

## War and Pieces: Breaking Down the US Infrastructure Bill during the COVID-19 Pandemic, Economic Uncertainty and the Ukrainian Invasion

By Rick Buczynski, Kent Kirby, Robert Miles, Chris Nichols and Dev Strischek  
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*“Skeptical scrutiny is the means by which deep thoughts can be winnowed from deep nonsense.”  
Carl Sagan*

*The United States’ bipartisan Infrastructure Investment and Jobs Act (IIJA) offers some unique, unprecedented business opportunities for commercial banks, major construction management firms, manufacturers of construction-related products, Wall Street investors, insurance carriers, among others.*

*Although much has been written about the legislation that went into effect January 1, 2022, there has been no comprehensive, detailed study providing micro-level decision-support tools and analysis until now. This is what this IBISWorld white paper is all about: evaluating the IIJA’s risks and rewards while COVID-19 (coronavirus) continues to infect people, the economy wrestles with inflation and the Ukraine-Russia conflict disrupts international markets.*

### About the Authors

Dr. Rick Buczynski is IBISWorld’s Chief Economist responsible for developing a wide range of risk management tools including the company’s Industry Early Warning and Concentration Risk Systems. Rick has published numerous articles on risk management and how economic forces influence credit risk. Prior to joining IBISWorld, Rick spent more than 20 years with Nobel Laureate in Economics Professor Lawrence Klein’s team of researchers at Wharton Econometrics (WEFA).

Kent Kirby is currently the Client Experience Director at DiCOM Software LLC, the leading provider of automated credit risk management software for banking. Mr. Kirby recently retired from a 40-year career in banking, with assignments encompassing lending, loan review, credit administration, portfolio management and credit policy. His last assignment was as the Senior Credit Policy Officer for Commerce Bank, based in Kansas City, MO.

Chris Nichols is Director of Capital Markets at SouthState Bank, responsible for several departments including relationship profitability pricing, hedging, secondary loan trading, SBA Small Dollar Loans, payments, fintech investments and innovation. Chris is the author of SouthState Banks’ popular “Banker to Banker” blog.

Robert Miles is a Senior Analyst with IBISWorld primarily focused on modeling and data to lead research initiatives and product development. He supports the IBISWorld Risk Ratings, and in conjunction with our Chief Economist, implemented the recalibration of the rating model and our ongoing model management activities. Robert has been a part of our internal macro forecasting team and has experience as an industry research analyst covering a broad range of sectors.

Dev Strischek is principal for Devon Risk Advisory Group LLC. Formerly senior credit policy officer at SunTrust Banks Inc., Atlanta, and former chair of the Risk Management Association (RMA), Dev continues working in the risk management arena by advising, consulting, teaching, and training in risk-related topics. His writings cover a wide range of lending and credit subjects, and he is author of *Analyzing Construction Contractors* published by RMA.

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## 1. Preamble

US politicians have debated the rebuilding of our aging infrastructure for decades. 10 years ago, prior to the 2012 general elections, Buczynski and Strisczek authored an article<sup>1</sup> contrasting many of the partisan philosophical issues central to the debate.

How things have not changed! To quote this paper, “Going forward, we believe that it makes sense to assume more of the same: gridlock and uncertainty—or, at best, marginal compromises that probably won’t change the status quo much for the rest of this year and into 2013.” The authors could have been more prophetic. 2013? Try 2021.

Nonetheless, at long last, a bipartisan Congress approved the 2,702-page, \$1.2 trillion Infrastructure Investment and Jobs Act (IIJA), which went into effect January 1, 2022, with funds being distributed over five fiscal years and allocated by state. The legislation includes \$550.0 billion in new investments above projected federal spending in several areas, including transportation, water clean-up, the environment, the power grid and broadband.

Is this good, long-awaited news? Another “New Deal,” a Rooseveltian, Keynesian approach resurrected?

Yes, to a point. However, several latent risks lurk in the act’s fine print that need to be culled from the myriad of IIJA’s business opportunities. Conventional wisdom has “Wisdom of Crowds<sup>2</sup>” merits, but as Mark Twain warned, “Whenever you find yourself on the side of the majority, it is time to pause and reflect.”

These latent risks and the Infrastructure bill’s opportunities are critical to many of IBISWorld’s clients, including commercial banks, major construction management firms, manufacturers of construction-related products, Wall Street investors and insurance carriers.

## 2. Our Objectives

Much has been written about the IIJA, some addressing the potential macroeconomic effect (consult an August 2021 Congressional Budget Office report<sup>3</sup>) with others, such as the House Committee on Transportation and Infrastructure<sup>4</sup>, detailing key aspects of the legislation. Still, others questioned the efficacy of the Bill<sup>5,6</sup>, but that is not what this report is about.

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1. Rick Buczynski and Dev Strisczek, “Post-Election Politics and Policies: Opportunities and Challenges for C&I Lending,” *The RMA Journal*, November 2012.

2. James Surowiecki, “The Wisdom of Crowds,” Anchor Books, 2005.

3. Congressional Budget Office, “Effects of Physical Infrastructure Spending on the Economy and the Budget Under Two Illustrative Scenarios,” CBO Report, August 2021.

4. The House Committee on Transportation and Infrastructure, *Infrastructure Investment and Jobs Act*, Committee Activity Issues, November 2021.

