

LIABILITIES OR ASSETS? EFFECTS OF AGE AND INDUSTRY ON BUSINESS SURVIVAL AMID INFRASTRUCTURE CRISES

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Abstract

This study explores and analyzes 57,858 businesses in Jackson, Mississippi, in the aftermath of the 2020 Pearl River flood and the 2022 watershed failure to better understand relationships between firm age, industry sector, and business survival in the wake of major infrastructure failures. Young businesses experienced high rates of dissolution during the crisis periods. Older businesses were similarly challenged to survive. For both groups, industry differences in survival rates were observed, particularly regarding the dependency of the business on Jackson's water infrastructure and the nature of the business with the public. Our results highlight the context dependence of the liability of newness, extending organizational ecology theory to disaster settings, and underscoring the need for targeted support of young and infrastructure-dependent businesses during crises.

Keywords: Liabilities of Newness, Water Infrastructure, Business Failure, Jackson, Mississippi

Introduction

Business start-ups are vital to the U.S. economy; however, many new businesses fail under normal conditions. Nationally, approximately 20% of new businesses fail within their first year and about 50% fail within five years (Bureau of Labor Statistics [BLS], 2024; U.S. Small Business Administration [SBA], 2023). In Mississippi, the rates are lower, with 25% of first-year and 60% of five-year businesses failing (BLS, 2024). The risks of failure are even higher during times of crisis or disasters. There is an expanding body of work on natural hazards that demonstrates that many businesses do not recover after disasters (Battisti & Deakins, 2017; Marshall & Schrank, 2018; Runyan, 2006; Williams & Shepherd, 2016; Zhang et al., 2009). Yet still, little is known about how localized infrastructure failures like a water crisis would affect business survival (Doern et al., 2019; Rose, 2007).

Jackson, Mississippi, provides an important empirical setting to address this knowledge gap because the city was struck by two consecutive crises in a short time span. First, in February 2020, the Pearl River reached its third-highest crest on record, inundating neighborhoods and

commercial districts, forcing closures, and leaving lasting damage to physical infrastructure. Many local businesses experienced interrupted operations, lost revenues, and costly rebuilding efforts (CBS News, 2020). Before the business community could fully recover, the city faced a second, arguably more severe disaster in August 2022, when systemic neglect and underinvestment led to the catastrophic failure of Jackson's primary water treatment plant. The water system collapse left 160,000 residents and businesses without reliable running water for weeks, crippling normal operations and further destabilizing the city's entrepreneurial ecosystem (TRACIE, 2022).

Drawing on the organization ecology framework, we investigate the relationship between the water crisis and increased failure rates of 57,858 young and established businesses in Jackson, Mississippi. We also use this framework to assess whether the industry characteristics of infrastructure dependence and customer-facing orientation moderate the failure rates associated with the age of the business. To answer these research questions, we grouped the Jackson businesses according to their formation dates pre-crisis, during the crisis, and post-crisis.

Organization ecology theory states that new businesses face liabilities of newness from the lack of routines, legitimacy, and slack resources; and that these liabilities increase mortality rates of new businesses (Freeman et al., 1983). As firms age, the liabilities of newness decrease from the establishment of routines and stakeholder relationships, though Brüderl and Schüssler (1990) highlight a U-shaped hazard pattern where adolescence (years 2-3) can heighten failure risks before stabilizing. This means that firms in year 1 have strong survival rates, a nuance that will resonate with our discussions of the asset of newness for post-crisis firms (Davidsson & Gordon, 2016). Organization ecology also states that established businesses have liabilities associated with structural inertia that reduce adaptability and rapid response to environmental shifts (Hannan & Freeman, 1984; Thornhill & Amit, 2003).

Our study makes three contributions. First, we extend organizational ecology by showing how liabilities of newness operate under disaster conditions, while also discussing "assets of newness" that may explain the observed strong survival of post-crisis startups (Davidsson & Gordon, 2016; Kuckertz et al., 2020). Second, we research an understudied entrepreneurship resource - water infrastructure - and contribute to the broader crisis literature with our finding that shocks to a municipal water infrastructure may bear a relationship to business survival (Doern et al., 2019). Third, we provide practical and policy insights that inform targeted interventions and that underscore the importance of crisis-related institutional entrepreneurship support (Marshall et al., 2015; Williams et al., 2017).

Literature Review

The literature suggests that younger firms suffer a liability of newness, exhibiting higher failure rates than older businesses (Freeman et al., 1983). Exogenous shocks like infrastructure

failures tend to further threaten business survival, especially for resource-constrained small enterprises (Battisti & Deakins, 2017; Doern, 2016). Moreover, industry context conditions these effects (Agarwal & Audretsch, 2001; Strotmann, 2007). Important gaps, however, exist in our understanding of the interaction of age, infrastructure, and industry—for instance, whether crisis conditions might alter or even reverse the usual survival patterns associated with firm age in different sectors.

