp?conch=8892306002t5G6cr9VPdkfssg2zI5r4RB0V03s6Vv5B (last visited Apr. 9, 2012) (1j).
Mississippi	*Mississippi State Department of Health Announces New Restaurant Inspection Rating System*, *supra* note 41 (2a); *Understanding Food Facility Inspection Grades*, MISS. ST. DEP'T OF HEALTH, http://msdh.ms.gov/msdhsite/_static/30,5301,77,333.html (last visited Apr. 9, 2012) (2e, 2h); Telephone Interview with representative at Miss. State Dep't of Health (Sept. 26, 2012) (2g - noting that restaurants can improve from a 'C' to a 'B' upon reinspection); Telephone Interview with John Luke, Dir., Div. of Food Prot., Miss. State Dep't of Health (Jan. 19, 2012) (2g, 2i, 2j, 2k).
New York	*Restaurant Inspection Information*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE, http://www.nyc.gov/html/doh/html/rii/index.shtml (last visited Apr. 6, 2012) (1a, 1b, 1j); Collins, *supra* note 206 (1c - noting 157 current inspectors and 23 new inspectors); 2009 AUDIT, *supra* note 204, at 1 (1c - noting that approximately 78% of inspections were restaurants); *Food Safety and Community Sanitation: Public Health Role and Responsibility*, N.Y.C. DEP'T OF HEALTH & MENTAL HYGIENE, http://www.nyc.gov/html/doh/html/inspect/insp.shtml (last visited Apr. 5, 2012) (1c - noting "[b]ecause [Public Health Sanitarians] are cross-trained, they are periodically reassigned to different programs"); 137 CITY REC. 1607 (June 15, 2010) (1d, 1e, 1g, 1i, 2e, 2g, 2h, 2i, 2k); *id.* at 1608 (1f); *id.* at 1608-09 (1h, 2e - adding up the greatest number of points possible for each violation); *Restaurant Inspection Results*, N.Y.C. OPEN DATA, https://nycopendata.socrata.com/Health/Restaurant-Inspection-Results/4vkw-7nck (last visited Sept. 24, 2012) (1j - providing a tool to download inspection results); 137 CITY REC. 1606 (June 15, 2010) (2a); *id.* at 1608-09 (June 15, 2010) (2c, 2d); *id.* at 1609 (2c, 2d); *id.* at 1607 (2e).

SITE	SOURCE
North Carolina	1941 N.C. Sess. Laws 435-36 (2a); 15A N.C. ADMIN. CODE 18A .2606 History Note (2010) (2a - noting revision in 1980); John Cochran, *Restaurants May Change Sanitation Grade System*, GREENSBORO NEWS & REC., Dec. 11, 1997, at B1 (2a - quoting an official stating that grading system has been in use for 50 years); Div. of Envtl. Health, *Food Service Establishment Inspection*, N.C. DEP'T OF ENV'T & NAT. RESOURCES (2008), http://www.deh.enr.state.nc.us/images/food/inspectform/DENR%204007%20(1-31-08)(4%5E45pm).doc (2b, 2c, 2d); 15A N.C. ADMIN. CODE 18A .2662(a) (2012) (2e); 15A N.C. ADMIN. CODE 18A .2660 (2012) (2f); *id.* 2661(h) (2g, 2h, 2i - noting that a reinspection "for the purpose of raising the alphabetical grade" must be requested and would occur within 15 days of request); Mike Baker, *Some Restaurants Get Questionable 'A' Grade*, SALISBURY POST (N.C.), Feb. 27, 2011, http://www.salisburypost.com/News/022711-Restaurant-inspections-story-from-AP-qcd (2i - "The inspector can return within 10 days to make sure the critical violation is fixed . . . . "); Telephone Interview with J. Lynn Lathan, Envtl. Supervisor, Food & Facilities Sanitation Program (Jan. 12, 2012) (2j); 10A N.C. ADMIN. CODE 46 .0213(a)(1) (2010) (2k).
