RAND

Kauffman-RAND Center for the Study of Small Business and Regulation

A RAND INSTITUTE FOR CIVIL JUSTICE CENTER

RESEARCH BRIEF

Are Small Businesses Riskier Than Larger Ones?

RAND RESEARCH AREAS
THE ARTS
CHILD POLICY
CIVIL JUSTICE
EDUCATION
ENERGY AND ENVIRONMENT
HEALTH AND HEALTH CARE
INTERNATIONAL AFFAIRS
NATIONAL SECURITY
POPULATION AND AGING
PUBLIC SAFETY
SCIENCE AND TECHNOLOGY
SUBSTANCE ABUSE
TERRORISM AND HOMELAND SECURITY
TRANSPORTATION AND INFRASTRUCTURE
WORKFORCE AND WORKPLACE

This product is part of the RAND Corporation research brief series. RAND research briefs present policy-oriented summaries of individual published, peer-reviewed documents or of a body of published work.

Corporate Headquarters
1776 Main Street
P.O. Box 2138
Santa Monica, California
90407-2138
TEL 310.393.0411
FAX 310.393.4818

© RAND 2006

www.rand.org

Small firms play a vital role in the U.S. economy, with more than half of Americans working in firms with fewer than 100 employees. Some policymakers, interested in supporting small business and entrepreneurship, have argued that the burden of health, safety, and environmental regulations falls too heavily on small firms, which have less ability to keep up with the growing body of regulatory requirements and cannot take advantage of economies of scale in purchasing mandated equipment. As a result, small firms have sometimes been exempted from regulatory compliance or held to a different standard than larger firms. At the same time, evidence suggests that small *establishments* (i.e., individual work sites, which may or may not be part of a larger firm) may pose a significant safety risk to workers. Previous research has shown that small establishments have elevated rates of fatalities and serious injuries.

Despite the research on small establishments, there has been little study regarding injury and fatality rates at small *firms*. We don't know whether the higher risks at small establishments are due to the size of the firm—i.e., the business organization. This distinction is important since it is the business organization and not the individual work site that entrepreneurship policy is intended to encourage. Do the findings for establishment size actually represent the effects of firm size? Or do both establishment size and firm size independently affect risk? A better understanding of the source of risks can help policymakers design and target appropriate policies.

A new study conducted by the RAND Corporation under the auspices of the Kauffman-RAND Center for the Study of Small Business and Regulation, and funded by the Ewing Marion Kauffman Foundation, separates out the effects of firm size and establishment size on safety risk and discusses the implications for health and safety policy.

Abstract

Business establishments (individual work sites) with fewer than 20 workers account for most occupational deaths and have much higher fatality rates than do larger establishments. However, research has not previously examined whether the higher risks at small establishments are related to the size of the *firm*—i.e., the business organization. This research looked at the effect of establishment size on fatality rates within firms of different sizes and at the effect of firm size for establishments of different sizes. The study found that smaller establishments still consistently have much higher risks. However, the effects of firm size on risk were different. For establishments with fewer than 100 workers, the smallest firms had the lowest fatality rates, not the highest, and small, single-establishment firms were among the safer workplaces. Most fatalities were related to serious violations of occupational safety and health standards. These findings suggest that, rather than focusing exclusively on establishments, health and safety policy might also target medium-sized firms with small establishments.

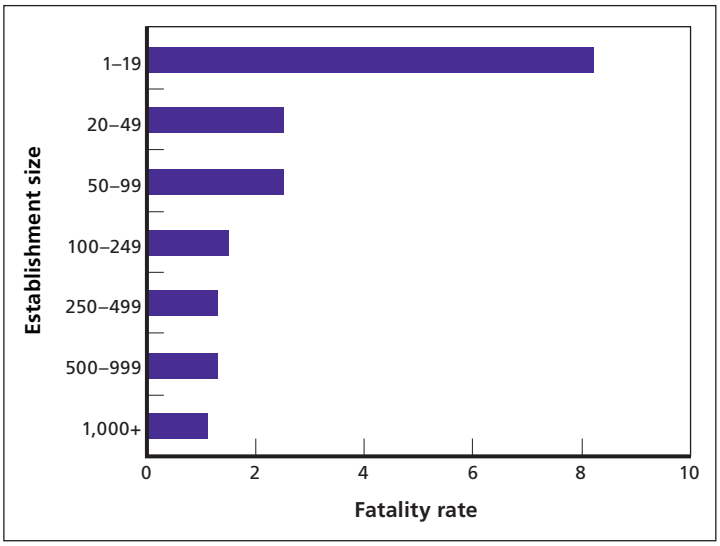
The Smallest Establishments Are the Riskiest in All Firm-Size Categories

The study uses data from the Occupational Safety and Health Administration (OSHA) accident investigation reports for the period 1992–2001 to examine the relationship between the fatality rate (i.e., the number of deaths per 100,000 workers) and business size, both in terms of establishment size and firm size. Deaths from assaults and highway crashes were excluded because these are

generally not investigated by OSHA. The sample included 17,481 work-related fatalities.