5. <https://www.washingtonpost.com/politics/2021/11/09/false-claim-that-only-11-percent-infrastructure-bill-goes-real-infrastructure/>

6. <https://reason.org/transportation-news/analysis-of-the-bipartisan-infrastructure-bill-how-buy-america-undermines-transit-and-more/>

Our objectives are straightforward—identifying and evaluating the likely risks and rewards arising from the law:

- Identify industries and sectors that could potentially benefit from the bill.
- Reveal the act’s latent risks associated with possible resource constraints, labor shortages, supply chain disruptions, including an over-reliance on imports of critical intermediate goods, plus inflationary supply chain stress related to the Ukraine and Russia conflict. In this context, we will leverage the findings published in a recent IBISWorld report on bottlenecks<sup>7</sup>.
- Develop a plug-and-play strategic tool that clients can use to pinpoint existing exposures while assessing risks and opportunities. This same methodology was employed in our bottleneck report and IBISWorld’s COVID-19 shock assessment application<sup>8</sup>.
- Assist clients in developing call prep questions integral to sales efforts.
- Suggest a framework to analyze construction contractors.
- Provide useful, informative links to help decision-makers navigate through a maze of complex challenges.

### 3. But First, Some Required Reading

Chris Nichols’ November 2021 blog<sup>9</sup> provides an excellent summary of the act’s effect on banking and some useful tips for bankers, but IBISWorld’s nonbank clients also should consult this easy-to-read piece. Nichols referred to several free resources, most notably from the National Association of Counties<sup>10</sup> and the Brookings Institution<sup>11</sup>.

You may also want to check out the American Society of Civil Engineers 2021 report<sup>12</sup>. For those keen on airport infrastructure, refer to the Federal Aviation Administration’s “National Plan of Integrated Airport Systems (NPIAS) – Airports,” study<sup>13</sup>. Finally, if you are interested in your business footprint’s state benefits, there is a “state scorecard” website you will find useful<sup>14</sup>.

### 4. Industry Group Analysis

In line with our objectives, we have identified eight core industry groups primarily involved in physical infrastructure. Smaller projects are not in our wheelhouse, and neither is the huge “reliance funding” allotment for cybersecurity and climate change earmarked to protect infrastructure respectively from cybersecurity attacks and to address flooding, wildfires, coastal erosion and droughts, along with other severe weather events. We judged the resilience funding allotments, more of a budgeted escrow than a clear infrastructure investment, and thus, we decided not to analyze this sector.

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7. Rick Buczynski, Kent Kirby, Robert Miles, and Jocelyn Phillips, “Potential Bottlenecks to Recovery, the Supply Chain Riddle and Credit Risk: What You Should Really Worry About,” IBISWorld Special Report, September 2021.

8. Rick Buczynski, Kent Kirby, Robert Miles, and Dev Strischek, “Pandemic Economics and What Bankers Need to Do to Beat COVID-19’s Shock and Awe Attack: New IBISWorld Tools to Manage Novel External Shocks,” IBISWorld Special Report, May 2020.

9. <https://www.linkedin.com/pulse/infrastructure-act-banking-impact-chris-nichols>

10. <https://www.naco.org/resources/legislative-analysis-counties-bipartisan-infrastructure-law>

11. <https://www.brookings.edu/blog/the-avenue/2021/08/05/the-senate-infrastructure-bill-puts-america-closer-to-another-new-deal/>

12. <https://www.infrastructurereportcard.org/wp-content/uploads/2020/12/2021-IRC-Executive-Summary.pdf>

13. [https://www.faa.gov/airports/planning\\_capacity/npias/](https://www.faa.gov/airports/planning_capacity/npias/)

14. <https://infrastructurereportcard.org/state-by-state-infrastructure/iija-for-states/>

Be aware that the allotment figures reported by the press are inaccurate, and we have done our best to get the numbers right for each of the eight industry groups:

- **Roads and bridges:** As part of the broader transportation allotment, \$110.0 billion has been earmarked for road and bridge construction, and related major projects such as road safety equipment. Further, \$11.0 billion of the funding will find its way to transportation safety programs designed to reduce car crashes and accidents involving pedestrians and cyclists. Funding also finances transportation research at universities.
- **Railroads:** \$66.0 billion goes toward rail maintenance, modernization, and expansion, with the bulk destined for the National Railroad Passenger Corporation, doing business as Amtrak, as the long-struggling railroad receives its largest federal aid payment ever. The bill will help finance Amtrak's repair backlog, upgrade stations, and replace outdated trains. The law, however, provides nothing for high-speed rail.
- **Electric grid:** A massive \$65.0 billion will renovate and expand the United States' ailing power grid. As outlined in a recent *Wall Street Journal* article<sup>15</sup>, the electric grid has three main elements, which include electricity generation, transmission, and distribution. Renovation and expansion will bring business to manufacturers and service providers in addition to involving government officials at the federal, state, and local levels.
- **Water:** The act provides \$55.0 billion for water infrastructure<sup>16</sup>. This clean drinking water initiative is clearly one of the most ambitious aspects of the IJA. This funding contains \$15.0 billion for lead pipe replacement, \$10.0 billion for chemical cleanup, plus funds to provide clean drinking water in American Indian communities.
- **Broadband:** Quoting Nichols's report, "The Act earmarks another \$65B (on top of a similar inject within last year's American Rescue Plan) to help ensure high-speed connectivity throughout the US. The focus will be on rural areas and includes a \$30-per month subsidy for low-to-moderate-income households." A closer look, according to Fierce Telecom<sup>17</sup> revealed "...a total of \$14.2 billion is allocated for an Affordable Connectivity benefit program, which is an extension of the existing Emergency Broadband Benefit program." Therefore, net of this subsidy, this leaves an estimated \$50.0 billion for "physical infrastructure" projects.
- **Airports and ports:** According to the Federal Aviation Administration<sup>18</sup>, "The Bipartisan Infrastructure Law provides \$15 billion for airport-related projects as defined under the existing Airport Improvement Grant and Passenger Facility Charge criteria. The money can be invested in runways, taxiways, safety, and sustainability projects, as well as terminal, airport-transit connections, and roadway projects." The American Waterways Operators disclosed in a press release<sup>19</sup>, "The bill contains \$17 billion for ports and waterways, including \$2.5 billion of 100% federal funding for inland waterways construction and major rehabilitation projects, \$4 billion for U.S. Army Corps of Engineers operations and maintenance, and an increase in funding for the Port Infrastructure Development Program."