Philadelphia	Envtl. Health Servs., *Food Protection*, CITY OF PHILA., http://www.phila.gov/health/environment/foodProtection.html (last visited Apr. 9, 2012) (1a); Press Release, Pa. Dep't of Agric., Agriculture Secretary: New Law Improves Food Safety Oversight, Adds Additional Transparency, Uniformity to Inspections (Nov. 30, 2010), http://www.agriculture.state.pa.us/portal/server.pt?open=18&objID=1096099&mode=2 (1a - noting that the Pennsylvania Department of Health established a statewide standard for inspections in 2010); Klein & DeWaal, *supra* note 65, at 23 (1b, 1c); Patrick Kerkstra & John Sullivan, *City in Need of Restaurant Inspectors*, PHILA. INQUIRER, Nov. 16, 2006, http://articles.philly.com/2006-11-16/news/25407532_1_food-inspections-critical-violation-food-carts (1c - "The city has 32 inspectors."); Telephone Interview with Bernard Finkel, Chief of Food Prot., Phila. Dep't of Pub. Health (Mar. 29, 2012) (1c - verifying that inspectors do not specialize in restaurant inspections); Telephone Interview with Bernard Finkel, Chief of Food Prot., Phila. Dep't of Pub. Health (Apr. 10, 2012) (1c - estimating that inspectors spend around 80% of their time on food inspections); Don Sapatkin, *Turning up the Heat on Phildelphia Food-Safety Inspections*, PHILA. INQUIRER, Aug. 7, 2009, http://articles.philly.com/2009-08-07/news/24986078_1_food-safety-restaurant-inspectors-food-temperatures (1d - noting the once-a-year minimum); Telephone Interview with Sheri Morris, Program Manager, Bureau of Food Safety & Lab. Servs., Pa. Dep't of Agric. (Jan. 13, 2012) (1d - confirming the once-a-year minimum); Telephone Interview with Bernard Finkel, Chief of Food Prot., Phila. Dep't of Pub. Health (May 10, 2012) (1f - verifying that there is no mandatory posting of inspection results); Envtl. Health Servs., *Food Safety Inspection Reports*, CITY OF PHILA. DEP'T OF PUB. HEALTH, http://www.phila.gov/health/environment/FoodSafetyReports.html (last visited Apr. 9, 2012) (1j).

SITE	SOURCE
Phoenix	*Food Inspection Grading System*, MARICOPA COUNTY ENVTL. SERVICES DEP'T, http://www.maricopa.gov/ENVSVC/Envhealth/PermitScoring.aspx (last visited Apr. 9, 2012) (1a, 1e - describing voluntary grading system; 2e - for the purposes of this Article, "priority violations" are considered critical violations and "priority foundation violations" are considered general violations. As of April 2012, the grading scheme in Maricopa County was voluntary); Gilger, *supra* note 46 (1b); Telephone Interview with Bryan Hare, Envtl. Health Operations Supervisor, Cent. Region, Maricopa Cnty. Envtl. Servs. Dep't (Apr. 10, 2012) (1c - confirming 75 EHSs, 14 supervisors, and 80-85% of inspectors' time spent on food); Telephone Interview with Ben, Inspector, Maricopa Cnty. Envtl. Services Dep't (Jan. 17, 2012) (1d, 1f, 2h, 2i, 2j, 2k - stating that a restaurant will have a follow-up inspection if it has one or more priority or priority foundation violations; given the voluntary nature of the grading regime, it remains unclear whether a reinspection can change a restaurant's grade); Press Release, Maricopa Cnty. Envtl. Servs. Dep't, An "A" for Food Safety: Maricopa County Environmental Services Announces Its New Food Inspection Grading System (Oct. 13, 2011), http://www.maricopa.gov/envsvc/EnvHealth/News/Release--111013-Food%20Grading%20System.pdf (1e, 2a); Envtl. Servs. Dep't, *Food Establishments Search*, MARICOPA COUNTY, http://www.maricopa.gov/EnvSvc/envwebapp/business_search.aspx?as_page_title=Food%20Establishments%20Search&as_type=Food (last visited Apr. 9, 2012) (1j).
