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What Makes Transparency Work?

(With Elena Fagotto)

In Los Angeles County, as in other localities, public health inspectors visit restaurants to make sure they comply with local hygiene codes. In most communities, however, the information they collect is locked away in government files. In a few, inspection results are posted in searchable electronic databases that foresighted and tech-savvy restaurant-goers may learn to access. But Los Angeles County goes much further. Since 1998, restaurant managers there have been required to post in their windows a letter grade ranging from A to C that reflects the results of their most recent hygiene inspection. Would-be patrons needn't call the public health office or visit a Web site. A glance at the restaurant's storefront tells them how clean it is and lets them incorporate that information into one of the most common of daily decisions – figuring out where to eat.¹

These restaurant hygiene reports have created powerful incentives for restaurateurs to clean up their premises. Early research has found significant revenue increases for restaurants with high grades and revenue decreases for C-graded restaurants (a powerful *effect*). More important, research results suggest that the policy has caused a measurable increase in restaurant hygiene and a significant drop in hospitalizations from food-related illnesses (a clear sign of *effectiveness*). Thus, more-informed choices by consumers appear to be improving restaurant cleanliness, rewarding restaurateurs who practice good hygiene, and stimulating a new dimension of beneficial competition among restaurants.²

This restaurant grading system illustrates how a thoughtful public policy can generate information that is genuinely helpful to people in their everyday decisions. What makes the Los Angeles County system so successful? More generally, what separates the transparency policies that succeed from

those that fail? In this chapter, we try to answer these questions by examining eight major U.S. targeted transparency policies: corporate financial reporting, restaurant hygiene disclosure, mortgage lending disclosure, nutritional labeling, toxic pollution reporting, workplace hazardous chemicals disclosure, patient safety reporting, and plant closing reporting (shown in Table 4.1 and explored in subsequent tables).³

We focus on this subset of the full database of policies because we can take advantage of a significant body of quantitative policy evaluations and other literature that has developed in recent years. Although these evaluations examine specific policies, they provide us with a means to look deeply at the crosscutting drivers of success.⁴ Thus the eight policies provide a particularly sharp means of evaluating the effectiveness of targeted transparency.

As we have seen, all targeted transparency policies share certain underlying design features. However, it is the variations in their design and the problems they address that shape their evolution and ultimately help to determine their success or failure.

A COMPLEX CHAIN REACTION

Like other forms of regulation, transparency policies aim to change the behavior of individuals and organizations in ways that policymakers believe will advance the public interest. But not all transparency policies achieve this objective. In this analysis, we divide transparency policies into three categories:

- (A) Some transparency policies fail to alter behavior because few act on the information they generate.
- (B) Other policies alter the behavior of individuals or organizations, but not necessarily in ways that are consistent with policy objectives.
- (C) Still other policies alter behavior in ways that ultimately advance core public policy objectives.

Transparency policies in category (C) are successful, while those in categories (A) and (B) are failures or are only marginally effective.

To illustrate, consider the nutritional labeling of packaged foods mandated by Congress in 1990 with the goal of reducing the risk of heart disease, cancer, and other chronic illnesses. Suppose shoppers responded to the availability of nutrition information on packaged cookies by continuing to choose cookies based only on price and taste, with no regard for the nutrition data provided under the policy. In this case, the policy would fall into category (A) and be deemed a failure.

Table 4.1. *Overview of Eight Selected Transparency Policies*

Disclosure System	Year Enacted	Public Policy Objective	Information Disclosed	Primary Disclosers	Primary Users
Corporate Financial Disclosure ^a	1933, 1934	Reduce hidden risks to investors, improve corporate governance	Company financial data	Public companies trading in U.S.	Investors, financial intermediaries
Restaurant Hygiene Disclosure ^b	Los Angeles County: 1997	Reduce risk of food-borne illness	Letter grades reflecting hygiene inspection results	Restaurants	Consumers
Mortgage Lending Disclosure ^c	1975	Reduce mortgage lending discrimination	Lending activity demographics	Banks and other lending institutions	Community groups, regulators
Nutritional Labeling ^d	1990	Reduce risks of chronic disease	Nutrients in most processed foods	Manufacturers of packaged foods	Consumers
Toxic Releases Disclosure ^e	1986	Reduce toxic pollution	Quantities of toxic releases by chemical and factory	Chemical manufacturers, users	Regulators, environmental groups, communities
Workplace Hazards Disclosure ^f	1983	Reduce worker exposures to chemical hazards	Information on workplace hazardous chemicals	Manufacturers, employers	Workers, employers
Patient Safety Disclosure (NY, PA) ^g	NY: 1990 PA: 1992	Improve cardiac surgery performance	Mortality rates, etc., in patient treatment	Hospitals, doctors	Patients, doctors, insurers, governments
Plant Closing, Mass Layoff Disclosure ^h	1988	Lower costs of major economic dislocations from closures/layoffs	Plans of large-scale layoffs/facility closings	Large companies	Affected workers, communities

Note: Dates are years of initial policy enactment; see the Appendix for a discussion of amendments or supplemental legislation in subsequent years.

^a Securities Act (1933) and Securities and Exchange Act (1934); ^b Los Angeles County Restaurant Hygiene Grade Cards; ^c Home Mortgage Disclosure Act; ^d Nutrition Labeling and Education Act; ^e Emergency Planning and Community Right-to-Know Act – the Toxics Release Inventory is a database established by the act; ^f Hazard Communication Standard – promulgated under the Occupational Safety and Health Act (1971); ^g New York Cardiac Surgery Reporting System and Pennsylvania Guide to Coronary Artery Bypass Graft Surgery;

^h Worker Adjustment and Retraining Notification Act.

Suppose shoppers responded by switching to cookies that were somewhat lower in sugar but higher in saturated fat. Or suppose they switched to cookies that were lower in both sugar and fat but increased their consumption of cookies enough to more than offset the health benefits. In these cases, nutritional labeling would have had effects on consumers' behavior, but it would not have furthered the policy aim of reducing heart disease. The policy would fall into category (B) in that it had an effect on behavior but was not effective.

But if shoppers responded by choosing cookies low in sugar and fat, and thereby increased the healthfulness of their overall diets, the policy would fall into category (C) and we would judge it to be successful. In examining our inventory of transparency policies, therefore, we must ask both whether new information changes user and discloser behavior and whether it does so in a way that moves that behavior in a desired policy direction.

As we have noted, simply placing information in the public domain does not guarantee that it will be used or used wisely. Individuals' and groups' responses to information are inseparable from their interests, desires, resources, cognitive capacities, and social contexts. Owing to these and other factors, people may ignore information, misunderstand it, or misuse it.⁵ Whether and how new information is used to further public objectives depends upon its incorporation into complex chains of comprehension, action, and response.

In transparency systems, those chains of actions and responses have two primary actors: those who are compelled by public policies to provide that information and whose behavior policymakers hope to change (disclosers), and those who receive the new information produced by transparency policies and whose choices policymakers hope to improve (users). These information disclosers and users are typically connected in an action cycle (see Figure 4.1).⁶

When disclosers provide information voluntarily to customers, investors, and employees through advertising, reports, or other means, as shown on the left side of the diagram, users and disclosers are linked through an action cycle that conceptually begins with the provision of information by disclosers to potential users. Users draw on information that they find relevant, which affects their perceptions about the product, service, or outcome of concern and in turn informs their actions or behavior. User behavior changes (for example, purchases of a new "healthy" snack) are interpreted by disclosers, who may adjust their behaviors on the basis of user activity (such as by producing more or fewer healthy product lines in response to consumer preferences).

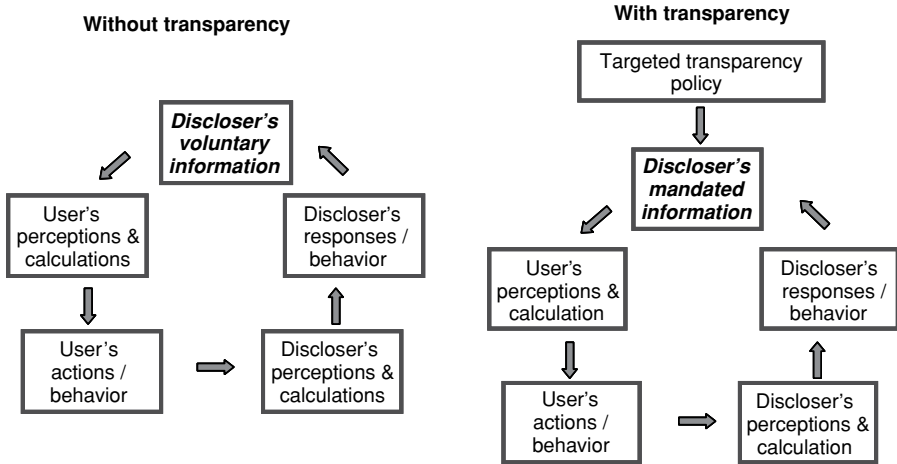


Figure 4.1. Targeted Transparency Action Cycle

As Chapter 2 described, there are many incentives for disclosers to provide less-than-complete information, so that the action cycle produces less than the socially desired outcomes. Targeted transparency policies attempt to redress the resulting information asymmetries in order to reduce public risks and improve public services. As depicted on the right side of Figure 4.1, such policies compel corporations, government agencies, or other organizations to provide information about their practices or products to the public at large. If this additional information is useful, accessible, and understood by consumers, investors, employees, community residents, or other individuals or groups, they may incorporate it into their decision-making processes in ways that alter their actions. The original disclosers of information, in turn, observe the changed choices of information users and, if policymakers are successful, respond by altering practices and products to reduce public risks or improve services.

The action cycle can be used to describe the effects and effectiveness of transparency policies across various policy domains as follows: A policy has *effects* when the information it produces enters the calculus of users and they consequently change their actions. Further effects may follow when information disclosers notice and respond to user actions. A system is *effective*, however, only when discloser responses significantly advance policy aims.

NEW INFORMATION EMBEDDED IN USER DECISIONS

Let us assume that, because of a targeted transparency policy, a new body of valued and accurate information is available to the public. Whether and

how people respond to that information depends on how easily it fits into their routine ways of making choices.

As we have seen, the concept of bounded rationality helps explain the limitations of typical decision making.⁷ People want to act rationally to advance their various, usually self-interested, ends. But because they are willing to invest only so much time and attention (and rightfully so), they don't seek out all of the information necessary to make optimal decisions. Instead, they try to make decisions that are good enough, using time-tested rules of thumb. (Economists call this *satisficing*.) Only information that penetrates these sometimes severe economies of decision making affects their calculations and actions.

Transparency systems alter decisions only when they provide pertinent information that enables people to substantially improve their choices without imposing significant additional costs. That is one reason diners are more likely to use the window-front grades in Los Angeles than Internet databases with similar information: the added cost of obtaining new information (in time, energy, and planning) is very low.

When new information becomes part of users' decision-making routines, we say that it is *embedded* in user decisions. For transparency systems to be effective, it is necessary but not sufficient that information become embedded in existing decision-making processes. Embedded information is not sufficient for effectiveness because conflicting preferences, cognitive challenges, and other constraints may still keep users from taking action that furthers public policy objectives.

What determines whether information will become embedded in users' decision making? We have identified three key factors:

- the information's perceived value in achieving users' goals;
- its compatibility with users' decision-making routines; and
- its comprehensibility.

Let us consider these factors in a bit more detail.

Value

Few people spend time and energy obtaining information for its own sake. Most people must perceive that the information will be valuable in achieving their goals. We assume that the underlying goals of users are not altered by most transparency systems. There are instances, however, where intensive education, training, or widely publicized crises change preferences; hence an accompanying transparency system can help users act on those changed preferences. The Enron and WorldCom corporate scandals and no-smoking

educational campaigns illustrate such synergies between preference changes and transparency systems.⁸

Making good decisions is a goal that all people share, and we all know that good information can sometimes improve our decisions: no one wants to eat in a restaurant with a filthy kitchen or buy a car that is unsafe. But consumers who feel they already know everything they need to know about restaurant quality or auto safety will ignore the data that transparency policies generate.