Age and Small Business Survival

Early studies established firm age as a key predictor of survival, giving rise to the “liability of newness” concept that new organizations experience disproportionately high failure rates compared to older ones (Freeman et al., 1983). The hazard of failure tends to decline as firms age, presumably due to accumulating experience, developing stable routines, and gaining legitimacy. He attributed new ventures’ vulnerability to several foundational challenges: entrepreneurs must learn new roles and tasks (incurring high learning costs), they struggle to coordinate untested structures, they rely on tenuous social ties with unfamiliar stakeholders, and they lack established external linkages. These liabilities of newness leave young small businesses fragile in their early years. Consistent with this view, Hannan and Freeman’s population ecology research likewise found that younger firms suffer higher mortality risk than older firms under equivalent conditions (Hannan & Freeman, 1984).

More recent studies have refined this age–survival relationship. While the liability of newness implies a monotonic decrease in failure rates with age, some studies have identified a “liability of adolescence.” For example, Brüderl and Schüssler (1990) found that very new firms sometimes enjoy a short initial “honeymoon” period (often due to founder optimism or initial resources) before experiencing a spike in failure rates after a couple of years in operation.

Similarly, Strotmann (2007) reported in an analysis of German manufacturing ventures that failure risk does not simply decline smoothly with age; instead, failure hazards peak after the first few years of a firm’s life—supporting a liability of adolescence—rather than immediately at founding. On the other hand, older firms can encounter a “liability of obsolescence” (or senescence): as organizations become mature, inertial forces and outdated routines may increase the likelihood of failure (Barron et al., 1994; Thornhill & Amit, 2003).

Notably, while the dominant view is that newness is a liability, a few scholars have argued that under certain conditions, newness might confer advantages such as flexibility and agility. For example, Simón-Moya, Revuelto-Taboada, and Ribeiro-Soriano (2016) found that young businesses were more likely to survive the 2008 financial crisis, reasoning that the crisis lowered these startups’ opportunity costs and “left founders with no other choice but to persevere.” Such findings suggest that in a turbulent environment, new businesses may sometimes leverage quick learning or pivoting ability as an asset of newness (Bartz & Winkler, 2016; Davidsson & Gordon,

2016). This remains an emerging perspective, but it raises the question of whether nascent firms can occasionally turn their youth into assets of newness.

Exogenous Shocks and Business Failure

Exogenous shocks such as natural disasters and infrastructure collapses create acute threats to business continuity. Research consistently shows that a substantial proportion of businesses in affected regions either fail outright or take years to recover. Following the Northridge earthquake, only about three-quarters of businesses recovered after 16 months (Dahlhamer & Tierney, 1996), while six months after Hurricane Katrina, roughly one-third of businesses remained closed or underperforming (Corey & Deitch, 2011). Similarly, during the COVID-19 pandemic, 43% of U.S. businesses temporarily closed in the early months, with employment among these firms falling by nearly 40% (Bartik et al., 2020). These findings underscore how exogenous shocks accelerate dissolution by disrupting revenues, straining organizational capacities, and exposing firms' reliance on external stability. Studies of organizational resilience confirm that crises pose substantial threats to viability, and many businesses enter such periods without sufficient preparedness or continuity planning (Ates & Bititci, 2011; Herbane, 2010; Pal et al., 2014; Sullivan-Taylor & Branicki, 2011).

Infrastructure failures are particularly damaging because they undermine the foundational systems required for commerce. The 2010 Chile earthquake, for instance, damaged ports and disrupted global supply chains (Altay & Ramirez, 2010). Similar dynamics were evident in the 1993 Midwest floods and the Northridge earthquake, where interruptions of water, power, and communications were key causes of business closures (Tierney & Nigg, 1995). Because lifeline utilities are non-substitutable in the short term, even well-established firms reported they could survive only hours without electricity and days without water. These cases illustrate that exogenous shocks, especially infrastructure collapses, can neutralize conventional advantages of experience or industry position. By directly disrupting the physical conditions of operation, they sharply elevate failure risks across the business population.

Industry Context as a Moderator of Age and Exogenous Effects

Industry-level factors influence business survival. Failure rates vary across industries with different capital requirements and growth trajectories; for example, survival tends to be lower in capital-intensive or stagnant sectors (Strotmann, 2007). Prior research also suggests that the liability of newness is attenuated in high-growth environments but intensified in declining ones (Agarwal & Audretsch, 2001; Carroll & Delacroix, 1982). Moreover, older firms can face liabilities of aging, where accumulated routines and inertia increase the risk of exit over time (Barron et al., 1994). Scholars have noted that these effects may be especially pronounced in

dynamic and technologically volatile industries, where adaptation is critical (Thornhill & Amit, 2003).