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15. <https://www.ase.org/blog/heres-how-infrastructure-bill-improves-grid> and <https://www.wsj.com/articles/americas-power-grid-is-increasingly-unreliable-11645196772?page=2>

16. Adi Kumar, Michael Neary, Sara O'Rourke, and Victoria Williams, "The US Bipartisan Infrastructure Law: Reinvesting in Water," McKinsey & Company, February 2022

17. Diana Goovaerts, "Here's what the U.S. Infrastructure Bill has in Store for Broadband," Fierce Telecom, August 2021

18. <https://www.faa.gov/bil/airport-infrastructure>

19. Press Release, "The American Waterways Operators Applauds Passage of Landmark Bipartisan Infrastructure Bill," American Waterways Operators, November 2021.

- **Public transit:** The bill sets a record for public transit outlays by the Federal government. The aim is to modernize infrastructure while upgrading public transit access for the elderly and people with disabilities. In November 2021, the Federal Transit Administration spelled out the details the act<sup>20</sup>, with most allotments being the \$33.5 billion earmarked for the Urbanized Area Formula Program<sup>21</sup> to support transit operations, and \$23.1 billion for the State of Good Repair Program<sup>22</sup> to assist in financing capital projects to maintain public transit systems.
- **Environment:** Various other sectors are beneficiaries of the \$21.0 billion allocated by the bill. Some involve grants, others involve subsidies. These monies will be employed to clean up hazardous waste sites, abandoned mines, and oil and gas wells that are not operational. \$3.5 billion is set aside to help both homeowners and businesses better weatherize their properties.

## 5. Methodology Exposing Risks

We have used four key risk metrics—labor shortage, supply chain, overseas trade exposure, and industry volatility—from IBISWorld’s Bottleneck/Supply Chain report, which we suggest you consult; refer to footnote 7 for more information. Precise details on how these indicators are calculated appear in that study.

1. **Labor shortage:** The aim is to measure potential labor market shortages/talent gaps for skilled and semiskilled workers. The data underlying the calculation employed IBISWorld proprietary data, namely age/employee and wages/revenue ratios. Along with adjustments made for incidence and persistent scarcities of science, technology, engineering and math (STEM) workers, the labor shortage metric serves as a proxy for labor market shortages.
2. **Supply chain:** Quantifying innate supply chain vulnerabilities, this risk factor primarily impacts industries requiring investment and/or supplier switching to plug supply/demand gaps. This includes industries that are capital-intensive, are experiencing chronic under-capacity, cannot easily secure substitute suppliers, are entangled in complex supply chains and/or practicing just-in-time delivery. To reflect potential vulnerability to supply chain risks, we used three of IBISWorld’s proprietary measures, including the degree of an industry’s globalization, capital intensity and profit. Capital intensity reflects the notion that industries in this category may require investment to diversify supply sources, such as having high switching costs. Profit is perhaps less obvious in its implication. In short, industry profit is a marker of relative strength in the value chain, in which higher profit infers greater control over pricing.
3. **Overseas trade exposure:** This metric measures an industry’s dependence on the importation of intermediate goods/commodities and is related to the supply risk index. We used IBISWorld imports/domestic demand ratio for 2019 as a proxy for an industry’s import exposure. Prepandemic figures were used because of the massive distortions in trade during the coronavirus pandemic.
4. **Industry volatility:** Be wary of industries that are inherently volatile, as volatility, or should we say, the lack of predictability of an industry’s performance, is often the bane of risk management. Dismissing this risk factor is serious risk management malpractice. Even if a line of business has been performing well for several years, if it is inherently volatile, it can turn on a dime. We used IBISWorld’s Industry Early Warning System, which calculates the variation of NAICS-granular risk ratings over-the-cycle, such as between 2006 and 2021.

For each NAICS industry that IBISWorld covers, we have defined a risk intensity metric for each of four risk categories above, using a 1 through 9 (low to high) scale constructed in similar fashion to our Industry Risk Rating scoring system<sup>23</sup>.