San Bernardino County	*See* Ghori, *supra* note 47, at B3 (2a); Envtl. Health Servs., *ABC Retail Food Inspection Guide*, COUNTY OF SAN BERNARDINO (Mar. 2012), http://www.sbcounty.gov/dehs/Depts/EnvironmentalHealth/EHS%20Documents/abc_retail_food_inspection_guide.pdf (2b, 2c, 2d, 2e, 2f, 2g, 2h, 2i, 2k); Telephone Interview with Stephanie, Div. of Envtl. Health Serv., Dep't of Public Health, Cnty. of San Bernardino (Sept. 26, 2012) (2g - confirming restaurants can improve their grade upon reinspection); Scott Vanhorne, *Board Alters Eatery A-B-Cs; Reinspection Time Trimmed from 30 to 10 Days*, THE SUN (San Bernadino, Cal.), June 15, 2004 (2j).
San Diego	*Food Facility Inspection Search*, COUNTY OF SAN DIEGO, http://www.sdcounty.ca.gov/deh/fhd/ffis/intro.html (last visited Apr. 9, 2012) (1a, 1b, 1f, 1j); E-mail Correspondence with Bao Huynh, Supervising Envtl. Health Specialist, Food & Hous. Div., San Diego Cnty. Dep't of Envtl. Health (Apr. 11, 2012) (on file with author) (1c - verifying 69 EHSs, 51 conducting inspections, 49 conducting inspections full time, and estimating 75-80% of time spent on food inspections); Williams & Armendariz, *supra* note 88 (1d, 2a, 2k); SAN DIEGO COUNTY, CAL., CODE OF REG. ORDINANCES § 61.107 (2011) (1e, 1i, 2e, 2g, 2h, 2i); Telephone Interview with Bao Huynh (Apr. 10, 2012) (1i, 2h - confirming that restaurants that receive a 'B' or a 'C' grade will be reinspected within 30 days); *San Diego Food Facility Inspection Search*, COUNTY OF SAN DIEGO, http://www2.sdcounty.ca.gov/ffis (last visited Apr. 9, 2012) (1j); *Retail Food Facility Operator's Guide*, *supra* note 113, at 6, 29 (1g, 1h, 2b, 2c, 2d); John Woollard & Vojkan Stefanovic, *Scores on Doors Schemes: International Study Tour Report*, ACT GOV'T HEALTH DIRECTORATE 8 (June 14-25, 2011), http://www.health.act.gov.au/c/health?a=sendfile&ft=p&fid=-1629748169&sid= (2f); Dep't. of Envtl. Health, *Food Facility Fee Schedule*, COUNTY OF SAN DIEGO (Rev. Aug. 24, 2012), http://www.sdcounty.ca.gov/deh/food/pdf/publications_feeschedule.pdf (2j - noting an hourly rate for re-grades of $142); Telephone Interview with Liz Pozzebon, Assistant Dir., San Diego Cnty. Dep't of Envtl. Health (Apr. 23, 2012) (2j - clarifying that the fee applies to a second reinspection that results from noncompliance and any reinspection that is a re-grading inspection); Telephone Interview with Celia Kroy, Envtl. Health Specialist & Specialist on Duty, San Diego Cnty. Dep't of Envtl. Health (Jan. 13, 2012) (2j - fees are only paid for the second reinspection).

SITE	SOURCE
San Francisco	S.F. HEALTH CODE § 452(a) (2011) (1a - noting that food service establishments within the City and County of San Francisco must have a permit from the Department of Public Health); *Food Safety Program: Inspections*, S.F. DEP'T OF PUB. HEALTH, http://www.sfdph.org/dph/EH/Food/Inspections.asp (last visited Apr. 9, 2012) (1b, 1d, 1g); Telephone Interview with Lisa O'Malley, Manager, Food Safety Prot. Program, S.F. Dep't of Pub. Health (Apr. 6, 2012) (1c - confirming 24 inspectors, and that inspectors also inspect about 6,800 food establishments, 400 laundry facilities, 960 tobacco shops–many of which are part of food establishments–and pet shops with overnight kennels. Assuming half of tobacco shops are also food establishments, food establishments make up 88% of establishments inspected, suggesting 21 FTE food inspectors.); S.F. HEALTH CODE § 456(C) (1f - discussing the Symbol of Excellence); *Food Safety Program: Restaurant Safety Scores*, S.F. DEP'T OF PUB. HEALTH, http://www.sfdph.org/dph/EH/Food/Score/default.asp (last visited Apr. 9, 2012) (1f - discussing the Symbol of Excellence); S.F. HEALTH CODE §§ 456.1(A)-(C) (1f - noting that the Symbol of Excellence must be posted as well as the inspection report); MISSIONLOCAL, http://missionlocal.org/san-francisco-restaurant-health-inspections (last visited Apr. 9, 2012) (1g, 1h); Telephone Interview with Lisa O'Malley (Jan. 25, 2012) (1i); Envtl. Health, *Enter the Business Name or Street Address*, S.F. DEP'T OF PUB. HEALTH, http://dph-extranet2.sfdph.org:7777/pls/eeop_htmldb/f?p=132:1:425350377776695 (last visited Apr. 9, 2012) (1j).