Industry context also moderates the relationship between exogenous crises and business survival. Not all industries are equally vulnerable to the same shock. After disasters, demand often plummets in consumer-facing sectors like retail or tourism, while construction sees demand surges due to rebuilding needs (Chang & Falit-Baiamonte, 2002). Because of such differences, the advantages of firm age—or conversely, liabilities of newness—can vary in strength across industries. In some cases, long-established firms in devastated sectors may fare no better than younger firms in less-affected industries. Yet relatively few studies have explicitly integrated firm age, industry context, and exogenous shocks, underscoring the need for more holistic analyses under conditions such as infrastructure collapse.

Theory and Hypothesis Development

Liabilities of Crisis-Born Businesses

Founding during a systemic shock compounds early organizational hazards because the routines, stakeholder ties, and legitimacy that typically accumulate with time must be created under disrupted conditions (Freeman et al., 1983). Evidence from prior crises shows that exogenous shocks depress revenues and growth, disrupt operations, and lengthen recovery—elevating exit risk for firms that begin amid a disruption (Bartik et al., 2020; Corey & Deitch, 2011; Dahlhamer & Tierney, 1996). In Jackson, the 2020 flood and 2022 water system failure created precisely this founding context, in which new ventures confronted the liabilities of newness while simultaneously navigating infrastructure interruptions that constrained everyday commerce (Altay & Ramirez, 2010; Tierney & Nigg, 1995).

Consistent with organizational ecology's age-dependent logic, these crisis-born ventures are expected to exhibit higher dissolution rates than those formed in stable conditions. Recent evidence reinforces this expectation that young businesses generally experience the steepest declines in financing and slower growth performance, underscoring how new businesses are disproportionately affected by shocks (Bartz & Winkler, 2016; Brown et al., 2020). In short, an infrastructure collapse is likely to amplify the vulnerability of new firms, placing those founded during the Jackson crises in a position of “double jeopardy”—organizationally new and immediately exposed to systemic disruption.

Hypothesis 1: Businesses founded during the infrastructure collapse will exhibit higher failure rates than businesses founded in more stable times, reflecting liability of newness under crisis conditions.

Assets of Post-Crisis Born Businesses

Post-crisis founding can sometimes invert the usual disadvantages of newness. When the environment resets, new ventures may be less constrained by legacy routines and more able to adopt resilient processes from inception, facilitating faster alignment with altered demand and operating constraints (Williams et al., 2017). Empirical studies suggest that crises can act as external enablers: some entrepreneurs persist and capitalize on shifting needs and institutional responses (Davidsson & Gordon, 2016; Kuckertz et al., 2020; Williams & Shepherd, 2016).

In Jackson's post-2022 recovery, which is characterized by targeted support and renewed demand for reliable services, such flexibility may translate into survival advantages for new ventures relative to incumbents adapting away from pre-crisis routines (Marshall et al., 2015). Founders could also leverage post-crisis public support, relief programs, or recovery capital unavailable before the disruption (Doern et al., 2019). Evidence from the Great Recession illustrates this dynamic that in the aftermath of crises, businesses often survive at higher rates because of business model innovations and the learning that occurs from the disruption (Cucculelli & Peruzzi, 2020; Simón-Moya et al., 2016).

Hypothesis 2: Businesses founded in the post-crisis recovery period will have higher survival rates than businesses established before the crisis, reflecting post-disaster conditions as an asset of newness.

Liabilities of Structural Inertia on Exogenous Shock Adaptation

Mature organizations often benefit from accumulated routines and stakeholder credibility, yet these same structures can impede timely adaptation when the environment shifts sharply (Hannan & Freeman, 1984; Thornhill & Amit, 2003). Age-related rigidity has been linked to failures driven more by external change than by internal deficiencies (Barron et al., 1994; Thornhill & Amit, 2003). In shock contexts, established firms may struggle to reconfigure operations when lifeline systems (e.g., potable water) fail, eroding presumed age advantages (Tierney & Nigg, 1995; Williams et al., 2017). The structural inertia perspective explains this risk: over time, organizations develop entrenched processes that enhance stability but constrain rapid adjustment to environmental jolts (Hannan & Freeman, 1984; Mellahi & Wilkinson, 2004). Empirical research confirms that older firm failures are more frequently associated with adaptation problems, whereas younger firms fail primarily from internal deficiencies (Thornhill & Amit, 2003).