Similarly, additional information won't help users who believe they have few meaningful choices to make. A restaurant grade might be of little value in a town with only one restaurant (although a C rating might persuade more people to eat at home). Requirements that employers clearly label hazardous substances in their workplaces have had little impact in part because many workers find it daunting either to change jobs or to persuade managers to use different chemicals.⁹

In addition, the cost of acquiring and using new information must be low enough to justify users' efforts in relation to expected benefits. Users may be more willing to invest time and effort in integrating new information into their choices when they perceive substantial immediate or long-term gain. Car buyers who care about safety may seek out safety rankings even though such ratings are not available in showrooms. Home buyers who care about school quality may be willing to invest time in searching newspapers, magazines, or Web sites for school rankings. Investors making important financial decisions may be willing to seek information about the risks of publicly traded companies even if the search is costly. In general, though, if users incur a substantial cost in either time or material resources to acquire information generated by transparency systems, they are unlikely to embed that information into their everyday choices.¹⁰

Compatibility

Information must also be compatible with the usual ways that people go about making their decisions. People have settled routines and habits for making choices. Some carefully compare the price-per-pound labels for different brands of pasta at the grocery before buying; others don't bother. Some browse reviews of products and services in publications like *Consumer Reports* or on Internet sites before making large purchases; others shop on impulse. Information generated by transparency policies can become embedded only if it is compatible with these settled routines.

Compatibility ordinarily includes two elements: *format* and *time and place of availability*. The Los Angeles restaurant ratings excel on both: everyone

who attended grade school understands the meaning of A, B, and C letter grades (format); and because grades are posted at the entrance of every restaurant, they are available to patrons *when and where* they make dining decisions (time and place).

Information is compatible in format if users can easily take note of new facts to make more-informed choices. Large miles-per-gallon stickers on new-car windows in dealer showrooms are easy to read and hard to miss. On the other hand, home buyers are unlikely to wade through technical government reports to determine which neighborhoods have high levels of toxic pollution.

As we have seen, one way to simplify the format of complex information is by creating a rating system. The Los Angeles restaurant hygiene grades and the auto rollover ratings described in Chapter 1 provide good illustrations. Both systems convert data and expert interpretation into simple normative signals such as stars or letter grades (see Figure 4.2). In both systems, underlying details can be accessed by those who want to study them. (Note that rating systems that lack access to such underlying facts would not constitute transparency systems as we define them.) In other systems, simple graphics – a pie chart or a clock face, for example – provide similar shortcuts.

Significantly, rating systems involve two sets of trade-offs: (1) simple presentation versus accurate communication of complex facts, and (2) normative judgments by policymakers versus normative judgments by users. If the information is not amenable to a simple rating formula or the rating organization is not widely trusted, then a rating system is unlikely to be effective.

Making information available at a time and place where users are accustomed to making decisions also maximizes the chances that information will become embedded. Grades in restaurant windows and fuel economy ratings on new-car stickers are familiar examples of such compatibility. Sometimes it takes careful planning to ensure that information is available when choices are actually occurring. Thus, if school performance report cards and information about toxic pollution from nearby factories are intended to inform the decisions of would-be home buyers, the data should be aggregated and made available in real estate offices or Web sites rather than being stored in different public databases. Similarly, campaign finance disclosures are more likely to facilitate opposing candidates' and voters' responses if they are available in real time, and hospital safety ratings are more likely to support doctors' and patients' choices if they are available in doctors' offices.

In some cases, decisions are made by agents acting on behalf of other people. When this is the case, information must be presented in a format



Figure 4.2. Restaurant Hygiene Quality Cards. *Source:* Restaurant hygiene cards, Fairfax area, Los Angeles. November 2005. Photos by Elizabeth Schetina

that fits in with those agents' routines. For example, travel agents are more likely to pay attention to government-required airline safety and on-time data if they are prominently displayed on travel reservation Web sites that travel agents frequent. Community groups representing neighborhood residents are more likely to press banks to improve their lending practices if the relevant information is posted on Web sites they normally access or emailed to them. Parents acting for their children are more likely to consider new information about school performance if it is sent home with reenrollment forms. Of course, additional problems can arise when the goals of agents and those they represent are not congruent. For example, agents may have incentives to exaggerate information in order to pursue their own aims.

Comprehension

Even if valuable and compatible with users' routines, information is unlikely to become embedded in everyday choices unless it is *comprehensible*. Information is comprehensible when users have the capacity to relate it to the decisions they face. The complexity of information often creates a barrier to comprehension by diverse groups of users.¹¹

The disclosure system for workplace chemical hazards illustrates the challenge of comprehensibility. Since 1983, federal regulations have required employers to inform employees about various hazardous substances at their workplaces. Employers must post material safety data sheets (MSDS) that describe the characteristics, hazards, precautions, and appropriate emergency responses for each hazardous chemical used.

Unfortunately, as the image of a typical MSDS shows (Figure 4.3), these data sheets are extremely difficult to understand. One study found that workers were able to grasp only about 60 percent of the information they contain.¹² In addition, workers have limited resources available for interpretation. In a unionized setting, they may be able to turn to local representatives or health and safety committees for assistance in responding to the information.¹³ However, in nonunion settings (which make up far more than 90 percent of all workplaces), workers must find other resources to help them interpret the technical data contained in data sheets. Compounding these difficulties, cognitive biases may affect workers' ability to act on information about low-level risks.¹⁴

In some cases, as we have noted, it is possible to dramatically simplify complex data to make them comprehensible and actionable. Restaurant hygiene grades in the Los Angeles system, for example, are a simple letter



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet Page 1

10110PP "Teflon" Advanced
Revised 16-FEB-2001

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"Teflon" is a registered trademark of DuPont.

Corporate MSDS Number : DU007357

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.
302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300 (outside U.S.
703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S.
302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Fluorinated Polyurethane (NJ Trade Secret Registry # 00850201001-5418P)		3-5
Acrylic Copolymer (NJ Trade Secret Registry # 00850201001-5516P)		1-2
Hexylene Glycol	107-41-5	1-4
Water	7732-18-5	89-95

HAZARDS IDENTIFICATION

Potential Health Effects

Skin contact may cause skin irritation with discomfort or rash. The product diluted 1:4 with water was not a skin irritant or a skin sensitizer in human patch testing.

Eye contact with the product may cause eye irritation with discomfort, tearing, or blurring of vision.

Inhalation may cause irritation of the upper respiratory passages or lung irritation effects with cough, discomfort,

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(HAZARDS IDENTIFICATION - Continued)

difficulty breathing, shortness of breath, or pulmonary edema (body fluid in the lungs). Symptoms may be modest initially followed in hours by severe shortness of breath requiring prompt medical attention.

Ingestion may cause nonspecific discomfort, such as nausea, headache, or weakness, heartburn, vomiting, or diarrhea. Ingestion of Hexylene glycol may cause temporary nervous system depression with anaesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

In case of contact, immediately wash skin with soap and water. Wash contaminated clothing before reuse.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physicians

Activated charcoal mixture may be administered. To prepare activated charcoal mixture, suspend 50 grams activated charcoal in 400 mL water and mix thoroughly. Administer 5 mL/kg, or 350 mL for an average adult.

Figure 4.3. Material Safety Data Sheet for Teflon Exposures. Source: Material Safety Data Sheet Excerpt, DuPont Corporation, pp. 1–2 (of 7), February 2001

grade based upon one hundred criteria that include not only the presence of rodent droppings but also food temperature, twice-served food, and utensil sanitation.¹⁵ Letter grades work in this case because most people trust health inspectors to combine the many different measures into a single metric that captures how we should judge a restaurant. In the same way, the five-star ranking system for automobile rollovers distills complicated engineering calculations and crash-test results into a simple yet credible scale. Most car shoppers are glad that someone in the National Highway Traffic Safety Administration has taken the time to test car models and inform them about this important aspect of safety.

In other cases, however, simple scales fail to make the crucial data more comprehensible. The five-color scheme designed to inform Americans about changing levels of threat of a terrorist attack fails notoriously in this regard. In this system, red indicates the most severe level of threat, green specifies low threat, and blue, yellow, and orange designate intermediate levels.¹⁶ But terrorist threat reporting differs from restaurant hygiene grading and automobile rollover ratings in two important ways.

First, terrorist threats are unfamiliar and diverse. Most people can clearly visualize what a filthy restaurant kitchen or an overturned car looks like and imagine the dire consequences they can produce. But what is a terrorist threat? Does it mean that terrorists are planning to crash planes into buildings near us, send suicide bombers to shopping malls, release noxious chemicals or infectious microbes into the environment, or disrupt telephone and Internet service? Or does it mean merely that some people in faraway countries seem to be talking about such actions? Without a more specific notion of threat, it is unlikely that any color-coded system could make this public risk more transparent.

Second, terrorist threat levels fail to guide individuals' actions meaningfully. Restaurant and auto rollover ratings help users make clear and straightforward choices – Should I eat at this restaurant? Should I buy this car? The choices with respect to terrorist threats are much more complicated. Citizens' objectives are multifaceted and may include staying alive and uninjured, protecting friends and family, helping authorities to identify threats, and aiding those in distress. Because it is not associated with specific threats or even particular locations, the color-coded scheme provides only vague suggestions for the public, such as “be alert to suspicious activity” (blue level) and “stay tuned to TV or radio for current information” (red level).¹⁷

When transparency systems produce complex information, intermediaries can sometimes translate it into user-friendly messages. The toxic

pollution disclosure system, for example, produces factory-by-factory data on releases of a list of toxic chemicals each year. It is difficult for untrained users to navigate this extensive database or relate emissions to relative levels of risk.¹⁸ More sophisticated users – such as owners and managers of industrial plants, environmental organizations, and regulators themselves – have the analytic capacities to comprehend this information. They use it to inform management goals, shape agendas for action, and target enforcement actions, respectively. Such intermediaries also create user-friendly Web sites searchable by chemical, facility, or zip code.¹⁹

The mortgage lending reporting system provides another example of intermediary action. The Home Mortgage Disclosure Act (HMDA) of 1975 (substantially strengthened in 1989) requires banks to disclose their mortgage loans by race, gender, census tract, and income level.²⁰ Intermediaries such as community organizations, economists, bank regulators, and bank managers used the mortgage lending data to gather evidence of lending patterns, leaving little doubt about the prevalence of racial discrimination in lending.²¹ National and local advocacy groups then pressed banks to increase their lending to disadvantaged customers, compiled public cases against particular banks, and negotiated with them to improve their practices.²²

As these varied cases suggest, making information generated by transparency policies comprehensible is no simple matter. When policies address an issue on which experts agree and for which most information users have similar goals, it is often possible to reduce complex information into a simple guiding metric. But when the knowledge itself is evolving quickly or subject to controversy, or when users have very different uses for the same kinds of information, this shortcut can create confusion rather than transparency. In such cases, transparency policies that produce more complex, disaggregated data are often comprehensible only to sophisticated users who then act as translators and advocates.

Table 4.2 summarizes the key dimensions of user embeddedness – value, compatibility, and comprehensibility – for eight of the transparency policies we have studied. In the final column of the table, we assess each policy's overall level of user embeddedness as high, moderate, or low on the basis of these components.