The research found that the smallest establishments in a firm are likely to be the riskiest. For example, as shown in Figure 1, among manufacturing firms with 1,000 or more workers, the fatality rate per 100,000 workers was nearly eight times higher for the smallest establishment category (1–19 workers) than that for the category with the lowest rate (1,000+ workers) and more than three times higher than that for establishments with 20–49 employees. Findings were similar within other firm-size categories. For example, for firms with 50–99 employees, establishments with 1–19 workers had a fatality rate of 24.3, compared with 5.9 for establishments with 20–49 employees and 2.5 for those with 50–99 employees. This pattern was the same for all of the industry sectors studied (transportation/public utility, wholesale, and service) except for retail trade.

Figure 1
Fatality Rate Per 100,000 Workers (Manufacturing), 1992–2001, for Firms with 1,000 or More Employees



Being Part of the Smallest *Firm* Is Often the Safest Situation for an *Establishment*

To understand how firm size might affect risk, the researchers also examined whether, for a given establishment size, those establishments in smaller firms were riskier than those in larger firms. Surprisingly, they found that large firm size did not have the kind of "protective effect" seen for large establishments, in which fatality rates decreased steadily and strongly with size. Instead, the researchers found that, for establishments in size categories with fewer than 100 workers, those in the smallest firms had the *lowest* fatality rates. Small establishments in medium-sized firms were the riskiest, while small, single-establishment firms were among the safest. These points are indicated in the table, which shows the fatality rate per 100,000 manufacturing workers according to establishment size and firm size. The shaded boxes (gray and purple) indicate single-establishment firms, i.e., establishment size and firm size are the same. Reading down the leftmost column, we see that, for establishments with 1–19 employees, those in firms of the same size (shaded in gray) had a fatality rate of 3.4, while those in firms with 20–49 employees had a fatality rate of 21.7—more than six times higher. In this example, small, single-establishment firms are the *safest*. Similar results are seen for the next two establishment size categories. This pattern was not seen, however, for single-establishment firms with more than 100 workers, as indicated by the three columns with the top number shaded in purple.

The table also indicates that the riskiest small manufacturing establishments (1–19 workers) were those in firms with 20–999 employees. Similar patterns were found in other sectors. For all nonconstruction sectors studied, firms in these categories had a total of over 1,100 deaths in establishments with 1–19 workers, an average of 114 per year.

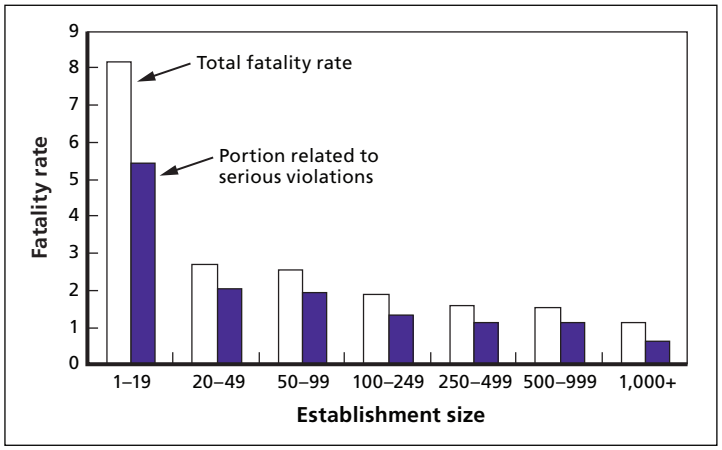
Most Workplace Deaths Are Related to Serious OSHA Violations

The study also found that, across all establishment-size categories, most fatalities were related to serious OSHA violations. (Serious violations are those that OSHA believes pose a substantial threat of causing death or serious injury.) As shown in Figure 2, the portion of total fatalities related to OSHA violations was fairly similar across establishment categories. Because small establishments with fewer than 20 workers had a higher fatality rate to begin with, they also had a higher rate of fatalities due to serious violations. This finding indicates that most of the difference in death rates can be explained by greater noncompliance at small workplaces.