Thus, longevity can evolve into vulnerability when survival depends on flexibility. The compounded flood and water infrastructure collapse in Jackson exemplified such a jolt, potentially neutralizing incumbency advantages. Prior crisis studies indicate that age-based strengths (experience, size, reputation) can evaporate under systemic breakdowns (Doern et al., 2019;

Williams et al., 2017), and in some disasters, older firms have even fared worse than newer ones because of rigidity or higher sunk commitments (Williams & Shepherd, 2016).

Hypothesis 3: During the infrastructure crisis, older businesses are more likely to dissolve than younger businesses, reflecting the exogenous shock on structural inertia.

Moderation Effects of Industry Context

Liabilities of newness vary across industries depending on structural conditions such as capital requirements, competition, and demand volatility (Agarwal & Audretsch, 2001; Strotmann, 2007). Prior studies suggest that new firms in industries with intense competitive pressures or high scale requirements are more prone to early failure, while firms in more munificent sectors may face less severe liabilities of newness (Agarwal & Audretsch, 2001; Strotmann, 2007). These insights frame our expectation that the Jackson water system's collapse would interact differently with industry characteristics.

Specifically, ventures in infrastructure-dependent sectors such as accommodation and food services, health care, and hospitality rely heavily on consistent water access to conduct day-to-day operations. Prior disaster research shows that interruptions of lifeline utilities such as water, power, or communications can drive closures across otherwise heterogeneous firms (Tierney & Nigg, 1995). By contrast, firms in sectors less tied to water infrastructure, such as information or professional services, may have been better positioned to maintain operations during the crisis. Building on these patterns, we test whether the Jackson water system failure reduced age-related differences in survival among firms in infrastructure-dependent industries, effectively muting the typical liability of newness.

Hypothesis 4a: In industries highly dependent on water infrastructure, the liability of newness is less significant, reflecting that older businesses in those industries also struggle to operate during a water infrastructure crisis.

Industry conditions shape how crises translate into business outcomes, with some sectors experiencing sharper disruptions in demand than others. Prior studies of earthquakes and other disasters document that retail and service businesses dependent on local foot traffic often sustain greater revenue losses than firms in less customer-facing industries (Chang & Falit-Baiamonte, 2002). Research on utility interruptions also emphasizes that cascading supply effects can differentially impact industries depending on their operational dependencies (Tierney & Nigg, 1995). More recently, evidence from the COVID-19 crisis showed that businesses relying on direct consumer interaction—such as restaurants and entertainment venues—experienced widespread closures, while sectors less reliant on face-to-face contact proved relatively resilient (Bartik et al., 2020; Fairlie, 2020).

Guided by these findings, we hypothesize and test whether in Jackson, where the water crises compounded consumer uncertainty and service interruptions, businesses in public-facing sectors such as retail trade and entertainment were more likely to dissolve compared to those in less customer-dependent industries.

Hypothesis 4b: Industries with public-facing sectors will have higher dissolution rates during a water infrastructure crisis, reflecting customer demand shifts.

Methods

Sample

The data for this study were drawn from the Mississippi Secretary of State (2025) online public business registry (MSPBR), which contains records of all registered business entities with a listed address in Jackson, Mississippi. A comprehensive data extract was obtained on January 9, 2025, yielding an initial dataset of 100,452 business entities across the city. These included corporations, limited liability companies (LLCs), partnerships, nonprofit corporations, and other forms of registration. Several data cleaning steps were undertaken that reduced the sample. Businesses without valid North American Industry Classification System (NAICS) codes were removed, since industry classification was required for hypothesis testing.

This reduced the sample to 58,811 firms. Entities with formations after December 31, 2024, were excluded to allow a proper observation window for failure (dissolution) events, leaving 58,678 firms. Firms with ambiguous or non-terminal statuses (e.g., “withdrawn by merger” or “undefined”) were dropped. Merger-related exits were excluded because a merger or acquisition is not treated as a failure in this study (Wennberg et al., 2010). NAICS codes were consolidated to their two-digit level to provide broad, comparable industry categories. Any remaining cases lacking a valid two-digit industry code were removed. After these procedures, the final sample consisted of 57,858 firms, representing a population of active and dissolved businesses in Jackson, Mississippi (See Table 1).

Variables

Dependent Variable. The dependent variable is Business Failure, operationalized as a binary outcome where 1 = dissolved and 0 = active as of January 9, 2025. A dissolution indicates that the business had officially ceased operations according to state records, whether voluntarily or involuntarily. This measure of failure is consistent with prior work on firm exit that treats formal dissolution as a definitive terminal outcome (Wennberg et al., 2010). For Hypotheses 1–3, we compared dissolution rates for Jackson firms to Mississippi and national benchmarks by firm age.