Two of the eight policies produce information that has become highly embedded in users' decisions: corporate financial disclosure and restaurant hygiene grades. As noted, the information in restaurant grades is highly relevant to users and is provided at an appropriate time, place, and format that is readily understood at relatively low cost. The information in corporate financial reports is also highly relevant, reasonably timely, and

Table 4.2. *User Embeddedness in Eight Selected Transparency Policies*

Disclosure System	Relevance of Information to User Decision	Compatibility with User Decision-Making Process			Comprehensibility of Information	Cost of Information Access for Users	User Embeddedness
		Format of Information	Timeliness of Information	Location of Information			
Corporate Financial Disclosure	High: directly related to assessing risk/return of investments	Detailed: multiple levels of content	Timely: available at time of investment; updated quarterly	Web; brokers, other intermediaries	Complex: typically requires third-party interpretation	Moderate cost to obtain; high cost to process	High (third party important)
Restaurant Hygiene Disclosure	High: directly related to assessing health risks	Simplified (letter grade, A–C)	Timely: available at time of choice; updated multiple times per year	Restaurant window/entry area	Simple: customer can interpret	Low cost to obtain and process	High
Mortgage Lending Disclosure	Low: not directly related to individual mortgage applicants; high: directly related to aims of community groups	Detailed: community-level microdata regarding bank lending	Timely: available at all times; updated annually	Web and lending institutions	Complex: typically requires third-party interpretation	Moderate cost to obtain; high cost to process	Moderate to high (third party important)
Nutritional Labeling	High: directly related to nutritional and dietary concerns	Simple format; complex vocabulary	Timely: available at point of sale; updated infrequently	Product labels	Complex: requires knowledge of nutrition	Low cost to obtain; high cost to process	High for some users; low for others

(continued)

Table 4.2 (continued)

Disclosure System	Relevance of Information to User Decision	Compatibility with User Decision-Making Process			Comprehensibility of Information	Cost of Information Access for Users	User Embeddedness
		Format of Information	Timeliness of Information	Location of Information			
Toxic Releases Disclosure	Low: not directly related to most individual decisions; moderate: variable for third parties	Detailed: pounds of chemical releases by plant	Timely: available at all times; updated annually	Web	Complex: typically requires third-party interpretation	Moderate cost to obtain; high cost to process	Low
Workplace Hazards Disclosure	Moderate: directly related to employment decisions	Detailed: information related to workplace chemicals	Timely/limited: available at the worksite, not available to job seekers; updated infrequently	Workplace posted sheets; Web for some information	Complex: multiple chemicals; exposure, risk data	Moderate cost to obtain; high cost to process	Low for workers; moderate for manufacturers selecting suppliers
Patient Safety Disclosure (NY, PA)	High: directly related to risk of medical treatment when facing decision	Moderate detail: multiple measures of medical safety	Timely: available to patients at all times; updated annually	Web; media reports	Complex: multi-attribute, technical information	High cost to obtain and process	Low
Plant Closing, Mass Layoff Disclosure	High: directly related to employee, community decisions	Simple: posting of pending closing/layoff	Not timely: 60 days prior to closing/layoff	Workplace/ community leaders notification	Simple	Low cost to obtain and process	Low for workers, communities

designed for comparability. However, because the data are complex and accounting vocabulary is hard to understand, users often rely on intermediaries (brokers, analysts, fund managers, and Web-based programs) to aid in embedding information in their investment choices.

Nutritional labeling and mortgage lending disclosure only moderately embed information in users' decisions – for differing reasons. Nutritional labels provide information to consumers conveniently available on products when and where they make purchasing decisions. However, as scientific advances make nutritional advice more complex, many shoppers have a difficult time comprehending how to use that information to improve food choices.²³

Mortgage lending data are only moderately embedded in users' decisions because few applicants seek such data when making choices about lenders. However, community organizations and federal regulators serve as the key agents, embedding the information in activities that aim to reduce discrimination.

Finally, four policies – toxic pollution reporting, workplace hazardous chemicals reporting, patient safety disclosure, and plant closing reporting – have not become embedded into most users' decisions for a variety of reasons. Information on factories' toxic pollution is seldom available to home buyers or renters at the time and place where it might have its greatest impact on behavior – searching for a home to purchase or an apartment to rent. Untrained users, furthermore, have difficulty translating complex data on pollution into understandable levels of risk. Workplace hazards reporting generally lacks intermediaries to clarify the risk information for employees. Even if intermediaries were available, many workers have very constrained workplace choices (exit) or limited abilities to translate concerns about exposure into changes in workplace practices or human resource policies (voice).

NEW INFORMATION EMBEDDED IN DISCLOSER DECISIONS

Changes in information users' behavior usually are not enough to make transparency policies effective. Information disclosers must also alter their decisions and actions. When disclosers incorporate user responses to information into their decision calculus, we say that new information has become embedded in discloser decision-making processes. Highly effective transparency policies, then, are doubly embedded.

Though the social context of discloser decisions differs from that of user decisions, they can be understood using the same analytic concepts. Disclosers are more likely to incorporate user responses into their decisions if

those responses have value in relation to their goals, are compatible with the way they make decisions, and are comprehensible to them.

It is important to keep in mind that disclosers' decisions to make improvements in products or practices sometimes anticipate rather than respond to users' changed choices resulting from transparency policies. Corporate managers concerned with protecting market share or reputation may try to predict the behavior of their customers, employees, or investors by introducing lines of healthy products, reducing toxic pollution, tightening corporate governance, or otherwise improving performance *before* the public demands such changes. Likewise, government officials may take anticipatory action to improve schools, purify drinking water, or improve other services before a new transparency system begins to drive users' responses.

Let us look in some detail at how the value, compatibility, and comprehensibility of users' responses to information affect the embedding of those responses in disclosers' decisions.

Response Value

In general, disclosers will change their practices only if they perceive that shifts in user behavior will have an impact on their core organizational goals. That is, for information to become embedded in disclosers' decisions, user actions must be perceived to substantially affect disclosers' interests or be likely to do so in the future. For companies, core objectives often include enhanced profitability, market share, and reputation. For public agencies, objectives may include increased constituency support, legitimacy, and trust.

If users respond to information in ways that do not directly affect disclosers, the behavior of disclosers is unlikely to change. Companies required to disclose specifics of toxic pollution have made commitments to reduce pollution in response to bad publicity, embarrassing demonstrations, and employee dissatisfaction. But they would be unlikely to respond to community residents' decisions to move away, since these actions do not directly affect the polluting companies. In the same way, elementary schools with poor report cards would be likely to make changes in response to pressure from local politicians and enrollment declines. But they would be unlikely to respond to students' failures to get high-paying jobs after graduation.

Furthermore, user behavior is relevant to disclosers only if the disclosers perceive that they have choices about how to respond. For example, a small food manufacturer might believe it lacks the resources to respond to shoppers' desire for healthier products. A cash-strapped school might lack the

capacity to respond to parent demands for smaller classes or more extracurricular activities.

Overall, the cost to disclosers of integrating user responses into management decisions must be sufficiently low to justify their efforts in relation to expected benefits, defined in their own terms. Disclosers may be more willing to invest time and effort when they perceive opportunities to beat the competition or avoid reputational damage.²⁴

Response Compatibility

Second, user responses are more likely to become embedded in disclosers' decisions if such responses are compatible with the ways in which managers receive, process, and act on new information.

Compatibility mismatches are sometimes process-oriented. For example, political candidates may have no way of perceiving and reacting to voter dissatisfaction with their disclosed sources of financing because no feedback process exists. Hospitals may not discern the character and degree of patients' concerns about medical errors because no patient-response mechanism exists.

Compatibility mismatches may also be temporal. Auto manufacturers, for instance, could not respond quickly to drops in sales of cars with high rollover ratings because their design cycle is slow, often three to four years.

Occasionally transparency systems actually alter disclosers' decision-making processes, thereby transforming a compatibility mismatch into a match. For example, when legislation forced chief executives to sign off on their companies' toxic pollution reports, some executives said that the requirement forced them to focus on and respond to total toxic pollution for the first time.²⁵

Response Comprehensibility

Finally, user responses must be comprehensible to disclosers. If user responses are misunderstood, they can't become effectively embedded in disclosers' decisions. For example, a food manufacturer might assume that declining sales of its high-sugar cereals are due to unusually effective advertising by a competitor, whereas shoppers are actually responding to nutritional information. A chemical company faced with negative publicity about toxic releases might conclude that communities are demanding general reductions in pollution, whereas residents may be concerned only about levels of carcinogens.

Evidence suggests that such misunderstandings of user behavior are relatively common. For example, studies have shown that many retailers have traditionally conducted only rudimentary analysis of sales data from point-of-sale information they collect.²⁶ As transparency policies become more common and communication technology advances, disclosers can design new ways of studying user responses to information before planning their own responses.

Table 4.3 summarizes the key aspects of discloser embeddedness – value, compatibility, and comprehensibility – for eight transparency policies. As with user embeddedness, we have evaluated the overall level of discloser embeddedness as high, moderate, or low for each policy.

Only two of the eight policies – corporate financial disclosure and restaurant hygiene quality standards – have become highly embedded in discloser decisions. In these cases, disclosers have much at stake and a refined ability to discern changes in user behavior in response to disclosed information. For example, executives of public companies know that investors and their advisers base their decisions in large part on the data produced by financial disclosure requirements. These stock purchase decisions strongly affect the primary objectives that managers pursue. Company stock prices determine the cost of raising investment capital, and top managers are frequently compensated in part on the basis of the performance of their company's stock. Thus, responses to stock movements have been deeply incorporated into many management decisions.²⁷

Other policies are only moderately embedded in discloser decision making. Banks and other financial institutions are unlikely to be actively aware of disparate lending practices that might form patterns of discrimination in their day-to-day activities. However, during attempts to merge with other banks, executives become highly sensitive to these decisions because they must comply with the community lending requirements of the Community Reinvestment Act. For several other transparency policies – nutritional labeling and patient safety, for example – the difficulty of discerning the causes of customers' or investors' changed choices impedes disclosers' capacity to adapt to those changes.

Finally, user responses to plant closing reporting could hardly be less embedded in the decisions of employers. The required sixty days' advance notice of plant closures or large-scale layoffs is linked to decisions made well in advance of the required disclosure period, which are almost certainly unaffected by responses to reporting. Notice generally comes too late for workers, unions, or community organizations to try to change employers' decisions.

Table 4.3. *Discloser Embeddedness in Eight Selected Transparency Policies*

Disclosure System	Impact of User Decisions on Discloser Goals	Compatibility of Response with Discloser Decisions	Ability to Discern User Changes in Behavior	Cost of Collecting Information Regarding Change in User Behavior	Discloser Embeddedness
Corporate Financial Disclosure	High: investor decisions directly affect capital market flows to disclosers	High: discloser companies highly attuned to investor decisions	High: firms, investment advisers attuned to changes in flows arising from new information	Moderate	High
Restaurant Hygiene Disclosure	High: customer decisions directly affect restaurant revenues	High: restaurants highly attuned to customer decisions	Moderate: direct observation possible, but imperfect; ability to perceive reduction/increase in traffic over time	Low to moderate	High
Mortgage Lending Disclosure	Low: ongoing activity; high: merger/acquisition	Low: ongoing activity; high: merger/acquisition	High: challenges using disclosed data directly observable by banks	Low: challenges brought as part of regulatory review for mergers	Low: ongoing activity; high: merger/acquisition
Nutritional Labeling	Moderate: consumer choice driven by price, taste, as well as nutrition	Moderate: consumer choice based on many factors	Moderate: difficult to discern sales shifts from label responses; large number of products for typical food processor	Moderate to high: sales data analysis or focus group reactions	Moderate
Toxic Releases Disclosure	Moderate: reactions to TRI dispersed (e.g., capital markets, reputation, sales, regulation)	Low to moderate: pollutant releases related to multiple decisions and firm objectives	Low to moderate: unclear pathway to perceive reactions, except from regulators	Moderate: no single data source or mechanism for gauging effects	Low to moderate

(continued)

Table 4.3 (continued)

Disclosure System	Impact of User Decisions on Discloser Goals	Compatibility of Response with Discloser Decisions	Ability to Discern User Changes in Behavior	Cost of Collecting Information Regarding Change in User Behavior	Discloser Embeddedness
Workplace Hazards Disclosure	Low for labor market behavior, which arises from multiple sources; moderate for supplier decisions more directly related to profitability	Low: nonunion worker response diffuse; union response may be more focused; moderate for supplier choice	Low to moderate: multiple reasons for potential hires to say “no,” but more direct information for current workforce, supplier responses	Moderate: difficult to discern for potential hires; more discernible for current workers and suppliers	Low to moderate
Patient Safety Disclosure (NY, PA)	Moderate: patient choice driven by price, expertise, as well as safety	Low: patient choices based on many factors	Low: difficult to discern whether patient decision arising from reaction to report cards or other factors (e.g., health-care coverage)	High: no single source or mechanism for gauging effects of report cards	Low to moderate
Plant Closing, Mass Layoff Disclosure	Low: plant closing/layoff decisions made in advance of notification; incentives to change very low at time of information provision	Low: unrelated to core reasons for closings or layoffs	High: reaction of users easy to perceive	Low: users directly notify discloser	Low

OBSTACLES: PREFERENCES, BIASES, AND GAMES

Even policies that manage to embed information may fail to become effective. Users or disclosers may integrate information into decision-making routines but decide, on balance, that new data do not justify changing their decisions. Alternatively, they may make changes in their behavior that frustrate rather than serve policy objectives. Or users and disclosers may misunderstand and misuse new information.