20. <https://www.transit.dot.gov/about/news/us-department-transportation-announces-key-priorities-funding-public-transportation#:~:text=The%20law%20authorizes%20up%20to,transit%20in%20the%20nation's%20history>.

21. <https://www.transit.dot.gov/funding/grants/urbanized-area-formula-grants-5307>

22. <https://www.transit.dot.gov/funding/grants/state-good-repair-grants-5337#:~:text=The%20State%20of%20Good%20Repair,a%20state%20of%20good%20repair>

23. Details regarding IBISWorld’s Industry Risk Rating System that has been used by hundreds of clients since 2003 is available upon request.

## 6. Results of the Analysis

In Table 1, we combined the eight industry groups defined in Section 4 with the risk metrics discussed in Section 5. In that table, we mapped IBISWorld industry codes to 6-digit NAICS for each industry associated with the respective group and populated the remaining cells with risk scores from the aforementioned IBISWorld report found in footnote 7. *Cells flagged in orange represent industries vulnerable to the respective risk factor<sup>24</sup>.*

Noticeably, the risk metrics we defined in Section 5 are not all encompassing; there may be false positives and situations where the system fails to detect areas of potential risk. To help circumvent this possible shortcoming, we identified feeder, or key supplier, industries for each of the eight industry groups analyzed. We employed IBISWorld’s supply chain concentration risk tools<sup>25</sup> to assist in this process. These are listed in Table 2 although with their associated risk factors.

Finally, for those NAICS concordance geeks out there, analysis of IBISWorld report OD4653 Railroad Track Construction, as seen in Table 1, comes from one of our many special reports we compile given multiple client requests. We mapped this to the very broad NAICS code 237990 “Other Heavy and Civil Engineering Construction” and 336510 “Train, Subway & Transit Car Manufacturing.” Similarly, IBISWorld report OD5955 Wireless Internet Service Providers was mapped to NAICS 517112. In Table 2, 334413 “Solar Panel Manufacturing” is a freshly minted code as per the Census Bureau’s NAICS 2022 definitions.

**Table 1: Warning Flags for Core Industry Infrastructure Groups**

Industry 2017 6-Digit NAICS	IBISWorld Codes	Infrastructure Category	Industry Description	Labor Shortage Risks	Supply Chain Risks	Overseas Trade Risks	Industry Volatility
237310	23731a	Roads & Bridges	Road & Highway Construction	4.78	6.40	1.00	4.80
237990	23731b	Roads & Bridges	Bridge & Elevated Highway Construction	2.25	5.00	1.00	8.61
237990	OD4653	Railroads	Railroad Track Construction	2.25	5.00	1.00	8.61
336510	33651	Railroads	Train, Subway & Transit Car Mfg	6.40	7.13	1.20	8.13
221112	22111a	Electric Grid	Coal & Natural Gas Power	4.60	3.40	1.00	6.44
221113	22111b	Electric Grid	Nuclear Power	7.16	3.40	1.00	3.09
221111	22111c	Electric Grid	Hydroelectric Power	5.23	3.40	1.00	1.00
221115	22111d	Electric Grid	Wind Power	3.40	3.40	1.00	3.01
221114	22111e	Electric Grid	Solar Power	3.40	3.40	1.00	1.00
221121	22112	Electric Grid	Electric Power Transmission	6.56	4.80	1.00	3.18
221210	22121	Electric Grid	Natural Gas Distribution	5.20	3.40	1.00	6.50
237130	23713	Electric Grid	Transmission Line Construction	6.65	3.80	1.00	2.92
221310	22131	Water	Water Supply & Irrigation Systems	5.78	3.40	1.00	5.42
221320	22132	Water	Sewage Treatment Facilities	4.59	3.40	1.00	4.82
237110	23711	Water	Water & Sewer Line Construction	5.74	3.80	1.00	5.30
517112	OD5955	Broadband	Wireless Internet Service Providers	7.00	7.00	1.00	5.00
519190	51711d	Broadband	Internet Service Providers	3.23	4.80	1.00	1.46
488111	48811	Airports/Ports	Airport Operations	5.20	9.00	1.00	1.31
488310	48831	Airports/Ports	Port & Harbor Operations	5.12	2.20	1.00	7.50
483211	48321	Airports/Ports	Inland Water Transportation	2.86	3.40	1.00	5.89
485111	48511	Public Transit	Public Transportation	4.80	9.00	1.00	3.68
541620	54162	Environment	Environmental Consulting	5.69	2.40	1.00	1.00
238910	23891B	Environment	Demolition & Wrecking	6.10	3.60	1.00	6.21
562211	56221	Environment	Waste Treatment & Disposal Services	3.22	6.40	1.00	6.68
562910	56291	Environment	Remediation & Environmental Cleanup Services	5.08	2.40	1.00	6.92
562920	56292	Environment	Recycling Facilities	6.20	3.60	1.00	5.38
238310	23831	Environment	Drywall & Insulation Installers	7.41	5.20	1.00	8.91

24. We applied a similar flagging threshold as IBISWorld’s Industry Risk Rating System, i.e., scores in excess of 5.7 are highlighted.