Table 1 *Business Survival Rates by Founding Cohort*

Founding Cohort	Firm Age in 2025	# of Firms	Jackson Survival (%)	Mississippi Survival (%)	National Survival (%)
Pre-crisis (≤ 2019)	6+ years	27,455	36.0	42.0	49.0
Crisis-period (2020)	5 years	6,214	28.0	40.5	48.5
Crisis-period (2021)	4 years	8,128	24.0	45.0	53.5
Crisis-period (2022)	3 years	5,519	31.0	52.0	61.2
Post-crisis (2023)	2 years	5,087	38.0	60.0	67.6
Post-crisis (2024)	1 year	5,455	99.0	75.0	79.3

Note. Jackson data are drawn from the Mississippi Secretary of State (2025). Mississippi and national survival rates are based on U.S. Bureau of Labor Statistics (2024) *Business Employment Dynamics* series (state-specific data for Mississippi and national data for the U.S.), and U.S. Small Business Administration (2023).

These benchmarks were drawn from recent U.S. small business statistics (Bureau of Labor Statistics, 2024; U.S. Small Business Administration, 2023). These percentages provide an external standard for evaluating whether Jackson's firms experienced disproportionately high failure rates under the crises (See Table 1).

Independent Variables. Each business was categorized into one of three founding cohorts based on MSPBR registration date. The Pre-crisis cohort are businesses founded before 2020. The Crisis cohort are businesses founded during 2020–2022, amid the compounding natural and infrastructural water crises in Jackson. The Post-crisis cohort are businesses founded in 2023–2024, which is the recovery period after the major crises had subsided.

The industry in which each business operated was classified using its two-digit NAICS code (See Table 2). Industry is a well-established variable in business survival models (Agarwal &

Audretsch, 2001; Audretsch & Mahmood, 1995; Chang & Falit-Baiamonte, 2002). In our regression models, we included industry group dummies to test whether infrastructure-dependent sectors versus independent sectors (H4a) and public-facing versus non-public-facing sectors (H4b) exhibited significantly different odds of business failure during the Jackson crisis, after controlling for other factors.

Infrastructure-dependent sectors are Construction (NAICS 23), Accommodation and Food Services (72), and Health Care and Social Assistance (62). Firms in these sectors heavily rely on functional infrastructure (e.g., clean water supply) for daily operations. Infrastructure-independent sectors are Information (51) and Professional, Scientific & Technical Services (54). Firms in these sectors are less directly tied to local physical infrastructure for core operations. Public-facing sectors are Retail Trade (44–45) and Arts, Entertainment & Recreation (71). These sectors involve direct face-to-face customer interactions and depend on steady foot traffic and consumer confidence.

Non-public-facing sectors are Finance & Insurance (52) and Management of Companies (55). These sectors generally do not rely on walk-in customers and can often operate with back-office functions. Although Finance & Insurance includes consumer services like bank branches, much of its activity, such as insurance underwriting and financial services, can be conducted without in-person interaction, so we classify it as non-public-facing.

Table 2 *Crosstabulation of NAICS Industry Categories and Firm Status in Jackson, MS*
(*N* = 57,858)

NAICS	Industry Description	Dissolved	Active	% Active	Total
11	Agriculture, Forestry, Fishing	509	441	0.46	950
21	Mining, Quarrying, Oil & Gas	251	230	0.48	481
22	Utilities	39	34	0.47	73
23	Construction	2,492	1,276	0.34	3,768
31–33	Manufacturing	1,552	615	0.28	2,167
42	Wholesale Trade	1,349	596	0.31	1,945
44–45	Retail Trade	5,678	1,712	0.23	7,390
48–49	Transportation & Warehousing	2,822	1,271	0.31	4,093
51	Information	863	354	0.29	1,217
52	Finance & Insurance	1,207	792	0.40	1,999
53	Real Estate and Rental & Leasing	3,238	3,568	0.52	6,806
54	Professional, Scientific, Technical	3,512	2,362	0.40	5,874
55	Management of Companies	209	403	0.66	612
56	Administrative & Support Services	2,416	1,070	0.31	3,486
61	Educational Services	518	655	0.56	1,173

62	Health Care & Social Assistance	1,519	1,462	0.49	2,981
71	Arts, Entertainment & Recreation	1,189	725	0.38	1,914
72	Accommodation & Food Services	1,747	782	0.31	2,529
81	Other Services (except Public Admin.)	4,934	3,219	0.39	8,153
92	Public Administration	123	124	0.50	247
Total		36,167	21,691	0.37	57,858

Note. Data are from the Mississippi Secretary of State (2025). Percentages in columns 4 indicate the proportion of firms active within each NAICS category relative to that category's total.