Fatality Rate Per 100,000 Workers (Manufacturing), 1992–2001

	Establishment Size						
Firm Size	**1–19**	**20–49**	**50–99**	**100–249**	**250–499**	**500–999**	**1,000+**
1–19	3.4						
20–49	21.7	2.3					
50–99	24.3	5.9	2.5				
100–249	22.7	4.7	2.8	2.4			
250–499	14.5	4.2	3.4	2.1	2.8		
500–999	21.4	4.1	3.2	2.0	1.3	3.0	
1,000+	8.2	2.5	2.5	1.5	1.3	1.3	1.1

Figure 2
Total Fatality Rate Per 100,000 Workers (Manufacturing), 1992–2001, Compared with the Fatality Rate for Deaths Related to Serious Violations



Conclusions and Policy Options

Although the study shows that, within a given firm, smaller establishments are riskier than larger establishments, the research also indicates that small, single-establishment firms are among the safer workplaces. The reasons for this "protective effect" are unclear, although it is possible that the presence of an owner on-site may help to improve safety. The relatively good record at small single-establishment firms may justify lighter regulatory interventions there than at small and medium-sized firms with multiple establishments.

The worst fatality rates were found at small establishments that were part of firms with 20–999 workers. As we saw in the table, fatality rates for small establishments in these firm-size categories were significantly higher than rates for establishments in the smallest and largest firm-size categories. If fatality rates for small establishments in these firms could be reduced to those found for small establishments in the smallest or largest firms, over two-thirds of these deaths would be prevented.

These findings point to several issues that should be considered in developing policy options to address health and safety problems at small establishments or firms.

OSHA Inspections. Small establishments do have higher risk, and the study found evidence of greater noncompliance with OSHA standards at small establishments. Nevertheless, it may still be difficult to justify a greater inspection effort at small establishments in general because of the relatively low number of employees at these establishments compared with larger ones. There are fixed costs associated with inspections, so that, for example, the time required to inspect five establishments with 20 workers in each would be much more than the time needed to inspect one establishment with 100 workers.

Targeting Small Establishments Within Medium-Sized Firms. Rather than focusing exclusively on establishments, OSHA might also focus on medium-sized firms (20–999) that have small establishments (1–19) because we have seen that they have unusually high fatality rates. If OSHA developed interventions for firms of this size, it might be cost-effective in improving safety at small establishments.

State-Run Consultations. Another option would be to expand OSHA's consultation program for small establishments, which often includes safety training. However, a substantial expansion in consultations is unlikely as long as participation in the program is voluntary.

Educational Programs. It may also be worthwhile to consider a new safety education program targeting small establishments. The effects of such an intervention might be small, but the public costs would be small as well. ■

This research brief describes work done for the RAND Institute for Civil Justice and documented in *Small Businesses and Workplace Fatality Risk: An Exploratory Analysis*, by John Mendeloff, Christopher Nelson, Kilkon Ko, Amelia Haviland, TR-371-ICJ (available at http://www.rand.org/pubs/technical_reports/TR371/), 2006, 102 pp., $20, ISBN: 0-8330-3944-X.
The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. **RAND**® is a registered trademark.

RAND Offices Santa Monica, CA • Washington, DC • Pittsburgh, PA • Jackson, MS • Doha, QA • Berlin, DE • Cambridge, UK • Leiden, NL

RB-9181-ICJ (2006)

Kauffman-RAND Center for the Study of Small Business and Regulation

A RAND INSTITUTE FOR CIVIL JUSTICE CENTER

THE ARTS
CHILD POLICY
CIVIL JUSTICE
EDUCATION
ENERGY AND ENVIRONMENT
HEALTH AND HEALTH CARE
INTERNATIONAL AFFAIRS
NATIONAL SECURITY
POPULATION AND AGING
PUBLIC SAFETY
SCIENCE AND TECHNOLOGY
SUBSTANCE ABUSE
TERRORISM AND HOMELAND SECURITY
TRANSPORTATION AND INFRASTRUCTURE
WORKFORCE AND WORKPLACE

This PDF document was made available from www.rand.org as a public service of the RAND Corporation.

This product is part of the RAND Corporation research brief series. RAND research briefs present policy-oriented summaries of individual published, peer-reviewed documents or of a body of published work.

The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world.

Support RAND

Browse Books & Publications

Make a charitable contribution

For More Information

Visit RAND at www.rand.org

Explore RAND Kauffman-RAND Center for the Study of Small Business and Regulation

View document details

Limited Electronic Distribution Rights

This document and trademark(s) contained herein are protected by law as indicated in a notice appearing later in this work. This electronic representation of RAND intellectual property is provided for non-commercial use only. Permission is required from RAND to reproduce, or reuse in another form, any of our research documents for commercial use.