Our research suggests that two kinds of obstacles can prevent successfully embedded transparency systems from effectively advancing policy objectives:

- lack of congruence between the goals of policymakers and those of information disclosers and users
- misinterpretation of information by disclosers or users, often owing to various kinds of cognitive bias.

Let us consider these obstacles more closely.

Goal Conflict

As we have discussed, both information users and disclosers employ newly revealed facts to advance their own aims, which may not be identical to or even consistent with public policy goals. For this reason, transparency policies are more likely to be effective when they tap into user goals that are consistent with public goals and create pressures to encourage disclosers to take actions that fit those same public goals.

Users' goals are more likely to be congruent with policy objectives than are disclosers' goals since, in principle, transparency systems are legislated to protect users' interests. Sometimes, however, public goals and the goals of at least some users do not coincide. Such lack of congruence may weaken a transparency system's effectiveness. For example, the public goal of nutritional labeling was to reduce the risk of heart disease and cancer. Many shoppers, however, were focused on the goal of losing weight. When they responded to information about fat but not calories, they complicated the signals to food companies about whether to introduce low-fat or low-calorie products. State laws that require disclosure of sex offenders' residences offer an even more striking case where public policy objectives and user interests can collide. The state laws (often referred to collectively as "Megan's Laws") aim to reduce the potential risks faced by communities from the release of dangerous sex offenders by informing residents of their current addresses.

However, since passage of these laws in the 1990s, some individuals have used that information to harass offenders, to force them to move out of their homes, or in several extreme cases to murder them.²⁸

Disclosers' goals are still less likely to be congruent with policy aims. In our stylized action cycle, disclosers alter their behavior primarily to satisfy the external demands of market pressures or political actions by users. Since disclosers usually report favorable news about their activities voluntarily, government mandates that aim to minimize risks or improve services generally force disclosure of unfavorable information.

As a result, in deciding both what to disclose and how to respond to user pressures, disclosers usually weigh conflicting interests – minimizing use of resources, maximizing competitive advantage, and avoiding reputational harm, for example. And because all transparency systems represent political compromises, they nearly always have loopholes that provide disclosers with choices about how to comply while pursuing their own interests. Therefore, disclosers may respond in ways that policymakers consider negative. While many disclosers act in good faith, others minimize or hide problems. In other words, they game the system.

To return to a recent example with national and international consequences, Enron, WorldCom, and other well-respected public companies manipulated disclosed earnings to attract investors. In some cases, executives moved substantial expenses off their reported balance sheets to avoid having to justify zigs and zags in their quarterly earnings reports. When media revelations of these practices in 2001 and 2002 forced these companies into bankruptcy, Congress created new disclosure requirements to close such loopholes.

Research on toxic pollution disclosure suggests that some companies engage in “paper reductions” of pollution by changing estimating techniques or definitions.²⁹ A commonly raised concern about school performance report cards is that administrators and teachers may alter curricula and pedagogical methods to boost the appearance of improved performance without necessarily improving education – by “teaching to the test,” or even helping students cheat on crucial exams.³⁰ Likewise, doctors and health-care administrators may game hospital reporting requirements by “creaming” – avoiding the most difficult-to-treat patients and seeking out healthier ones.³¹

Sometimes, of course, the goals of at least some disclosers do coincide with transparency policy aims. Executives of public companies generally support corporate financial reporting as a means of lowering the cost of capital, gaining competitive advantage, and securing investors' trust. Many major producers of packaged foods ultimately favored government-mandated nutritional labeling so that they could reap benefits in higher

prices and improved image from products shown by labels to be reasonably healthy. Some food companies favored government-mandated organic labeling for similar reasons.

It is also possible for transparency systems to change organizations' internal priorities. Managers charged with improving environmental, safety, or financial practices may use new disclosure regulations to advocate changes they would like in company policy that also support public objectives.

However, it is important to note that congruence of policymakers', users' and disclosers' goals is *not* necessary for a transparency system to be effective. What is essential is that there be congruence between policy goals and the *behavioral changes* of users and disclosers. At their best, transparency policies trigger user actions that cause disclosers to advance some public good (such as public health) while pursuing private goals (such as profit). In this sense, transparency policies act as a "visible hand" that, like Adam Smith's invisible hand, harnesses private incentives for public benefits.

Misinterpretation

Even when goals are congruent, inaccurate interpretation of information may damage the effectiveness of transparency policies.

As we have already discussed, some misinterpretations are the result of cognitive errors. For example, most people tend to overestimate risks from rare, cataclysmic events while underestimating risks associated with ongoing problems or hazard exposures.³²

Other misinterpretations result from a failure to understand the scientific implications of information or the metrics of the transparency system itself. For example, journalists (one important category of information users) widely misinterpreted factory managers' disclosure of toxic pollution measured in pounds as equivalent to a ranking of health risks to the public. This led to headlines that mistakenly labeled particular factories as the "worst" polluters and encouraged companies to change their waste emission policies based on pounds of toxins rather than other metrics – such as exposure or toxicity – that more accurately reflected public health risks.³³

Misinterpretations of information by shoppers, investors, or community residents can also lead to unintended discriminatory effects. Researchers have shown that the ability to understand and use certain types of risk information varies with age, educational background, and other socioeconomic factors. Older and less well-educated consumers have more trouble understanding nutritional labels than younger and better-educated consumers.³⁴ Higher educational levels also have a positive impact on workers' understanding of information about exposure to hazardous chemicals.

Disclosers, too, may misinterpret new information in ways that create barriers to transparency's effectiveness. Restaurants concerned about users' response to hygiene grades may focus on one data point (employee hand-washing, for example) when patrons are actually more concerned about another (rodent droppings or stale food). Banks may increase lending to relatively prosperous inner-city businesses or residents while community groups may be more concerned about those that are struggling. When misunderstood information becomes embedded in disclosers' decision-making processes, the resulting systemic distortion impedes transparency effectiveness.

In summary, lack of congruence in goals and misinterpretations of new information can reduce the effectiveness of transparency systems even when information becomes embedded in routines. Sometimes such distortions mean that new information does more harm than good to specific public aims. As a practical matter, such gaps between policy goals and actual effects often become evident only after some time has passed. Thus, mid-course corrections become essential. Periodically analyzing and updating metrics increases the chances that obstacles will not cripple a promising transparency system.³⁵

Table 4.4 details the extent of goal congruence, misinterpretation, and cognitive bias for each of the eight policies we focus on in this chapter. In the right-most column, we offer a prediction regarding the strength of the link between the actions of users and disclosers on the one hand and policy outcomes on the other, basing our prediction on this analysis of the major obstacles to policy effectiveness. The strength of the connection between action and effectiveness should be high when there is strong congruence between user goals and policy objectives and when the potential for misinterpretation, cognitive error, and discloser gaming is low.

HOW DO TRANSPARENCY POLICIES MEASURE UP?

How well do various transparency policies incorporate the logic of the action cycle and successfully embed information into the decision-making routines of users and disclosers? And, as we have argued, is embeddedness the key to the effectiveness of transparency policies? Using a broad survey of existing research on these eight policies, we categorized them into three general groups according to how well they accomplished their policy objectives:

- *Highly effective*: The transparency policy has significantly changed the behavior of most users and disclosers in the direction intended by public policies. We regard three of the eight policies as highly effective:

Table 4.4. *Obstacles to Effectiveness in Eight Selected Transparency Policies*

Disclosure System	Congruence of User and Public Policy Goals		Users: Chance of Misinterpretation and Cognitive Biases	Disclosers: Chance of Misinterpretation and Strategic Action	Predicted Link of User/Discloser Actions and Policy Outcomes
	User Goals	Public Policy Goals			
Corporate Financial Disclosure	Evaluate risk and return of potential investments	Capital market efficiency; reduce risks to investors; improve corporate governance	Low: highly developed channels and third parties for evaluation of information	Moderate: unintended consequences from reporting; gaming system through loopholes	High
Restaurant Hygiene Disclosure	Lower risk of exposure to bad health outcomes from eating out	Reduction of public health risk	Moderate: simple system of reporting may neglect risks not included in rating	Moderate: restaurants may not address practices not included in ratings	Moderate to high
Mortgage Lending Disclosure	Improve access to mortgages for groups facing discrimination	Reduce housing market discrimination through home lending practices	Low to moderate: third parties evaluate statistical information but may have strategic reasons to misinterpret	Low: statute sets clear definitions of discriminatory practices relating to disclosed data	High
Nutritional Labeling	Improve nutrition; reduce risks of disease; lose weight	Reduce risks of disease; improve nutrition	Moderate to high: confusion of nutritional and dietary objectives; conflicting preferences	Moderate: incentives to market products that appeal to multiple, conflicting user preferences	Low to moderate
Toxic Releases Disclosure	Reduce exposure to harmful chemicals	Reduce toxic pollution	High: difficulty in translating tonnage release information into risk measures; cognitive problems associated with low-level-risk perception	Moderate: allows paper reductions in tonnage releases unrelated to risk reduction	Low to moderate

(continued)

Table 4.4 (continued)

Disclosure System	Congruence of User and Public Policy Goals		Users: Chance of Misinterpretation and Cognitive Biases	Disclosers: Chance of Misinterpretation and Strategic Action	Predicted Link of User/Discloser Actions and Policy Outcomes
	User Goals	Public Policy Goals			
Workplace Hazards Disclosure	Lower exposure to risks at workplace	Reduce worker exposures to risks	High: cognitive biases associated with low-level-risk perception	Low to moderate: switching work assignments to those less concerned (aware) of exposures	Moderate
Patient Safety Disclosure (NY, PA)	Reduce risks of death, serious injury from selection of hospital/surgeon	Improve performance of cardiac surgery procedures	High: difficult to weigh risk of error in multi-attribute selection problem facing patient; high-pressure and low-frequency decision compounds problem	Moderate: systemic mistakes hard to correct; selection and sorting for healthy patients may be common	Low
Plant Closing, Mass Layoff Disclosure	Workers: find new jobs as quickly as possible; community: find potential alternatives to shutdown/mass layoff	Lower the costs associated with major economic dislocation from closures/layoffs	Low	Low: closure decision already made (few repercussions from disclosure); firms can avoid reporting layoff if fewer than 50 workers involved (spread layoffs over time)	High

corporate financial reporting, the Los Angeles restaurant hygiene grading system, and mortgage lending disclosure under the Home Mortgage Disclosure Act.

- *Moderately effective:* The transparency policy has changed the behavior of a substantial portion of users and disclosers in the intended direction but has also left gaps in behavior change and produced unintended consequences. We judged three policies as moderately effective: nutritional labeling requirements, toxic pollution reporting, and workplace hazardous chemicals disclosure.
- *Ineffective:* The transparency policy has failed to appreciably change the behavior of users and disclosers or has changed behavior in directions other than those intended. Two of the eight policies were ineffective: patient safety disclosure and plant closure and layoff notification requirements.

Table 4.5 summarizes our effectiveness findings. The sixth and seventh columns provide a summary assessment of each policy's effects and effectiveness based upon the relevant evaluation literature. That literature is voluminous. Table 4.6 (found at the end of the chapter) summarizes the studies on which we've relied.

Overall, the literature assessing the effectiveness of each policy comports well with the expectations derived from our conceptual analysis of embeddedness and the obstacles to effectiveness. Column five of Table 4.5 offers our overall prediction of each system's effectiveness based on component assessments of user embeddedness, discloser embeddedness, and various obstacles. The table shows that the highly effective policies – those that achieved their intended objectives – embedded information strongly into the decision-making processes of both users and disclosers. Moderately effective policies, by contrast, embedded information strongly into the decision making of select groups of users and/or disclosers but failed to diffuse information more broadly. Ineffective policies failed to embed information into the calculations of either disclosers or users and consequently did not alter their behavior substantially.