25. Rick Buczynski and Kent Kirby, “The End of the Credit Cycle? Concentration Risk Revised,” The RMA Journal, May 2019.

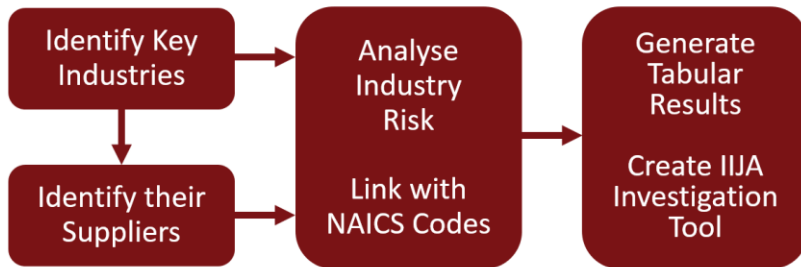
Table 2: Warning Flags for Supplier/Feeder Industries Connected to the Infrastructure Bill

Industry 2017 6-Digit NAICS	IBISWorld Codes	Industry Description	Labor Shortage Risks	Supply Chain Risks	Overseas Trade Risks	Industry Volatility
212210	21221	Iron Ore Mining	7.53	6.57	1.41	8.83
212230	21223	Copper, Nickel, Lead & Zinc Mining	4.36	7.78	1.95	7.35
212311	21231	Stone Mining	6.88	4.38	1.00	2.56
212321	21232	Sand & Gravel Mining	4.42	6.39	1.00	6.64
237120	23712	Oil & Gas Pipeline Construction	3.20	2.40	1.00	3.33
237130	23713	Transmission Line Construction	6.65	3.80	1.00	2.92
237310	23731A	Road & Highway Construction	4.78	6.40	1.00	4.80
237990	23799	Heavy Engineering Construction	2.25	5.00	1.00	8.61
238120	23812	Steel Framing	6.89	5.20	1.00	6.10
238210	23821	Electricians	5.51	3.80	1.00	8.34
238910	23891A	Excavation Contractors	6.10	3.60	1.00	6.21
324121	32412	Asphalt Mfg	4.75	3.95	1.00	4.06
325180	32518	Inorganic Chemical Mfg	6.62	6.70	3.40	4.09
325920	32592	Explosives Mfg	4.38	5.13	1.58	6.99
326121	32612	Plastic Pipe & Parts Mfg	5.59	4.70	1.00	6.81
327310	32731	Cement Mfg	3.88	5.61	1.00	8.85
327320	32732	Ready-Mix Concrete Mfg	3.72	5.00	1.00	8.32
327331	32733	Concrete Pipe & Block Mfg	3.40	6.03	1.00	8.82
327390	32739	Precast Concrete Mfg	6.37	4.04	1.00	8.90
327420	32742	Gypsum Product Mfg	6.73	3.72	1.00	8.07
331110	33111	Iron & Steel Mfg	5.31	5.73	1.29	8.18
331210	33121	Metal Pipe & Tube Mfg	2.89	6.34	1.89	7.56
331221	33122	Steel Rolling & Drawing	3.68	5.00	1.00	4.19
332311	33231	Structural Metal Product Mfg	4.04	6.03	1.00	8.23
332911	33291	Valve Mfg	4.22	5.74	3.57	4.76
333120	33312	Construction Machinery Mfg	7.38	8.04	4.68	5.78
333511	33351	Metalworking Machinery Mfg	3.49	5.74	2.26	5.50
333611	33361b	Wind Turbine Mfg	6.81	6.40	2.19	8.86
333612	33361A	Engine & Turbine Mfg	6.05	7.74	4.93	6.95
333914	33391	Pump & Compressor Mfg	3.85	5.32	3.13	4.97
333921	33392	Forklift & Conveyor Mfg	5.97	4.04	1.69	7.51
334112	33411b	Computer Peripheral Mfg	4.86	6.05	8.51	6.23
334210	33421	Telecommunication Networking Equipment Mfg	5.49	7.08	1.81	8.24
334220	33422	Communication Equipment Mfg	3.93	7.08	6.12	8.27
334413	33441c	Solar Panel Mfg	6.66	5.20	5.71	5.18
335311	33531	Electrical Equipment Mfg	4.38	6.47	3.81	8.14
335921	33592	Wire & Cable Mfg	6.04	6.40	4.56	1.91
336120	33612	Truck & Bus Mfg	4.33	6.47	1.98	6.14
336510	33651	Train, Subway & Transit Car Mfg	6.40	7.13	1.20	8.13
423320	42332	Stone, Concrete & Clay Whsle	3.80	8.22	1.00	6.57
423810	42381	Construction & Mining Equipment Whsle	4.94	8.22	1.00	6.98
423830	42383	Industrial Machinery & Equipment Whsle	3.48	8.28	1.00	7.01
423860	42386	Aircraft/Marine/Railroad Transport Equip Whsle	5.25	8.64	1.00	6.47
424690	42469	Chemical Whsle	5.52	7.86	1.00	5.41
484220	48422	Local Specialized Freight Trucking	4.95	5.00	1.00	7.29
488210	48821	Rail Maintenance Services	4.64	2.40	1.00	1.00
518210	51821	Data Processing & Hosting Services	6.40	2.40	1.00	3.16
532411	53241	Heavy Equipment Rental	3.00	3.40	1.00	8.31
541310	54131	Architects	6.75	2.40	1.00	5.99
541330	54133	Engineering Services	5.55	2.40	1.00	7.97
541620	54162	Environmental Consulting	5.69	2.40	1.00	1.00

## 7. IBISWorld's Infrastructure Investigation Tool

Sections 4 and 5 define the structure and methodology yielding the results in Section 6. It also suggests an architecture for a workbook tool providing clients with useful data, while acting as a guide for further client investigations. Figure 1 illustrates our approach.