Results

Descriptive Statistics

The final sample includes 57,858 businesses registered (founded) in Jackson, Mississippi (Jackson), across all major NAICS industry categories. Of these, 36,167 businesses (62.5%) had dissolved by January 2025, and 21,691 (37.5%) remained active. Table 2 reports survival by NAICS sector. Service-oriented categories such as Other Services (NAICS 81), Retail Trade (44–45), and Professional/ Scientific/ Technical Services (54) accounted for the largest groupings of businesses; however, survival rates varied across industries. Management of Companies (55) had the highest percentage of active firms (66%), whereas Retail (44–45) had one of the lowest (23%). Health Care and Social Assistance (62) showed nearly half of its firms surviving (49%).

Table 1 shows survival rates by founding cohort, benchmarked against both Mississippi and national averages. Pre-crisis firms (founded ≤ 2019) had a survival rate of 36%, substantially below both the Mississippi (42%) and national (49%) averages. Firms founded during the crisis (2020–2022) showed survival rates ranging from 24% to 31%, below national averages (48.5%–61.2%). Post-crisis firms (2023–2024) displayed higher survival, with the 2023 cohort at 38% (vs. 67.6% nationally) and the 2024 cohort at 99% (vs. 79.3% nationally).

Hypothesis Tests

Hypothesis 1 stated that businesses founded during infrastructure collapse will exhibit higher failure rates than businesses founded in more stable times, reflecting liability of newness under crisis conditions. To test Hypothesis 1, survival rates of firms founded during the crisis (2020–2022) were compared against pre-crisis firms (≤ 2019) and 2020–2022 national benchmarks. Crisis-period firms exhibited survival rates between 24% and 31%, consistently lower than pre-crisis firms (36%) and well below national survival benchmarks for comparable firm ages (48.5%–61.2%). These results support Hypothesis 1, showing that firms founded amid the Pearl River flood and water system collapse had significantly lower survival.

Hypothesis 2 stated that businesses found in the post-crisis recovery period will have higher survival rates than businesses established prior to the crisis, reflecting post-disaster conditions as an asset of newness. Post-crisis cohorts (2023–2024) were compared to pre-crisis firms (≤ 2019). The 2023 cohort displayed a survival rate of 38%, which is above Jackson’s pre-crisis firms (36%) although below the national benchmark (67.6%). The 2024 cohort exhibited a survival rate of 99%, far exceeding both Mississippi (75%) and national averages (79.3%). The 2024 post-crisis startup cohort’s 99% one-year survival rate likely reflects its short exposure period and the unique post-crisis environment. New businesses launched immediately after a crisis often benefit from recovery resources, support programs, and adaptive opportunities, yielding unusually high early survival (Davidsson & Gordon, 2016; Simón-Moya et al., 2016). Furthermore, some business closures from this cohort may not yet be officially recorded, which can temporarily inflate survival figures. While this percentage is high, it arguably reflects short-term benefits following the crisis and warrants follow-up in future studies. Overall, these findings partially support Hypothesis 2.

Hypothesis 3 stated that during infrastructure crisis, older businesses are more likely to dissolve than younger businesses, reflecting the exogenous shock on structural inertia. We compared survival rates of pre-crisis firms (≤ 2019) to crisis-founded firms (2020–2022). Pre-crisis firms exhibited a survival rate of 36%, which was higher than the Crisis-cohort 2020 (28%), 2021 (24%), and 2022 cohort (31%). Compared to national benchmarks, the pre-crisis Jackson survival rate of 36% was substantially lower (49%). These results do not fully support Hypothesis 3. Structural inertia appeared to diminish their survival relative to national peers, but not in comparison to the Jackson Crisis-cohort.

Hypothesis 4a stated that in industries highly dependent on water infrastructure, the liability of newness is less significant, reflecting that older businesses in those industries also struggle to operate during a water infrastructure crisis. Logistic regression models (Table 3) compared infrastructure-dependent industries with infrastructure-independent industries. Results showed both groups were significant predictors of survival ($\chi^2 = 1$, $p = .001$). However, the direction of the coefficients contradicted expectations. Infrastructure-dependent firms had slightly better odds of survival relative to the reference group, while infrastructure-independent firms (NAICS 51, 54) showed higher odds of dissolution. Thus, Hypothesis 4a was not supported. One interpretation is that infrastructure-dependent industries may have benefited from emergency aid and policy attention. For instance, essential sectors often receive prioritized assistance after disasters, which can bolster incumbent firms’ survival (Corey & Deitch, 2011). This external support may have mitigated the expected disadvantages in those industries.