Highly Effective Systems

According to our review of available research, three of the eight transparency systems have contributed to significant, long-term behavior changes by users and disclosers in the direction intended by policymakers. Although these systems have encountered problems and required major adjustments over time, evidence suggests that they share core strengths.

Table 4.5. *Summary Evaluation of Effect and Effectiveness in Eight Selected Transparency Policies*

Disclosure System	Embeddedness in Users' Decisions (Table 4.2)	Embeddedness in Disclosers' Decisions (Table 4.3)	Predicted Link of Effect to Effectiveness Owing to Obstacles (Table 4.4)	Evaluation of Transparency System Effectiveness	Key Studies: Effect/No Effect	Key Studies: Effectiveness
Corporate Financial Disclosure	High	High	High	Highly effective	<p><i>Effect</i></p> <ul style="list-style-type: none"> • Bushee and Leuz, 2004 • Gomes, Gorton, & Madureira, 2004 <p><i>No effect</i></p> <ul style="list-style-type: none"> • Stigler, 1964 • Benston, 1973 	<p><i>Effective</i></p> <ul style="list-style-type: none"> • Simon, 1989 • Lang & Lundholm, 1996 • Botosan, 1997 • Bushman & Smith, 2001 • Ferrell, 2003 • Greenstone, Oyer, & Vissing-Jorgensen, 2004 • Hail & Leuz, 2006
Restaurant Hygiene Disclosure	High	High	Moderate to high	Highly effective	<p><i>Effect</i></p> <ul style="list-style-type: none"> • Jin & Leslie, 2003 	<p><i>Effective</i></p> <ul style="list-style-type: none"> • Jin & Leslie, 2003 • Simon et al., 2005 • Jin & Leslie, 2006

Mortgage Lending Disclosure	Moderate to high (third party important)	Low: ongoing activity; high: merger/acquisitions	High	Highly effective	<i>Effect</i> • Munnell et al., 1996	<i>Effective</i> • Bostic et al., 2002 • Joint Center for Housing Studies, Harvard University, 2002 <i>Moderately effective</i> • Bostic & Surette, 2001
Nutritional Labeling	High for some users; low for others	Moderate	Low to moderate	Moderately effective	<i>Effect</i> • Kristal et al., 1998 • Moorman, 1998 • Nayga, Lipinski, & Savur, 1998 • Mathios, 2000	<i>Moderately effective</i> • Derby & Levy, 2001 • Kim, Nayga, & Capps, 2001 • Variyam & Cawley, 2006
Toxic Releases Disclosure	Low	Low to moderate	Low to moderate	Moderately effective	<i>Effect</i> • Hamilton, 1995 • Konar & Cohen, 1997 • Khanna, Quimio, & Bojilova, 1998 • EPA, 2000 • Bui, 2002 • Patten, 2002	<i>Moderately effective</i> • Graham & Miller, 2001 • Oberholzer-Gee & Mitsunari, 2002

(continued)

Table 4.5 (continued)

Disclosure System	Embeddedness in Users' Decisions (Table 4.2)	Embeddedness in Disclosers' Decisions (Table 4.3)	Predicted Link of Effect to Effectiveness Owing to Obstacles (Table 4.4)	Evaluation of Transparency System Effectiveness	Key Studies: Effect/No Effect	Key Studies: Effectiveness
Toxic Releases Disclosure (<i>cont.</i>)					<ul style="list-style-type: none"> • Grant & Jones, 2004 • Decker, Nielsen, & Sindt, 2005 	<i>Ineffective</i> <ul style="list-style-type: none"> • Bui & Mayer, 2003
Workplace Hazards Disclosure	Workers: low; manufacturers selecting suppliers: moderate	Worker-related decision: low; supplier-related decision: moderate	Moderate	Moderately effective	<i>Effect</i> <ul style="list-style-type: none"> • Robins et al., 1990 • Kolp, Williams, & Burtan, 1995 	<i>Moderately effective</i> <ul style="list-style-type: none"> • GAO, 1992a • Kolp et al., 1993 • OSHA, 1997 • Phillips et al., 1999
Patient Safety Disclosure (NY, PA)	Low	Low to moderate	Low	Ineffective	<i>Effect</i> <ul style="list-style-type: none"> • Romano, Rainwater, & Antonius, 1999 • Dranove et al., 2003 • Werner, Asch, & Polsky, 2005 • Jha & Epstein, 2006 	<i>Effective</i> <ul style="list-style-type: none"> • Hannan et al., 1994 • Chassin, 2002 • Hannan et al., 2003 • Cutler, Huckman, & Landrum, 2004

Plant Closing, Mass Layoff Disclosure	Low	Low	High	Ineffective	<i>No effect</i> <ul style="list-style-type: none">• Green & Wintfeld, 1995• Chassin, Hannan, & DeBuono, 1996• Schneider & Epstein, 1996• Peterson et al., 1998• Schneider & Epstein, 1998• Marshall et al., 2000• Mukamel & Mushlin, 2001	<i>Moderately effective</i> <ul style="list-style-type: none">• Mukamel & Mushlin, 1998• Mukamel et al., 2002
					<i>No effect</i> <ul style="list-style-type: none">• Addison & Blackburn, 1994• Levin-Waldman, 1998• GAO, 2003b	<i>Ineffective</i> <ul style="list-style-type: none">• Addison & Blackburn, 1997

Corporate Financial Disclosure

Financial disclosure by publicly traded companies – with all of its flaws – deeply embeds information into the decision processes of both information users and corporations. Institutional and individual investors use key indicators from quarterly and annual reports to inform stock purchases and sales. Securities analysts, brokers, financial advisers, and other intermediaries translate these reports into user-friendly data for clients. Internet-based systems customize information to suit the needs of investors, and search-facilitating technologies improve its readability. Government requirements assure formats that allow investors to compare one company with another. Company managers, in turn, track investor responses to their financial disclosures as a routine practice and respond to perceived investor concerns.

While some economists have questioned the need for mandated financial transparency and its effectiveness, a growing literature suggests that financial reporting has been effective both in reducing investor risks and in improving corporate governance.³⁶ Research concludes that financial reporting limits investors' risks by reducing investment errors and reducing costs of identifying appropriate investment opportunities.³⁷ Financial reporting also reduces information asymmetries between more and less sophisticated investors.³⁸ In addition, public reporting reduces firms' cost of capital and attracts the attention of analysts who may then recommend the stocks for purchase.³⁹

Reporting improves corporate governance by reducing information asymmetries between shareholders and managers, encouraging managerial discipline, reducing agency costs, supporting enforceable contracts, and disciplining corporate compensation.⁴⁰ Researchers have also found that foreign companies that switch to using more rigorous U.S. disclosure rules experience market benefits. Newly disclosed information reduces investor errors in achieving their investment goals and improves companies' stock liquidity and access to capital, explaining why some foreign companies decide to adopt more transparent accounting standards.⁴¹ Comparative studies have concluded that investors are less likely to buy stocks during financial crises in companies with relatively low transparency and that investors leave less transparent markets for more transparent ones.⁴²

Restaurant Hygiene Disclosure

Publicly posted hygiene scores reduce search costs for consumers and provide restaurants with competitive incentives to improve. In Los Angeles, grades posted at restaurant entrances have become highly embedded in customers' and restaurant managers' existing decision processes. A restaurant's

grade is available *when* users need it, at the time when they make a decision about entering the establishment; *where* they need it, at the location where purchase of a meal will take place; and in a *format* that makes complex information quickly comprehensible.⁴³ Grades promote comparison-shopping in situations where most consumers have real choices. Most important, the information tells consumers something that they want to know but did not know before – the comparative cleanliness of restaurants. Restaurant managers, accustomed to local health regulations, have both market and regulatory incentives to discern customers' perceptions of food safety.

A comprehensive study of the Los Angeles transparency system suggests that the restaurant grading system has been highly effective. Researchers found significant effects in the form of revenue increases for restaurants with high grades and revenue decreases for C-graded restaurants. More important, they found measurable increases in hygiene quality and a consequent significant drop in hospitalizations from food-related illnesses.⁴⁴ The rating system also improved hygiene at franchised restaurants, which tended to have lower hygiene standards than company-owned restaurants in the same chain.⁴⁵ Overall, more informed choices by consumers appear to have improved hygiene practices, rewarded restaurants with good grades, and generated economic incentives that stimulated competition among restaurants.⁴⁶ A more recent study similarly concludes that the restaurant grading system successfully reduced the number of food-borne disease hospitalizations in Los Angeles County.⁴⁷

Mortgage Lending Disclosure

Bank reporting of home loan information broken down by race, gender, and income level has become highly embedded in the decision processes of both information users and banks. National and local advocacy groups have used the information to advance their long-standing goal of reducing discrimination by financial institutions. They have compiled public cases against particular banks in specific communities and negotiated with those banks to improve their practices. Bank regulators, another significant group of users, have used the information to promote new rules to fight discrimination in credit access, to monitor improvements in lending, and to tighten enforcement.

This transparency system works synergistically with conventional regulations to promote fair lending. Under the Community Reinvestment Act, federal regulators use disclosed data to check that financial institutions meet the credit needs of the communities they serve, an important factor in approving requests for bank mergers. This regulatory requirement

creates added incentives for banks to respond to the demands of advocacy groups. Some banks have also employed government-mandated lending data to identify important new market opportunities in inner-city communities and have then specialized in financial products targeted at low-income clients.

Researchers have found that mortgage lending disclosure contributed to increasing access to mortgage loans for blacks and minority groups during the 1990s.⁴⁸ Disclosures demonstrated that discrimination was a common practice, and information helped spur regulatory action.⁴⁹ Financial institutions tended to improve their lending to meet communities' needs prior to merger applications.⁵⁰ Furthermore, mandated transparency contributed to an increase in home ownership for all racial groups.⁵¹

Moderately Effective Systems

Three of the transparency policies we studied – nutritional labeling, toxic pollution reporting, and disclosure of workplace hazards – have proven moderately effective. They are characterized by more limited changes in discloser behavior to reduce public risks or by mixed responses that sometimes advance regulatory aims but sometimes frustrate them as well.

Nutritional Labeling

Medical research has established that overconsumption of saturated fats, sugar, and salt increases risks of chronic illnesses, including heart disease, diabetes, and cancer. Congress required that nutritional labels be displayed on packaged foods, using standardized formats, metrics, and recommended consumption levels in order to promote comparability. However, this transparency system, available on every can of soup, candy bar, and box of cereal, is only moderately embedded in consumers' decisions for several reasons.

First, many consumers do not consider nutritional information relevant to their purchasing goals. They make choices based mainly on price and taste. Second, the scope of nutritional disclosure excludes large categories of food – fast food, full-service restaurant meals, and delicatessen foods, for example – even though they make up roughly one-half of household food expenditures.⁵² Finally, although information on packaged foods is available when and where consumers need it, the label has not proven comprehensible to many consumers.

Research on the effectiveness of nutritional labeling also reveals the complexities of shoppers' and food companies' responses to a sophisticated transparency system. Researchers have found that some consumers, especially

those who are well educated and interested in health, have understood and responded to new information by changing purchasing habits, while others groups, such as older consumers and shoppers with lower incomes, have not changed their behavior.⁵³ Some consumers misinterpret labels. Dieters, for example, tend to emphasize fat content more than total calories and give up on labels when they don't lose weight.⁵⁴

Analyses suggest that food companies have tried to anticipate consumers' responses to nutritional labels and to react strategically, but their responses have been only partially congruent with the aims of policymakers. Most companies have continued to market traditional high-fat, high-sodium, high-sugar products, sometimes adding more healthy ingredients such as fiber or introducing brand extensions of low-fat or low-sodium products, so that at least there are increased product choices.⁵⁵

Whether there have been positive effects on public health is not yet clear. Americans reduced their fat consumption during the early 1990s but did not reduce total calorie consumption, leading to concerns about obesity.⁵⁶ One study found a slight improvement in diet quality; another suggested that introduction of nutritional labels was associated with a decrease in body weight and in the probability of obesity for non-Hispanic white women.⁵⁷ However, overall per capita fat consumption has increased markedly, and sugar and calorie consumption has continued to rise.