Figure 1: Basic Architecture of the Study Using a Stepwise Approach



This sequential approach is summarized as follows:

1. Identify core IJJA industries: Define which specific industries fall under each of the eight industry groups found in Section 4.
2. Identify the supplier (feeder) industries for each industry in all eight industry groups: An example is presented in Table 3. The remaining seven industry groups can be found in the appendix.
3. Analyze the industry risk for each IJJA industry: This uses the four risk factors outlined in Section 5.
4. Link all industries with NAICS codes: This is a common practice for many of IBISWorld's clients, especially commercial banks.
5. Generate summary tables of results: Tables 1 and 2 help guide investigations into the dynamics of industry linkages pertaining to infrastructure. They are available to all clients as workbooks.
6. Create the infrastructure investigation tool: The tool makes use of IBISWorld's framework for identifying related risks within an industry's supply chain and enables the user to further investigate targeted industries. Its design follows IBISWorld's algorithm employed in both our COVID-19 and Bottleneck/Supply Chain apps.



**Table 3: Core and Supplier Industries for Road and Bridge Infrastructure**

NAICS Codes 2017 6 Digit	Roads and Bridges	Supplier NAICS 2017 6 Digit	Supplier Industries
237310	Road & Highway Construction	324121	Asphalt Mfg
237990	Bridge & Elevated Highway Construction	327320	Ready-Mix Concrete Mfg
		327331	Concrete Pipe & Block Mfg
		331221	Steel Rolling & Drawing
		532411	Heavy Equipment Rental
		212311	Stone Mining
		212321	Sand & Gravel Mining
		327320	Ready-Mix Concrete Mfg
		327331	Concrete Pipe & Block Mfg
		331110	Iron & Steel Mfg
		423810	Construction & Mining Equipment Whsle
		212321	Sand & Gravel Mining
		327310	Cement Mfg
		333120	Construction Machinery Mfg
		423810	Construction & Mining Equipment Whsle
		423320	Stone, Concrete & Clay Whsle
		327390	Precast Concrete Mfg
		541310	Architects
		541330	Engineering Services

More about the tool: first, it is not designed as a system or model to make predictions. Rather, it is engineered as a decision support application. Priorities, specifically targeted sectors, are defined by the client, then the app builds a navigational mapping facilitating additional research by the client around those priorities.

The tool can define priorities via exposures inputted by the user. Although this utility was developed primarily with IBISWorld’s banking clients in mind, any quantitative client relying on NAICS codes will find this facility useful. The tool can function without any exposure data, enabling the user to focus on a selected industry group and that group’s dynamics. For example, nonbanks have found this process beneficial in analyzing their client base’s user fees.

An added layer of specificity can be included via state-by-state data inputs. The core data is the same as used to construct Tables 1 and 2, while the inter-industry dynamics of the supply chain found in the tool enhance the usefulness of these flat tables.

Finally, supplemental occupational data from the US Bureau of Labor Statistics is incorporated into the tool. This enables the user to take a deeper dive in understanding industries of interest. While the metrics defined in the tables determine general risk factors, one can sift through occupational data to identify relevant factors at the regional level. A hypothetical example: Industry A in the Southeast relies heavily on construction occupations and there is a high density of these employees in the area. However, Industry B feeds into Industry A, but their key occupational needs are not well matched in that location. This type of bottleneck can lead to inordinate and costly delays in a project’s implementation.

## 8. Call Prep Briefs for Your Business Development Team

IBISWorld clients reading this report are familiar with our iExpert reports, which are designed to assist their business development teams in understanding prospective client needs, and the shared risks experienced prior to pursuing or even closing a deal. For example, here are some snippets from call-prep reports on IBISWorld's website for Table 1's Railroad Track Construction industry report:

- Has your company been exposed to volatile input prices?
- Is your company located near key end markets?
- Do you notice an uptick in revenue when federal funding is high?
- Do you monitor the price of steel?
- When the price of steel rises, how does that affect demand?

We suggest that clients draw on IBISWorld's iExpert to develop and ask their own proprietary questions as appropriate.

## 9. Analyzing Construction Contractors<sup>28</sup>

Depending on the stage in the business cycle, nearly 1.0 million individuals and entities claim to be contractors. The industry is extremely bar-belled with a few large contractors at one end and many thousands of small contractors at the other end of the bar. General contractors (GCs) employ several subcontractors to provide products and services beyond a GC's skill set, especially those sub craftsman handling plumbing, heating, air-conditioning, electrical, carpentry, drywall, painting, among other skills.

Both residential construction and commercial construction activity fluctuate with interest rates because both developers and contractors are heavily leveraged, and developers can only offer collateral vulnerable to market supply and demand also affected by interest rate levels and real estate capitalization rates that rise and fall with general interest rates. GCs and subs typically give lenders their progress billings as collateral, but progress billings are largely payments to reimburse for materials and labor. Developers generally hold back some portion of the contract as retention, say 10.0%, to cover any defects noted on punch lists, and contractors are paid their retention after the project receives a notice of completion, indicating it is finished. The construction industry historically has operated with very thin gross profit averaging 20.0% or less, so the 10.0% retention check amounts to receiving half the gross profit dollars in one payment well after the contraction work is done.