Seattle	*Food Protection Program*, PUB. HEALTH-SEATTLE & KING COUNTY, http://www.kingcounty.gov/healthservices/health/ehs/foodsafety.aspx (last visited Apr. 9, 2012) (1a); E-mail Correspondence with Phil Wyman, Health & Envtl. Investigator III, Envtl. Health Serv. Div., Dep't of Pub. Health, Seattle & King Cnty. (Apr. 12-13, 2012) (on file with author) (1c - stating 37 total inspectors and 32 FTE food inspectors); *Risk Based Inspection Program*, PUB. HEALTH-SEATTLE & KING COUNTY (2011) http://www.kingcounty.gov/healthservices/health/ehs/foodsafety/FoodBusiness/TastingRoom/~/media/health/publichealth/documents/foodsafety/2011RiskBasedInspectionProgram.ashx (1d); Telephone Interview with Rosemary Byrne, Health & Envtl. Investigator III, Envtl. Health Servs. Div., Dep't of Pub. Health, Seattle-King Cnty. (Jan. 26, 2012) (1f - verifying that there is no mandated public posting of inspection results); *Common Questions About Food Safety*, PUB. HEALTH–SEATTLE & KING COUNTY, http://www.kingcounty.gov/healthservices/health/ehs/foodsafety/foodfaq.aspx (last visited Apr. 9, 2012) (1b, 1g, 1i); *Food Establishment Inspection Report*, PUB. HEALTH–SEATTLE & KING COUNTY (2007), http://kingcounty.gov/healthservices/health/ehs/foodsafety/inspections/%7e/media/health/publichealth/documents/foodsafety/inspectionform.ashx (1h - adding up the total maximum number of points); *Food Establishment Inspection Data*, PUB. HEALTH–SEATTLE & KING COUNTY, http://www.datakc.org/Government/Food-Establishment-Inspection-Data/f29f-zza5 (last visited Feb. 17, 2012) (1j).
South Carolina	*New Restaurant Inspection System in Effect in S.C.*, FLORENCE MORNING NEWS, Aug. 29, 1967, at 5 (2a); *Myrtle Beach Area Restaurant Inspections August 18-24, 2011*, MYRTLE BEACH RESTAURANT NEWS, Aug. 27, 2011, http://myrtlebeachrestaurantnews.com/myrtlebeachrestaurantnews articles/dhec-inspections/2052-myrtle-beach-area-restaurant-inspections-august-18-24-2011.html (2b, 2c, 2d - using sample inspection reports from Myrtle Beach cited in the Article to piece together how many possible points are available. For the purposes of this Article, "critical risk factors" and "critical violations" are grouped together as "critical violations"); S.C. CODE ANN. REGS. 61-25 Ch. XIV § L (2010) (2e, 2g, 2h, 2i); *Food Safety and S.C. Public Health*, S.C. DEP'T OF HEALTH & ENVTL. CONTROL, http://www.scdhec.gov/environment/envhealth/food/htm/inspection-rating.asp (last visited Oct. 1, 2012) (2e); S.C. CODE ANN. REGS. 61-25 Ch. XIV § E (2e - noting that permits may be revoked if a restaurant has a score below 70 for three consecutive routine inspections); *id.* § K (2i); Telephone Interview with Laura, Bureau of Envtl. Health, S.C. Dep't of Health & Envtl. Control (Jan. 19, 2012) (2j); S.C. CODE ANN. REGS. 61-25 Ch. XIV § H (2k).