Toxic Releases Disclosure

Initially enacted as a public right-to-know measure in 1986, the toxic pollution reporting requirement soon became viewed by regulators as one of the federal government's most effective pollution-control measures. As soon as disclosure was required, executives of some major companies announced plans to reduce toxic pollution by as much as 90 percent. Reported pollution declined substantially during the next decade.

Nonetheless, factory-by-factory and chemical-by-chemical data produced by the system remain minimally embedded in the decisions of most potential users of such information. Most home buyers, renters, job seekers, consumers, and investors do not consider toxic pollution when they decide what neighborhood to live in, where to send children to school, where to work, or in what companies to buy stock. In contrast to experience with the transparency system for mortgage lending, advocacy groups have not for the most part incorporated toxic pollution data into their core strategies.

While newly disclosed information about toxic pollution has remained relatively unembedded in market transactions and community action, it did become quickly embedded in important regulatory and administrative

processes, particularly in actions by Congress and federal regulators. Existing goals and decision processes made those officials highly responsive to the new information. Some had been urging stricter regulation of toxic chemicals for more than a decade, struggling with the lack of reliable information to support their efforts. Their initial responses – in the form of stricter laws or regulations – did help to strengthen incentives for companies to reduce toxic releases.⁵⁸ Enforcement officials also found the data useful as a basis for their actions.

As a result, *anticipated* reputational and regulatory threats quickly embedded newly disclosed information in some manufacturers' routine decision processes. Many targeted companies, especially those with national reputations to protect, made commitments for long-term reduction of toxic pollution in response to the first disclosures of shocking information. Some companies sought to reduce their emissions by engaging in pollution-prevention strategies, while others substituted different chemicals.⁵⁹

However, there were serious flaws in the system. Reporting of lead and nitric acid emissions showed inaccuracies that raised doubts about the quality of the data.⁶⁰ Some reported decreases reflected changes only in reporting procedures, substituted chemicals were not necessarily less toxic, and reported decreases and increases of pollution varied widely by state, industry, and year.⁶¹

As noted earlier, researchers have suggested that the effectiveness of this transparency system has been more limited than it appears. National news coverage created time-limited investor responses (company stock prices declined) to the first round of disclosures of surprisingly high levels of toxic releases by many publicly traded companies.⁶² And firms with large amounts of toxic releases became more forthcoming in disclosing environmental data in their reports to the federal Securities and Exchange Commission.⁶³ There is, however, little evidence of lasting responses by community residents and other potential users of the information. One study suggested that pollution reporting had an exceedingly low impact on housing prices and failed to stimulate the expected community response to pressure polluters, while other research found only limited impact on more expensive properties or homes located very close to facilities.⁶⁴

Workplace Hazards Disclosure

Researchers have found contradictory evidence about whether workplace hazardous chemicals disclosure, which imposed substantial new reporting burdens on employers and manufacturers, has improved worker safety. Despite its compatibility with workers' goals of limiting their own risks or

seeking higher wages to compensate for risks, new information about chemical hazards has not become embedded in most employees' routine decision making. Accessible only within the workplace and generally only in technical and non-comparable form, information usually is not available at a time and place or in a format to inform job seekers' decisions. For workers already on the job, data sheets have often been too complex to be comprehensible, and therefore have not been good indicators of comparability of the magnitude of health and safety risks. In addition, the quality of required safety training has varied widely from workplace to workplace, with small workplaces often lacking the capacity to provide employees with sufficient risk information and training.⁶⁵

Exercising broad discretion permitted by regulators, employers have produced information sheets that vary widely in quality, detail, and technical vocabulary. Research on the quality of data sheets has shown that only 51 percent of analyzed sheets were even partially accurate in all their sections.⁶⁶ Workers were generally able to understand only about 60 percent of the information on such sheets.⁶⁷

The high cost of understanding information has discouraged workers from using the safety sheets to change work habits. Even in cases where workers seemed to comprehend safety information, they used it only in limited fashion.⁶⁸

It should be noted that all of the documented cases of the impact of training and disclosure of information occurred within unionized establishments where unions could play a key intermediary role.⁶⁹ The absence of unions in more than 90 percent of private-sector workplaces raises questions about the wide applicability of these results.

Nonetheless, workplace chemical hazard information has become embedded in some employers' decision-making processes. Limited evidence suggests that the awareness of risks associated with certain chemicals has led some employers to switch to safer substances. One early analysis of the disclosure requirement found that 30 percent of surveyed employers had adopted safer chemicals.⁷⁰ Concerns about potential liability claims brought against employers by customers and/or workers may have contributed to substitution.⁷¹ In addition, material safety data sheets have become such a useful tool for the exchange of information between manufacturers of hazardous chemicals and their corporate customers that some have extended the sheets' use to nonhazardous chemicals. Overall, workplace chemical hazards reporting has functioned more as a communication tool and incentive system between companies that are chemical producers and those that are chemical users than as a device to help employees reduce their risk exposure.

Ineffective Systems

Ineffective transparency systems lead to little or no change in the behavior of users or disclosers and so do not advance policy objectives. Two of the transparency systems we studied – medical mistakes disclosure (Pennsylvania)⁷² and plant closing reporting – proved ineffective because new information was not compatible with the preexisting decision processes of would-be information users, because many users faced a limited set of choices and so could not act on new information, or because users' goals differed from those of policymakers. In some instances, they also proved ineffective because disclosers responded to user demands in ways that actually exacerbated the public problem that the system sought to address.

Patient Safety Disclosure

Research results to date suggest that Pennsylvania's patient safety disclosure system for cardiac surgery may be ineffective and New York's may be moderately effective, although researchers remain divided about the specific effects and effectiveness of both systems. In all reporting of patient safety problems, metrics have proven particularly problematic. The state systems' narrow focus on mortality rates, as well as the complexities of risk adjustment, may undermine their credibility. Hospital managers and physicians, focused on liability issues and unaccustomed to aggregating patient safety data to address systemic problems, often resist information sharing and traditionally have had limited institutional mechanisms for learning from past mistakes.⁷³

Although some research on the New York reporting system found that ratings reliably predicted risk-adjusted mortality rates,⁷⁴ other research concluded that patient safety reports may have had low predictive accuracy and may have been based on data with internal inconsistencies.⁷⁵

In Pennsylvania, one survey suggested that the state's reporting system had little or no influence on the referrals of most cardiologists (87 percent). Respondents expressed concern about the narrow focus of reporting on mortality, inadequate risk adjustment, and questionable reliability of data. More than half of cardiac surgeons also reported that they were less willing to operate on severely ill patients after the report card was introduced.⁷⁶ Survey data also suggested that coronary bypass patients had limited knowledge of the state-mandated report card, both before and after surgery.⁷⁷

By contrast, early research in New York State found that the introduction of the state's reporting system was associated with significant declines in

risk-adjusted mortality rates in the first three years, giving New York the lowest risk-adjusted bypass mortality rate of any state in 1992.⁷⁸ A later evaluation of the first ten years of reporting found that both patient volume and mortality rates declined in relatively high-mortality hospitals.⁷⁹ Hospitals that received very poor ratings had improved their performance, while below-average hospitals had not responded as strongly.⁸⁰

Interestingly, researchers also found that improvements in cardiac surgery under the New York system could not be attributed to market forces, since managed-care companies and patients did not seem to use the information and better performance was not associated with changes in market share.⁸¹ Researchers also found that new information initially widened the gap between whites and black and Hispanic patients receiving cardiac surgery in New York State, but that the effect declined over time.⁸²

More general analysis of Medicare data from 1994 to 1999 found lower risk-adjusted mortality rates in regions – including New York and Pennsylvania – where information on certain surgical procedures is publicly reported.⁸³ However, other analyses of Medicare claims data suggested that the introduction of report cards was associated with a decline in the illness severity of bypass surgery patients, perhaps because of selection bias by doctors and/or hospitals,⁸⁴ and that more highly educated patients made greater use of reported information.⁸⁵

On the whole, these limited and inconsistent research findings underscore the need for more systematic evaluation of regulatory transparency systems aimed at improving patient safety in hospitals. Such evaluation would help lay the groundwork for the design of more effective reporting systems.

Plant Closing, Mass Layoff Disclosure

Plant closing reporting aims in part to enable workers to respond to economic dislocation by providing information about long-term layoffs at or shutdown of manufacturing facilities. However, evidence suggests that the information generated by this transparency system has failed to materially affect the decision-making processes of workers who face these disruptive events. Disclosure has provided little assistance to affected workers in how to seek new employment and has had no effect on the availability of other options.

The timing of disclosure may be mismatched with workers' needs. Since the sixty-day notice required by the reporting system starts running when workers are still employed, their capacity to engage in full job searches upon notification is very limited. The required information may also come

too late for labor unions, community groups, or other intermediaries to create political pressures that might change the company's decision to close. In addition, such advocates often lack capacity and/or experience to help facilitate job searches.⁸⁶

Finally, the objectives of users, intermediaries, and disclosers may prove quite diverse in the face of closures, leading them to pursue different strategies once they receive information about the imminent event. Not surprisingly, there are few documented cases of employers changing closure or layoff decisions in the wake of community and/or union notification of their plans.⁸⁷

Studies of the impact of plant closure reporting on reemployment prospects of displaced workers have consistently shown limited effects. Several studies have found that the disclosure requirement has only modest impact on the provision of advanced notice information beyond what had been voluntarily provided before the act.⁸⁸ In those cases where new information was provided, workers did somewhat better in finding new employment in the immediate wake of displacement. However, for those who did not find jobs immediately following closures or layoffs, spells of unemployment tended to last longer than for workers who were not notified. Thus, if there were effects on reemployment, they were modest and restricted to a subset of workers.⁸⁹

CRAFTING EFFECTIVE TRANSPARENCY POLICIES

Targeted transparency policies have the potential to introduce important new information about risk and the quality of public services into established decision-making processes of buyers and sellers, community residents and institutions, voters and candidates, or other participants in markets or collective action. To be effective, however, the information they provide must become an intrinsic part of the decision-making routines of users and disclosers. Even if information is embedded in everyday decisions, policies must still avoid or overcome obstacles that lead to misunderstanding or gaming of the system. Our analyses of individual transparency policies confirm the importance of these drivers across a range of policies.

Simply providing more information to consumers, investors, employees, and community residents will not assure that risks are diminished or that schools, banks, and other institutions improve their practices. Without careful design and implementation, transparency policies can do more harm than good. This chapter suggests that it is possible to predict the

conditions needed to make transparency an effective tool of governance. In our final chapter, we suggest ten principles for crafting effective transparency policies.

Much depends on how policies evolve over time, however. The next chapter explores why some transparency policies grow more rigorous and effective while others degenerate into costly charades.