Table 3: *Logistic Regression of Infrastructure-Dependent vs. Infrastructure-Independent Firms*

Variables	<i>B</i>	S.E.	Wald	<i>df</i>	<i>Exp (b)</i>	<i>p</i>
NAICS Code 62	.008	.001	161.546	1	1.008	<.001
NAICS Code 72	-.004	.001	40.787	1	.996	<.001

NAICS Code 23	-.006	.002	16.978	1	.994	<.001
NAICS Code 51	-.007	.001	33.435	1	.993	<.001
NAICS Code 54	.002	.001	19.198	1	1.002	<.001
Constant	-.5.21	.010	2637.163	1	.594	<.001

*** $p = .001$

Hypothesis 4b stated that industries with public-facing sectors will have higher dissolution rates during a water infrastructure crisis, reflecting customer demand shifts. Logistic regression models (Table 4) tested public-facing industries against non-public-facing industries. Results indicated that Retail (NAICS 44–45) significantly increased the odds of dissolution ($\chi^2 = 1$, $p = .001$), while Management of Companies (NAICS 55) significantly decreased failure odds ($\chi^2 = 1$, $p = .001$). Arts/ Entertainment (NAICS 71) and Finance (NAICS 52) were not statistically significant. These findings partially support Hypothesis 4b.

Table 4: *Logistic Regression of Public Sector Firms vs. Non-Public Sector Firms*

Variables	<i>B</i>	S.E.	Wald	<i>df</i>	<i>Exp (b)</i>	<i>p</i>
NAICS Code 44-45	-.017	.001	686.459	1	.983	<.001
NAICS Code 71	-.001	.001	1.572	1	.999	.210
NAICS Code 52	.000	.001	.078	1	1.000	.780
NAICS Code 55	.020	.002	161.785	1	1.020	<.001
Constant	-.434	.010	2068.363	1	.648	<.001

*** $p = .001$

Discussion

Our study examines the effects of infrastructure crises—such as Jackson’s 2020 flood and 2022 water system failure—on the survival of young and established businesses. Our results demonstrate that young businesses have increased likelihoods of failure following infrastructure shocks, suggesting that organizational age is an important variable when examining crisis survival. This finding aligns with the theory that young firms lack the legitimacy, resources, and routines to withstand environmental turbulence (Freeman et al., 1983). There is also the assumption that established businesses have the accumulated human, social, and financial capital to weather shocks that disrupt new businesses (Brüderl & Schüssler, 1990; Thornhill & Amit, 2003). Our findings that the established businesses in our sample failed at rates comparable or higher to national averages for new businesses challenge this assumption and suggest that factors like infrastructure stability can moderate the effects of firm age (Aldrich & Fiol, 1994; Eggers, 2020). Moreover, we observed that ventures founded after the crisis demonstrated notably higher survival rates than those established pre-crisis. This suggests that in a post-crisis environment, newness can sometimes become an asset, as fresh enterprises may be more adaptable to the changed conditions and free of legacy constraints.

Our study also explores the roles of industry characteristics on business survival amid crises. We hypothesized that firms in infrastructure-dependent industries and in public-facing service sectors would be more vulnerable to an infrastructure collapse and found partial support. Consistent with resource dependence arguments (Hillman et al., 2009), businesses in industries requiring reliable water and utilities – such as Accommodation/Food Services and Health Care – experienced elevated failure rates. Further, in comparison, professional and information services had higher survival rates. An interesting finding is that manufacturing companies had low post-crisis survival rates, even lower than many service-based firms. One interpretation is that manufacturing businesses, though not public-facing, were heavily disrupted by the water infrastructure failure (for instance, due to reliance on water for production processes or supply chain interruptions (Haraguchi & Lall, 2015). Collectively, these results highlight the contingent nature of industry effects on business survival under crisis conditions (Herbane, 2010; Kuckertz et al., 2020) and make several contributions to entrepreneurship theory and practice.

First, we extend the literature on the survival of new businesses by demonstrating that the liability of newness is influenced by context. While prior research established that young firms face higher baseline mortality (Aldrich & Fiol, 1994), our findings show that an external infrastructure breakdown can magnify this liability. The confluence of internal vulnerabilities (limited resources, undeveloped routines) with external institutional failure can lead to disproportionately high dissolution of startups and early-stage ventures. Our findings answer recent calls to incorporate environmental shock contingencies into theories of organizational survival (Eggers, 2020; Williams & Shepherd, 2016). Furthermore, ventures launched in the post-crisis period outlasted many older firms, hinting at a potential “asset of newness” wherein the flexibility of new entrants becomes advantageous in a transformed environment.