Low profit, volatile materials prices and labor shortages are exacerbated by supply chain kinks interrupting the flow of materials and by the dominance of fixed price contracts dampening the ability of contractors to reprice as their key inputs become costlier. Recent rollercoaster rides in key construction commodity prices such as lumber, oil and copper illustrate a tough environment, and lenders have been reluctant to offer longer-term financing to contractors essentially engaged in building short-term projects and offering only progress billings as collateral. The inability to lock in lower interest rates leaves contractors vulnerable to short-term interest rate increases, and this costly debt load means contractor leverage is mostly short-term borrowings subject to more frequent repayment calls.

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28. Dev Strischek, "Analyzing Construction Contractors," Risk Management Association (3rd edition) 2005.

## 10. Other Risks Not Covered Here: Pay Attention!

There are numerous risk factors not addressed in this report, yet worthy of consideration:

- **Political risks:** Despite midterm elections in late 2022, we do not anticipate any headwinds to obstruct or truncate the bipartisan infrastructure bill. Nonetheless, political risks will be significant on a state and local level. It is all about how funds are meted locally.
- **State and local economic risks:** These are intertwined with state and local political risks. For IBISWorld clients, we suggest you consult our state and county level analysis available on our website.
- **Geopolitical:** Russia's invasion of Ukraine is stark reminder on how the world has become so inextricably interconnected, with reverberations cascading down with vengeance from the very top of the global geopolitical landscape. Economic and financial risks have peaked across the board. Consider how this conflict has suddenly endangered world food markets; Ukraine and Russia supply about 30.0% of global wheat exports, and Ukraine is a major market maker in corn, barley, millet, rapeseed, soybeans and sunflower seed. Most of these crops are planted in April and May, and the war has disrupted shipments from both Ukrainian and Russian Black Sea ports. (Source: Ukraine, Russia, Volatile Ag markets, *Market Intel*, March 16, 2022, American Farm Bureau Federation FB.org)
- **Additional labor stresses:** Longshore labor negotiations could further disrupt US freight markets<sup>26</sup>. This force also clearly stresses the supply chain.
- **Inflation:** Ongoing, mounting inflationary pressures can erode the real purchasing power of the bill and its affect, as well as your opportunities. This is related to all the four risk factors articulated in Section 5. Regarding Federal Reserve monetary policies, the Fed is most interested in "core inflation" that excludes volatile food and energy prices. We believe that Fed interest rate policies will not be overly influenced by the Ukraine and Russian conflict. Stresses lie on many other fronts.
- **Commodity prices:** There are a myriad of commodity prices under serious siege<sup>27</sup> even prior to the Ukraine-Russia conflict. These global supply chain disruptions live to see another day.
- **Pandemic:** Pundits have proclaimed that the coronavirus pandemic is waning, on multiple occasions. We have advised our clients to continue to use IBISWorld's pandemic tool (see footnote 8) and hope for the best.

## 11. Wrapping it Up

Mark Twain once opined: "We have the best government money can buy." By that measure, the current administration has certainly made the IJIA a luxury item, and in this report, we have tried to open this gift box to show what lies inside—both the opportunities and the risks. We have offered some tools that can be used in assessing the risks and rewards associated with potential initiatives.

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26. <https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/shipping/121521-feature-uswc-longshore-labor-negotiations-could-further-disrupt-us-freight-markets>

27. <https://www.theguardian.com/business/2022/feb/24/gas-and-oil-prices-surge-amid-fears-of-global-energy-shortage-russia-ukraine>

In our view, it is more about sales efficiency than infrastructure project failures. Therefore, here are two observations:

- The first: Have you considered factors beyond financial viability? Do you consider physical production resources such as the availability of labor, both blue and white collar labor, supplier risks along the value chain, overseas trade vulnerability and the intrinsic volatility of industries necessary to undertake major infrastructure projects, as discussed in Section 5?
- The second: Have you considered that in recent years about half of corporate cash profits have been spent on stock buybacks instead of investment in private infrastructure? Thus, it is not only crumbling roads and rusting bridges needing public infrastructure repair and replacement, but also worn-out and obsolete plant and equipment, hardware and software in the private sector. Infrastructure spending must occur in both the public and private sectors. Think about the short-sightedness of replacing drawbridges across the Mississippi River only to have the moving parts controlled by obsolete, hacker-prone software or new airports managed by air-traffic controllers still relying on 20-year-old computers.

Finally, the dearth of private investment sadly shortchanges workforce training where US companies have lagged well behind international competitors across the Atlantic and Pacific. The infrastructure bill creates a greater need for workforce training as argued in a report published in August 2021<sup>29</sup>. One can only hope that pervasive and persistent labor shortages will induce companies to become more proactive and aggressive in upgrading employee training as more substantial tax incentives are considered<sup>30</sup>. Remember Mark Twain's other observation about the role of money in politics: "There are two things that are important in politics. The first is money, and I can't remember the second." Maybe it is time to reallocate corporate cash from treasury stock purchases to upgrading human and physical resources.