Table 4.6. *Summary of Effectiveness Research in Eight Selected Transparency Policies*

Disclosure System	Key Studies: Effect/ No Effect	Key Studies: Effectiveness
Corporate Financial Disclosure	<p><i>Effect</i></p> <ul style="list-style-type: none"> • When SEC reporting requirements were extended to firms quoted on the Over the Counter Bulletin Board, smaller firms decided not to comply and were pushed to a less-regulated market. Stock returns of noncompliant or newly compliant firms were negative around announcement dates, whereas already compliant firms experienced positive returns. (Bushee & Leuz, 2004) • Analysis of cross-sectional differences among firms pre- and post-introduction of regulation to stop the practice of selective disclosure showed that small firms lost 17% of analyst following, while big firms increased it by 7%. The regulation caused a reallocation of information-producing resources. This penalized smaller firms, which experienced higher cost of capital. (Gomes, Gorton, & Madureira, 2004) <p><i>No effect</i></p> <ul style="list-style-type: none"> • Comparison of new stock issues in 1923–1928 and 1949–1955 suggested that mandatory disclosure requirements adopted in 1934 had no important effects on the quality of new securities sold to the public. (Stigler, 1964) • Analysis of share prices before and after the 1934 Securities Act suggested that mandated disclosure had no measurable effects on the share prices or on investor risk. (Benston, 1973) 	<p><i>Effective</i></p> <ul style="list-style-type: none"> • Analysis of stock prices on regional exchanges before and after mandatory disclosure found that variance of returns lessened substantially after disclosure was required, suggesting that investor risk was reduced even though mean returns did not change. (Simon, 1989) • Study of financial analysts' data suggested that more informative disclosure policies decreased the dispersion among analyst forecasts, leading to greater accuracy in forecasting. (Lang & Lundholm, 1996) • Analysis of 1990 annual reports suggested that greater disclosure was associated with lower cost of equity capital. (Botosan, 1997) • Literature review concluded that financial disclosure created incentives for improved corporate governance, informing executive compensation, contract management, and shareholder and board monitoring. (Bushman & Smith, 2001) • Analysis of the impact of the 1964 disclosure requirements on the over-the-counter (OTC) market showed dramatic reduction in stock volatility. However, disclosure had no impact on stock returns and stock price synchronicity. (Ferrell, 2003)

**Restaurant
Hygiene
Disclosure**

Effect

- Mandatory grade cards increased restaurants' revenue by 3.3%; voluntary disclosure generated a 2.6% increase. For mandatory disclosure, authors found a 5.7% increase in revenue for A-grade restaurants, a 0.7% increase for B-grade, and a 1% decrease for C-grade. In the case of voluntary disclosure, A-grade revenues increased by 3.3%; difference for B and C grades not significant from A grade. The reduced impact on revenues in the case of voluntary disclosure might have had two causes: consumers might have been fully informed about the system, or they might have assumed that no grade card posted meant that the restaurant did not undergo an inspection. (Jin & Leslie, 2003)

- Firms that were newly required to make disclosures under the 1964 Securities Act Amendments for stocks traded over the counter (OTC) had cumulative excess returns of 13% in period prior to passage versus 6–9% for firms that already had comparable disclosure requirements in the same period. (Greenstone, Oyer, & Vissing-Jorgensen, 2004)
- Analysis of cost of equity capital in 40 countries found that in countries with stronger disclosure requirements, regulations, and enforcement mechanisms, firms had lower cost of capital. (Hail & Leuz, 2006)

Effective

- Mandatory disclosure led to average increase in restaurant hygiene quality of 5.3% (based on point score), whereas voluntary disclosure increased it by 3.9%. The improvement of hygiene quality was reflected in a reduction of the number of hospitalizations for food-related illnesses. Restaurants under mandated disclosure also improved physical structure of buildings (longer-term investment effects). (Jin & Leslie, 2003)
- Los Angeles County restaurant hygiene grade cards were associated with a 13.1% decrease in hospitalizations owing to food-borne diseases in 1998 (a year after the introduction of grade cards). The decrease in hospitalizations persisted in 1999 and 2000. (Simon et al., 2005)
- Although chain-affiliated restaurants tended to have higher hygiene quality because of reputational incentives, the introduction of grade cards improved hygiene at franchised units in the chain, which tended to have lower hygiene than company-owned units. (Jin & Leslie, 2006)

(continued)

Table 4.6 (continued)

Disclosure System	Key Studies: Effect/ No Effect	Key Studies: Effectiveness
Mortgage Lending Disclosure	<p><i>Effect</i></p> <ul style="list-style-type: none"> Federal Reserve study used HMDA data to evaluate the existence of mortgage discrimination. When minority and white applicants with similar financial characteristics were compared, rejection rates of minorities were 7–8 percentage points higher. Race proved to be an important explanatory factor in mortgage lending decisions both for institutions with the largest number of loans to minorities (5% of institutions accounted for 50% of applications) and for remaining institutions. (Munnell et al., 1996) 	<p><i>Effective</i></p> <ul style="list-style-type: none"> The higher the percentage of mortgage originations for low- and moderate-income individuals in a given year, the greater the probability that the institution acquired another bank the following year. The authors found that moving from the 25th to the 75th percentile of the distribution of CRA lending was associated with a 0.8 percentage point increase in the likelihood of making an acquisition in the following year. (Bostic et al., 2002) From 1993 to 2000 the number of home purchase loans made to black borrowers increased by 94%, to Hispanics by 140%, and to other minority borrowers by 92%. Minority borrowers represented 25% of total home purchase lending in 2000, as opposed to 17% in 1993. Home purchase loans to lower-income borrowers (with incomes less than 80% of MSA median income) and/or lower-income communities increased by 77% (571,000 loans) from 1993 to 2000. The study attributed part of the increase to the expansion of government-backed lending, especially loans insured by the Federal Housing Administration (FHA). In 2000 minorities represented 40% of home purchase mortgages insured by FHA, as opposed to 22% in 1993. (Joint Center for Housing Studies, Harvard University, 2002)

Nutritional Labeling

Effect

- Survey data suggested label use increased after mandatory labeling, but 70% of adults wanted labels that were easier to understand. (Kristal et al., 1998)
- Purchase and survey data suggested that producers anticipated consumer responses by adding “positive” nutrients without reducing “negative” nutrients in base brands and reducing “negative” nutrients without adding “positive” nutrients in brand extensions when labels were introduced, creating a highly segmented market. (Moorman, 1998)

Moderately effective

- Research found impact of CRA and HMDA difficult to quantify. Especially in 1990s these regulations might have increased access to mortgage credit for low-income/minority families, since banks introduced new mortgage programs. Furthermore, lenders were sensitive to the distribution of their loan portfolios. Finally, Congress empowered the Dept. of Housing and Urban Development to create new affordable housing goals for Fannie Mae and Freddie Mac. However, most of the increase in lending to minorities happened for banks that were not subject to CRA. But since authors found that changes in family characteristics do not explain the increase, they concluded this should be attributed to fair lending policies, good economic cycle, and low interest rates. (Bostic & Surette, 2001)

Moderately effective

- Survey data suggested consumers using labels focused on products’ fat content. Owing to variety of factors, consumers reduced intake of calories from fat from 41.1% during 1977–1978 to 33.6% in 1995 but did not reduce caloric intake overall. Fat-modified products gained significant market share 1991–1995, both before and after mandatory labeling was introduced. (Derby & Levy, 2001).

(continued)

Table 4.6 (continued)

Disclosure System	Key Studies: Effect/ No Effect	Key Studies: Effectiveness
Nutritional Labeling (cont.)	<ul style="list-style-type: none"> • Questionnaires on nutritional label use showed that lower-income individuals were less likely to read labels. Education and importance placed on nutrition were also positively correlated to label use. People who received their information from media (TV, radio, books) were less likely to use labels. (Nayga, Lipinski, & Savur, 1998) • Analysis of label and scanner data suggested that sales of highest-fat salad dressings declined after mandatory labeling was introduced. (Mathios, 2000) 	<ul style="list-style-type: none"> • Label use had a positive effect in improving diet quality, ranging from 3.5 to 6.1 points in the Healthy Eating Index range. Higher income and education were associated with increased label use. Males, older individuals and those who reside in non-metro areas were less likely to use labels. (Kim, Nayga, & Capps, 2001) • Research found statistical evidence that nutritional labeling led to decreases in body weight and the probability of obesity among non-Hispanic white women, comparing those who reported using labels and those who did not before and after NLEA passage. Decrease in body weight equated to a monetary benefit between \$63 and \$166 billion over 20-year period. (Variyam & Cawley, 2006)
Toxic Releases Disclosure	<p><i>Effect</i></p> <ul style="list-style-type: none"> • There were 134 mentions of TRI-related stories by journalists for 1989; media focused on firms accounting for larger share of pollution. Investors' reaction to the publication of TRI information caused an average loss of \$4.1 million in stock market value on day 0. The effect of the information was more dramatic for firms that had also received media coverage of their releases, with average abnormal returns of -\$6.2 million on day 0. (Hamilton, 1995) 	<p><i>Moderately effective</i></p> <ul style="list-style-type: none"> • In 1988–1999 reported releases dropped by more than 50%, harmful chemicals releases declined even more, and recycling improved (since 1991 recycling increased by 12%). But the rate of decline slowed down after the first 5 years of reporting. From 1988 to 1993 total releases decreased by 37%, an average of 7% per year. From 1993 to 1998 total releases fell by 10%,

- Of a sample of 40 firms with highest press coverage and highest abnormal returns, 32 reduced their TRI/\$ revenue, 8 firms increased emissions. Firms also reduced their TRI/\$ revenue ranking in their industry. Average firm in sample reduced emissions by 1.84 pounds per thousand \$, whereas an industry-weighted sample of other firms reduced by 0.17 pounds. The top 40 in terms of abnormal return were compared to the 40 largest emitters (only 11 firms were among the top 40 and in the 40 largest emitters). It was found that top 40 reduced TRI emissions more than 40 worst polluters. (Konar & Cohen, 1997)
 - Steep declines in TRI emissions were observed between 1987 and 1988. Since 1988 emissions have declined more moderately. Off-site transfers declined until 1990 but increased significantly from 1991, when off-site transfers started to include recycling and energy recovery. Stock market analysis showed that abnormal returns were not significant in days -1 and 0 of the event study, in any of the years. The average abnormal returns were negative and statistically significant in day 1 from 1990 to 1994. They were not significant in 1989. Over a 0-5-day window, abnormal returns were significant only in 1992 and 1994. (Khanna, Quimio, & Bojilova, 1998)
- average of 2% per year. Reduction is not a national phenomenon but rather a media/industry/facility-specific phenomenon. TRI emissions decreased, but toxic waste increased. Air releases decreased dramatically (-61%). Surface water releases were down by 66% overall, but the amount varied significantly year by year. Land disposal of toxic chemicals increased because of higher costs of recycling. Facilities with large amount of emissions have been more successful at reducing them. There were large variations by industries, with significant reductions from chemical manufacturers and increases in food and primary metal sector. New industries (reporting for the first time in 1998) increased their releases by 5% (with metal mining and electric utilities driving the increase). (Graham & Miller, 2001)
- Emissions beyond 1-mile circle around property had no effect on property values. Property values increased within the 1-mile distance as a result of TRI info release; results suggested that perceptions were even more favorable for risks within 0.5 miles. (Oberholzer-Gee & Mitsunari, 2002)

(continued)

Table 4.6 (continued)

Disclosure System	Key Studies: Effect/ No Effect	Key Studies: Effectiveness
Toxic Releases Disclosure (cont.)	<ul style="list-style-type: none"> • Reductions in emissions and transfers between 1990 and 1996 were 1.5 to 2.2 times greater than the general TRI trend and 1.3 to 19 times greater than for other companies in their same industry sector. Facilities that received negative press reduced emissions more than other facilities. For example, one facility reduced emissions of a chemical cited in the press by 86%, and overall facility emissions by 64%, whereas emissions at other facilities owned by the same company stayed the same. Hazardous substances released declined from 7,800 in 1994 to 5,400 in 1999. A study of 4 states with similar industry composition found that releases had declined by 60% from their peak year (1992). Episodic releases of TRI chemicals from manufacturers and releases of substances above reportable quantities declined by 68% from their peak year (1990). (EPA, 2000) • TRI releases fell by 78.37% from 1988 to 1995. Differences in TRI emissions attributable to variation in stringency of state regulations of TRI emissions showed that states with additional regulations (but no numeric goals) cleaned up more than states that had no additional TRI-type regulations (i.e., states that had only federal-level regulation). However, states with stringent regulations, with numeric goals for reduction of TRI, did not reduce emissions more rapidly. Evidence was inconclusive on the impact of state regulations on TRI abatement. (Bui, 2002). 	<p><i>Ineffective</i></p> <ul style="list-style-type: none"> • Plants that emitted TRI-listed substances were in lower-income communities. Declines in emissions were not uniform across locations. Larger reductions occurred in higher-value regions and in regions with higher initial releases. Economic impact (measured as change in housing values) of initial TRI information was exceedingly low. Even in case of chemicals with strong link to cancer and other diseases, impact was very low. Impact was not significant beyond the zip code where the plant was located, for emissions traveling through air or water. (Bui & Mayer, 2003)