Second, our work contributes to the emerging research on crises and entrepreneurship. Several entrepreneurship studies address crises with a focus on entrepreneurial responses to financial recessions or acute disasters (Bullough et al., 2014; Doern, 2016). We contribute to this literature with large-sample evidence of how a protracted infrastructure crisis impacts existing businesses across an entire metropolitan economy. The natural experiment of the Jackson Pearl River flood and water crisis’s effects on business survival bridges entrepreneurship research on business survival with institutional theory (Aldrich & Fiol, 1994). In contexts of institutional voids or failures, our study suggests that while the risks to all businesses increase, younger and infrastructure-dependent ventures may be disproportionately impacted.

Third, we contribute to practical discourse on entrepreneurial ecosystems and policy. The findings highlight that improving infrastructure reliability is not merely a public welfare concern but a key component of fostering entrepreneurial sustainability. City and state policymakers can draw from our evidence that investments in water, power, and transportation systems are essentially investments in the survival of new businesses. In addition, support programs during crises might usefully target the most vulnerable groups identified here – young firms and those in

critical service sectors – to mitigate the higher failure risk they face. By clearly identifying which businesses are most at risk in an infrastructure breakdown, our study provides a foundation for more targeted crisis intervention and economic development strategies (Herbane, 2010; Williams et al., 2017).

Limitations and Future Research

Like all research, this study has limitations that temper the interpretation of our findings. First, our analysis is based on cross-sectional data of firm status following the crises, which limits our ability to make strong causal inferences about the timing and process of firm failures. We observe whether firms were active or dissolved as of early 2025, but we cannot determine exactly when or why each firm exited; some closures may be attributable to factors other than the infrastructure breakdown. Second, the study focuses on the single city of Jackson, Mississippi, which has a unique infrastructure context and economic profile. This case-study approach raises questions about generalizability. The patterns we document might differ in other regions or countries with different institutional environments. Third, our measures of survival and industry are broad. We categorize firms by age groups and 2-digit NAICS sectors, which may mask important nuances such as firm size, specific sub-sector dynamics, or adaptive actions taken by firms during the crisis. We also do not directly measure the degree of infrastructure disruption each business experienced.

The findings from this research open several avenues for future inquiry to deepen and extend our understanding of business survival under infrastructure crises. Future studies could include firm-level characteristics such as size, financial resources, leadership experience, or adaptive strategies to determine how these factors interact with firm age during crises (Audretsch & Mahmood, 1995; Gimeno et al., 1997). For example, examining whether startups with greater initial capitalization or support networks fare better in infrastructure failures would enrich understanding of the liabilities of newness (Brüderl & Preisendörfer, 1998; Brüderl & Schüssler, 1990; Cooper et al., 1994). Future research can also test interaction effects. For instance, it would be insightful to see if very young firms in highly infrastructure-dependent industries (e.g., restaurants or hospitals) are disproportionately more vulnerable than their older counterparts, or if certain protective factors mitigate this interaction (Marshall & Schrank, 2014). Additionally, firm size was not analyzed in this study; yet, firm size often increases with firm age, so controlling for size in future models could help isolate the effect of age on survival outcomes (Audretsch & Mahmood, 1995).

To establish causality and generalizability, future work could employ longitudinal methods. A longitudinal study tracking firms before, during, and after an infrastructure crisis would help pinpoint the timing and mechanisms of failure (or survival), offering insight into whether declines were already underway pre-crisis or triggered by the event (Cole et al., 2019). Studies could

analyze multiple cities or regions that experience similar shocks – for example, comparing Jackson’s water crisis outcomes with those of firms in another city that faced a comparable infrastructure failure. Such designs would help isolate the effect of institutional breakdowns from other local factors. Additionally, qualitative case studies or interviews with business owners could shed light on how entrepreneurs perceive and respond to infrastructure challenges, uncovering micro-level strategies that complement quantitative data (Doern, 2016; Williams et al., 2017).

Conclusion

This study examines the complex role of infrastructure crises in business survival, highlighting different implications for organizational age and industry. We find that the advantages of firm maturity can rapidly diminish when fundamental public infrastructure fails, as even established ventures struggled to survive Jackson’s water system collapse, while younger firms were especially challenged to survive. Industry characteristics also matter, as sectors closely tied to infrastructure functionality experienced higher failure rates than less dependent sectors. These conclusions reinforce and refine classic entrepreneurship theories by showing that liabilities of newness and other firm-level vulnerabilities are exacerbated by institutional failure. Ultimately, even established firms remain vulnerable to resource dependencies (Hillman et al., 2009); such crises also magnify new ventures’ legitimacy challenges (Aldrich & Fiol, 1994). At the same time, firms founded post-crisis occasionally benefited from an “asset of newness,” leveraging flexibility and recovery-driven opportunities to enhance survival (Davidsson & Gordon, 2016).

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