Opportunities in investing in infrastructure? Indeed. But it is more about investment in your business intelligence and research, rather than seeking out supposedly "free" inside-the-beltway government money doled out with all the necessary, time-consuming paperwork. Our final word: "Think!"

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29. <https://thehill.com/blogs/congress-blog/labor/566215-the-infrastructure-bill-creates-more-need-for-workforce-training>

30. <https://taxfoundation.org/tax-treatment-of-worker-training>

**Appendix: Additional Core and Supplier Industries for the Infrastructure Bill**

**Table 4: Core and Supplier Industries for Railroad Infrastructure**

NAICS Codes 2017 6 Digit	Railroads	Supplier NAICS 2017 6 Digit	Supplier Industries
237990	Railroad Track Construction	212311	Stone Mining
336510	Train, Subway & Transit Car Mfg	332311	Structural Metal Product Mfg
		423810	Construction & Mining Equipment Whsle
		423830	Industrial Machinery & Equipment Whsle
		423860	Aircraft, Marine & Railroad Transportation Equipment Whsle
		333120	Construction Machinery Mfg
		333612	Engine & Turbine Mfg
		331210	Metal Pipe & Tube Mfg
		333511	Metalworking Machinery Mfg
		335311	Electrical Equipment Mfg

**Table 5: Core and Supplier Industries for Electric Grid Infrastructure**

NAICS Codes 2017 6 Digit	Electric Grid	Supplier NAICS 2017 6 Digit	Supplier Industries
221112	Coal & Natural Gas Power	238210	Electricians
221113	Nuclear Power	335921	Wire & Cable Mfg
221111	Hydroelectric Power	333612	Engine & Turbine Mfg
221115	Wind Power	333611	Wind Turbine Mfg
221114	Solar Power	334413	Solar Panel Mfg
221121	Electric Power Transmission	237120	Oil & Gas Pipeline Construction
221210	Natural Gas Distribution	238910	Excavation Contractors
237130	Transmission Line Construction	238120	Steel Framing
		326121	Plastic Pipe & Parts Mfg
		331210	Metal Pipe & Tube Mfg
		335921	Wire & Cable Mfg

**Table 6: Core and Supplier Industries for Water Infrastructure**

NAICS Codes 2017 6 Digit	Water Infrastructure	Supplier NAICS 2017 6 Digit	Supplier Industries
221310	Water Supply & Irrigation Systems	333120	Construction Machinery Mfg
221320	Sewage Treatment Facilities	333914	Pump & Compressor Mfg
237110	Water & Sewer Line Construction	237990	Heavy Engineering Construction
		212210	Iron Ore Mining
		325180	Inorganic Chemical Mfg
		331110	Iron & Steel Mfg
		326121	Plastic Pipe & Parts Mfg
		212321	Sand & Gravel Mining
		327320	Ready-Mix Concrete Mfg
		331210	Metal Pipe & Tube Mfg
		332911	Valve Mfg
		532411	Heavy Equipment Rental
		238910	Excavation Contractors
		212230	Copper, Nickel, Lead & Zinc Mining
		327310	Cement Mfg
		327331	Concrete Pipe & Block Mfg
		541620	Environmental Consulting

**Table 7: Core and Supplier Industries for Broadband Infrastructure**

NAICS Codes 2017 6 Digit	Broadband	Supplier NAICS 2017 6 Digit	Supplier Industries
517112	Wireless Internet Service Providers	237130	Transmission Line Construction
519190	Internet Service Providers	334210	Telecommunication Networking Equipment Mfg
		334220	Communication Equipment Mfg
		335921	Wire & Cable Mfg
		334112	Computer Peripheral Mfg
		518210	Data Processing & Hosting Services

**Table 8: Core and Supplier Industries for Airport and Port Infrastructure**

NAICS Codes 2017 6 Digit	Airports/Ports	Supplier NAICS 2017 6 Digit	Supplier Industries
488111	Airport Operations	237310	Road & Highway Construction
488310	Port & Harbor Operations	333921	Forklift & Conveyor Mfg
483211	Inland Water Transportation	238210	Electricians
		541330	Engineering Services
		237990	Heavy Engineering Construction
		331110	Iron & Steel Mfg

**Table 9: Core and Supplier Industries for Public Transportation Infrastructure**

NAICS Codes 2017 6 Digit	Public Transportation	Supplier NAICS 2017 6 Digit	Supplier Industries
485111	Public Transportation	336120	Truck & Bus Mfg
		336510	Train, Subway & Transit Car Mfg
		488210	Rail Maintenance Services
		333511	Metalworking Machinery Mfg
		331210	Metal Pipe & Tube Mfg
		335311	Electrical Equipment Mfg

**Table 10: Core and Supplier Industries for Environment Infrastructure**

NAICS Codes 2017 6 Digit	Environment	Supplier NAICS 2017 6 Digit	Supplier Industries
541620	Environmental Consulting	325920	Explosives Mfg
238910	Demolition & Wrecking	333120	Construction Machinery Mfg
562211	Waste Treatment & Disposal Services	424690	Chemical Whsle
562910	Remediation & Environmental Cleanup Services	484220	Local Specialized Freight Trucking
562920	Recycling Facilities	532411	Heavy Equipment Rental
238310	Drywall & Insulation Installers	327420	Gypsum Product Mfg