SITE	SOURCE
St. Louis	ST. LOUIS, MO., CITY REVISED CODE 11.42.040 § 1-201.10(B) (as amended 2010) (1a - defining "Regulatory Authority"); Klein & DeWaal, *supra* note 65, at 28 (1b); Telephone Interview with Pat Mahoney, Supervisor, Food & Beverage Control, Food Div., St. Louis Dep't of Health (Mar. 19, 2012) (1c - confirming that there are 10 food inspectors, and that they specialize in food inspections); ST. LOUIS, MO., CITY REVISED CODE 11.42.232 § 10-101.35(B)(1) (as amended 2010) (1d); *id.* § 10-101.37 (1e, 1f, 1g, 1h, 2e, 2i, 2j); Telephone Interview with Pat Mahoney, Supervisor, Food & Beverage Control, Food Div., Dep't of Health (Jan. 17, 2012) (1i, 2e, 2g, 2h); Dep't of Health, *Dining Establishment Health Ratings and Inspection Reports*, CITY OF ST. LOUIS, http://stlouis-mo.gov/government/departments/health/environmental-health/food-control/restaurant-ratings-search.cfm (last visited Apr. 9, 2012) (1j); Trout, *supra* note 86, at 335-38 (2a); Dep't of Health, *Food/Beverage Control: Inspection Report*, CITY OF ST. LOUIS (2010) (2b, 2c, 2d); Telephone Interview with Pat Mahoney, Supervisor, Food & Beverage Control, Food Div., St. Louis Dep't of Health (Jan. 19, 2012) (2f); ST. LOUIS, MO., CITY REVISED CODE 11.42.232 (as amended 2010) (2k).
Toronto	*Toronto's DineSafe Program*, CITY OF TORONTO, http://www.toronto.ca/health/dinesafe (last visited Feb. 15, 2012) (2a, 2e); *Food Premises Inspection and Disclosure System: Frequently Asked Questions*, CITY OF TORONTO, http://app.toronto.ca/food2/FDFAQRegular.jsp (last visited Feb. 15, 2012) (2g, 2h, 2i, 2j, 2k).
Washington, D.C.	Health Reg. & Licensing Admin., *Food Safety Hygiene & Inspection Services Division (FSHISD)*, D.C. DEP'T OF HEALTH, http://doh.dc.gov/service/food-safety-hygiene-and-inspection-services-division (last visited Sept. 9, 2012) (1a, 1c - noting "the staff for the [food safety program] includes 17 sanitarians"); Klein & DeWaal, *supra* note 65, at 30 (1b, 1d - noting establishments are inspected 2-4 times per year); Telephone Interview with representative at Food Safety Hygiene & Inspection Servs. Div. (Apr. 6, 2012) (1c - confirming that inspectors inspect food service establishments, swimming pools, beauty parlors, barber shops, nail salons, spas, electrolysis establishments, and massage parlors); *Yelp Washington, D.C.*, YELP, http://www.yelp.com/dc (enter key term in "search for" box; repeat for other search terms; to restrict to "Driving (5 mi.)," check that option under "Distance" in the filters section) (1c - finding that "food" accounts for 67.1% of searches for "food," "spa," "beauty," "barber," "nail salon," "massage," "pools," and "electrolysis" in Washington, D.C., when the search radius is limited to 5 miles); D.C. MUN. REGS. tit. 25, § A4400.1 (2003) (1d); Telephone Interview with Ashley Ballard, Food Prot. Div., Washington D.C. Dep't of Health (Jan. 23, 2012) (1d - clarifying the risk-based frequency system; 1f - verifying that there is no mandated posting of inspection results); Health Regulation & Licensing Admin., *Search Inspections*, D.C. DEP'T OF HEALTH, http://washington.dc.gegov.com/webadmin/dhd_431/web/?a=Inspections (last visited Apr. 9, 2012) (1j).