- TRI disclosures had a positive impact on companies' willingness to disclose environmental information in their 10Ks. Number of companies providing environmental disclosure in 10Ks increased from 99 in 1985 to 110 in 1990. Also, the extensiveness of disclosures improved. Companies with worse environmental performance (measured by size-adjusted level of TRI emissions) increased the provision of environmental information more than others. Companies that received negative media coverage may have increased disclosure, but TRI variable alone remained significant. (Patten, 2002)
- Research on pollutant emissions by subsidiaries found that they have significantly higher emission rates than other facilities. Because parent firms were not liable for pollution generated by their subsidiaries, the latter received less corporate pressure to reduce pollution. (Grant & Jones, 2004)
- Analysis of house sales showed that releases of TRI pollutants had negative and statistically significant impact on property values. More expensive properties were especially impacted, indicating that environmental attributes are subject to a wealth effect. (Decker, Nielsen, & Sindt, 2005)

(continued)

Table 4.6 (continued)

Disclosure System	Key Studies: Effect/ No Effect	Key Studies: Effectiveness
Workplace Hazards Disclosure	<p data-bbox="357 222 413 247"><i>Effect</i></p> <ul data-bbox="357 259 994 1010" style="list-style-type: none"> <li data-bbox="357 259 994 661">• Joint labor-management training proved effective in improving workers' understanding of safety information. Participants in the special training program perceived the training as helpful; that perception grew over time. Workers responded that they had changed work practices: they read labels, were more aware of dangers, avoided hazardous areas, and used protective equipment. 54% of supervisors had changed their own practices in response to the training program. 30% of workers reported that working conditions had improved following the training. The program also increased the level of concern and responsiveness of managers and unions. Joint labor-management training program had positive impact on employees' behavior. More interactive training delivery to smaller groups was key factor for success. (Robins et al., 1990) <li data-bbox="357 666 994 1010">• Evaluation of 150 material safety data sheets (MSDS) showed 83% of MSDS provided specific chemical names for all the listed ingredients. Of 134 MSDS with identifiable chemical components, 37% reported accurate health effects; 47% were inaccurate and 16% partially accurate. 76% of MSDS had accurate first-aid information; 47% of MSDS had accurate information for personal protective measures; 22% had inaccurate information on this topic. 47% had accurate info on exposure limits; 16% had inaccurate values. Only 11% of reviewed MSDS were accurate in all the 4 dimensions. 51% of MSDS were partially accurate in all 4 areas. (Kolp, Williams, & Burtan, 1995) 	<p data-bbox="1008 222 1194 247"><i>Moderately effective</i></p> <ul data-bbox="1008 259 1645 925" style="list-style-type: none"> <li data-bbox="1008 259 1645 431">• Study found that almost 70% of small employers reported little difficulty with MSDS preparation and accessibility, but 80% had problems in complying with training requirements. 56% of employers reported a "great" or "very great" improvement in the availability of information and 30% of employers reported switching to less hazardous chemicals. (GAO, 1992a) <li data-bbox="1008 437 1645 776">• For 91 tested workers, 2/3 of info in MSDS was comprehended. 80% of surveyed workers had seen an MSDS before survey; only 45% had seen it during training. 2/3 requested information on the chemicals with which they worked; 2/3 of these workers found MSDS they received in response difficult to comprehend. 80% of workers receiving chemical hazard information of any type reported changing behavior, and 50% reported MSDS were helpful in preventing or responding to emergency situation. Workers had trouble understanding difficult vocabulary, and layout of MSDS was confusing. Differences in educational level were an important factor impacting understanding; workers with college education scored higher. (Kolp et al., 1993) <li data-bbox="1008 781 1645 925">• According to 3 studies on the comprehensibility of MSDSs, workers understood 60% of the information reported. A 1990 study by the Printing Industries of America found that employees with 15+ years of education understood 66.2% of MSDS information. (OSHA, 1997)

**Patient
Safety
Disclosure
(NY, PA)**

Effect

- Survey of hospitals' CEOs in California and New York found report cards were generally rated as fair or good by hospitals, with respondents in large/high-volume hospitals more knowledgeable of cards. Hospitals with higher mortality rates were more critical of report cards. (Romano, Rainwater, & Antonius, 1999)
- Analysis of the impact of report cards on cardiac surgery in New York and Pennsylvania showed evidence of selection behavior by providers, leading to an increase of procedures performed on healthier patients. Sorting among patients caused delays in the execution of surgery. Authors also found increased matching of patients with hospitals, with patients with more severe conditions being treated in higher-quality hospitals. (Dranove et al., 2003)

- Evaluation of MSDS understanding gave mixed evidence. Out of a sample of 160 workers (95% of sample had undergone training on MSDS), 39% found MSDS difficult; 46% did not. 90% of workers said MSDS were satisfactory to very satisfactory in providing information. 3/4 of workers changed work habits following disclosure of MSDSs. But workers' frequency of usage was low: 1/3 used MSDS half/all of the time; the rest rarely to never used them. Workers reported easy access to MSDS. (Phillips et al., 1999).

Effective

- Analysis of New York hospital data suggested that the dissemination of information on surgery outcomes resulted in an improvement of surgery results from 1989 to 1992. Authors found a decrease in the actual mortality rate and an increase in average patient severity of illness. (Hannan et al., 1994)
- Improvements in certain heart surgery procedures in New York attributed to changes adopted by hospitals in response to disclosure. Especially hospitals identified as very poor performers improved after disclosure, while mediocre or below-average hospitals did not respond as strongly. Managed-care companies and patients did not use reported data. (Chassin, 2002)
- Analysis of Medicare data from 1994 to 1999 showed that in regions with public reporting on certain heart procedures – including Pennsylvania and New York – risk-adjusted mortality rates were lower than in the rest of the country. (Hannan et al., 2003)

(continued)

Table 4.6 (continued)

Disclosure System	Key Studies: Effect/ No Effect	Key Studies: Effectiveness
Patient Safety Disclosure (NY, PA) (cont.)	<ul style="list-style-type: none"> • Research on the impact of the New York cardiac surgery reporting system found that, after the release of report cards in 1991, the gap between whites and black and Hispanic patients receiving surgery increased, but the difference declined over time, going to pre-reporting levels in a decade. Possible explanations were that physicians may have initially associated race with higher risk but later learned that race was not associated with outcomes, or they might have learned that reported information had limited impact on physician selection. (Werner, Asch, & Polsky, 2005) • Study of New York State data from 1989 to 2002 found hospital ratings reliably predicted risk-adjusted mortality rates. However, performance was not associated with changes in market share; changes in market share were similar for best performers and worst performers. Surgeons with poor performance ratings were more likely to leave practice in the state within 2 years from data publication. (Jha & Epstein, 2006) 	<ul style="list-style-type: none"> • Analysis of 1991–1999 data from a cross-sectional time series for specific New York hospitals suggested that the state’s Cardiac Surgery Reporting System led to fewer relatively healthy patients seeking treatment at poor-performing hospitals and to subsequent improvements in those hospitals’ performance (i.e., a lower rate of risk-adjusted mortality). High-performing hospitals did not increase in patient volume or improve in performance. (Cutler, Huckman, & Landrum, 2004)
	<p><i>No effect</i></p>	<p><i>Moderately effective</i></p>
	<ul style="list-style-type: none"> • Evaluation of New York’s report cards found predictive accuracy of the disclosure model low and internal inconsistencies in data. Mortality rates might be imperfect metric. (Green & Wintfeld, 1995) 	<ul style="list-style-type: none"> • Hospitals and physicians with better reported outcomes showed higher growth in market share in some geographical areas. Correlation was stronger for surgeons than for hospitals, but it tended to decline over time. (Mukamel & Mushlin, 1998) • Statistical analysis of the probability of a contract between individual cardiac surgeons in New York State and managed-care organizations in 1998 (1993–1995 data) in relation to surgeon’s risk-adjusted mortality rates suggested that local market conditions may be significant variables. Downstate, lower surgeon mortality rates were associated with an increased probability of a contract. Upstate, the association was weaker. (Mukamel et al., 2002)

- Study found no movement of patients away from hospitals with high mortality rates, nor did patients move to hospitals with low rates (Chassin, Hannan, & DeBuono, 1996)
- Survey of cardiologists' and surgeons' opinions on Pennsylvania report cards found large awareness of disclosure system among physicians; however, fewer than 10% discussed report cards with more than 10% of their patients. Physicians criticized report cards for absence of quality indicators other than mortality, inadequate risk adjustment, and data unreliability. Cardiologists reported increased difficulties in finding surgeons to treat severely ill patients. Majority of surgeons confirmed they were less willing to operate on such patients. (Schneider & Epstein, 1996)
- Study of New York report cards found no evidence that provider profiling limited procedure access for elderly or increased out-of-state transfers. (Peterson et al., 1998)
- Patient survey found that 20% of respondents were aware of Pennsylvania's report cards, but only 12% knew about them before surgery. Fewer than 1% knew the correct rating of their surgeon or hospital and reported that information had a moderate or major impact on their selection of provider. (Schneider & Epstein, 1998)
- Analysis of empirical evidence on impact of hospital performance data suggested that consumers and purchasers rarely searched out the information and did not understand or trust it. Reporting had small, although increasing, impact on their decision making. Small portion of physicians and larger portion of hospitals used the data. (Marshall et al., 2000)

(continued)

Table 4.6 (continued)

Disclosure System	Key Studies: Effect/ No Effect	Key Studies: Effectiveness
Patient Safety Disclosure (NY, PA) <i>(cont.)</i>	<ul style="list-style-type: none"> Literature review found little evidence of report cards' impact on patients' choice of provider or health plan, perhaps owing to inability of providers to respond rapidly to shifts in demand, information already incorporated in consumers' choices, and problems with report cards' quality and credibility. (Mukamel & Mushlin, 2001) 	
Plant Closing, Mass Layoff Disclosure	<p><i>No effect</i></p> <ul style="list-style-type: none"> Comparison of Displaced Worker Surveys conducted in 1988, 1990, and 1992 (WARN was implemented in 1989) showed little impact of WARN in workers' notification. Both before and after disclosure was required, there was very limited formal notice (with less than 15% of displaced workers receiving notice). Authors observed a decline in workers receiving informal notice, balanced by an increase in the number of workers receiving no notice at all. Workers displaced because of plant shutdown were more likely to receive notice than workers displaced by layoffs. Overall, WARN legislation did not seem to have affected workers' notification trends. Results could not be attributed to employers' ignorance, because they often deliberately chose certain firm sizes to avoid coverage by WARN, 	<p><i>Ineffective</i></p> <ul style="list-style-type: none"> Analysis of Displaced Worker Surveys showed limited impact of WARN in reducing unemployment. Comparison of escape rates from unemployment for notified and nonnotified workers showed that escape rate is higher for notified workers who immediately transitioned from one job to the other (0 days unemployed). This could be explained by the fact that notified workers had benefited from an additional period to search for new jobs. However, considering that on-the-job search was less productive than off-the-job and correcting for this difference, the escape rates for notified and nonnotified workers became similar. Notified workers conducted less intensive search in notification period than nonnotified workers did after leaving their jobs. (Addison & Blackburn, 1997)

with some firms seeking legal advice before deciding to comply. Limited impact was also attributed to the fact that firms with fewer than 100 employees (35% of workforce at time of study) were not required to comply. (Addison & Blackburn, 1994)

- WARN's limited impact arose from absence of enforcement mechanisms other than lawsuits by workers. (Levin-Waldman, 1998)
 - GAO assessment of WARN's implementation found that in 2001 there were 1.75 million job losses through extended mass layoffs. In that year, employers provided notice for an estimated 36% of mass layoffs or closures that qualified for WARN (717 out of 1,974). Employers provided notice for 46% of plant closures and 26% of mass layoffs. Remaining ones were subject to WARN, but notice was not provided. 2/3 of notices provided were on time. Employers had problems applying WARN because of difficulties in calculating the layoff threshold, and courts applied WARN provisions inconsistently, which created confusion. Educational materials by DOL were not widely available. (GAO, 2003b)
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