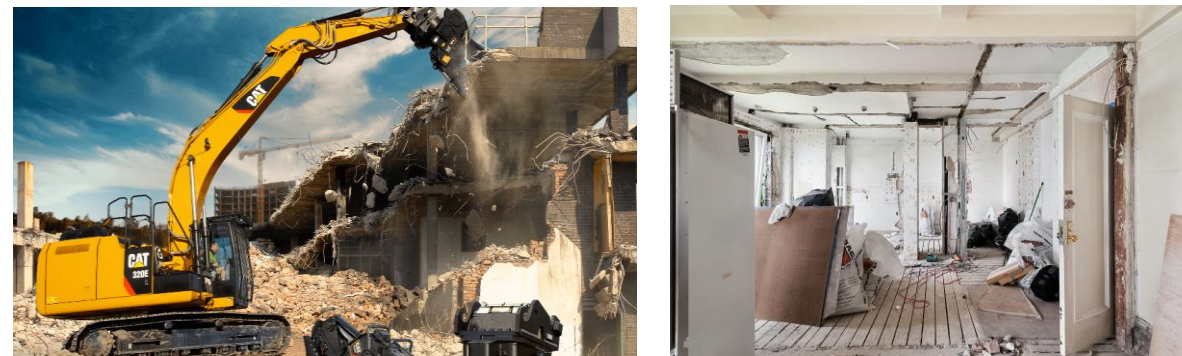


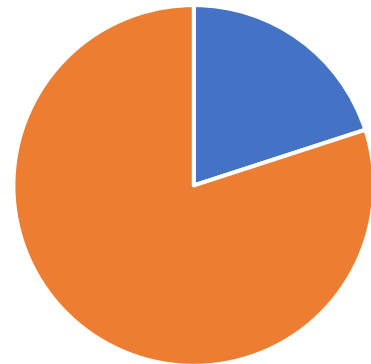
Considerable Factors in Determining the Sustainability Benefits of the Demolition of an Existing Structure for a New Build and of the Renovation of an Existing Structure

The decision between whether to demolish or renovate a building comes down to which one will satisfy the owner's needs and objectives while remaining within budget. This project will identify factors in determining sustainability benefits between a completely new construction project that demolishes the existing structure prior to rebuilding and a renovation project that reuses some or all of the existing structure. Research on construction data, interviews conducted with leading industry members, and journals that reported on both these strategies are presented. This project will examine considerations that reduce the demolition's negative impact on the environment and improve the overall lifecycle of the building, which includes the use of a construction and demolition waste plant to turn that waste into recycled aggregates. The new construction after demolition allows for the installation of modern energy systems that use sustainable and efficient building designs and lead to a long-lasting building lifecycle. Demolition provides higher cost savings and sustainability benefits to the building and its operations due to the ability to reduce the negative impacts of waste by recycling and being equipped with modern technology to improve energy savings through its design and its mechanical, electrical, and plumbing systems. A design that foresees future upgrades or renovations will improve the lifecycle of a building, leading to greater cost reduction and sustainability benefits by making future improvements more feasible and cost-effective.



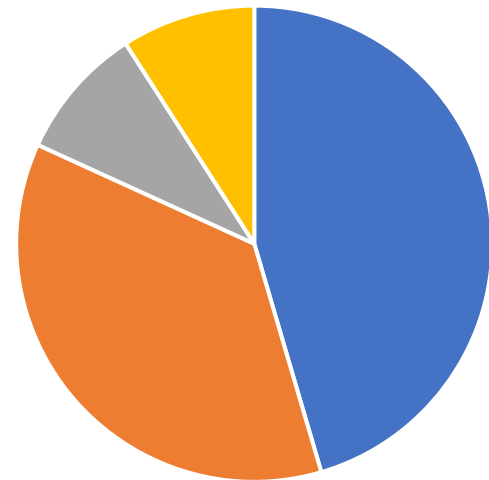
Responses from structured interviews with industry experts

Do time constraints influence the company's decision to choose either a demo or renovation approach on a project?



■ Yes, or often ■ No, or rarely

What factors have influenced your company to perform a demolition rather than a renovation or vice versa?



■ Cost/budget
 ■ Existing structure's condition/ lifespan
 ■ Time
 ■ Zoning Restrictions

Trends in the Industry

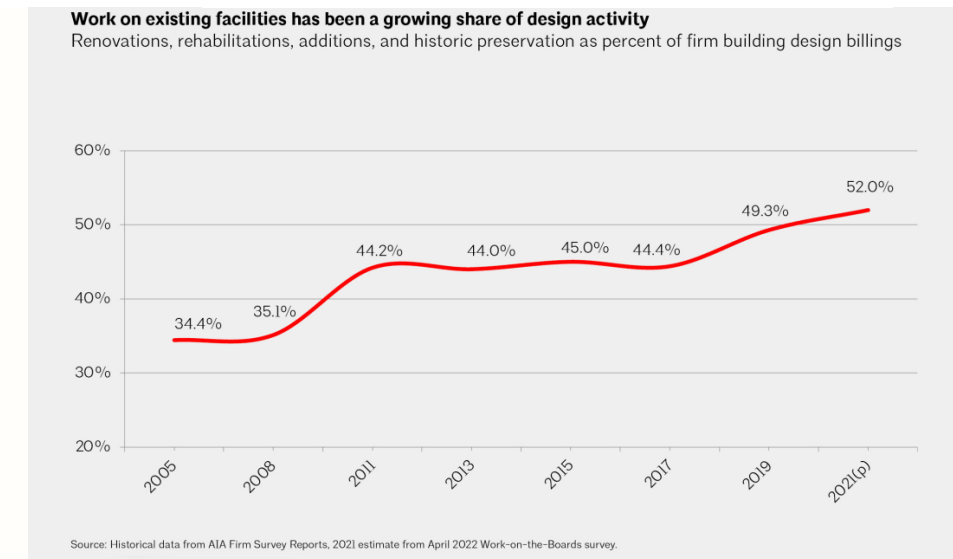


Figure 1. Example of Industry Trends
 Source: Historical Data from AIA Firm Survey Reports, 2021 Estimate from April 2022 Work-on-the-Boards survey (Richards, 2022).

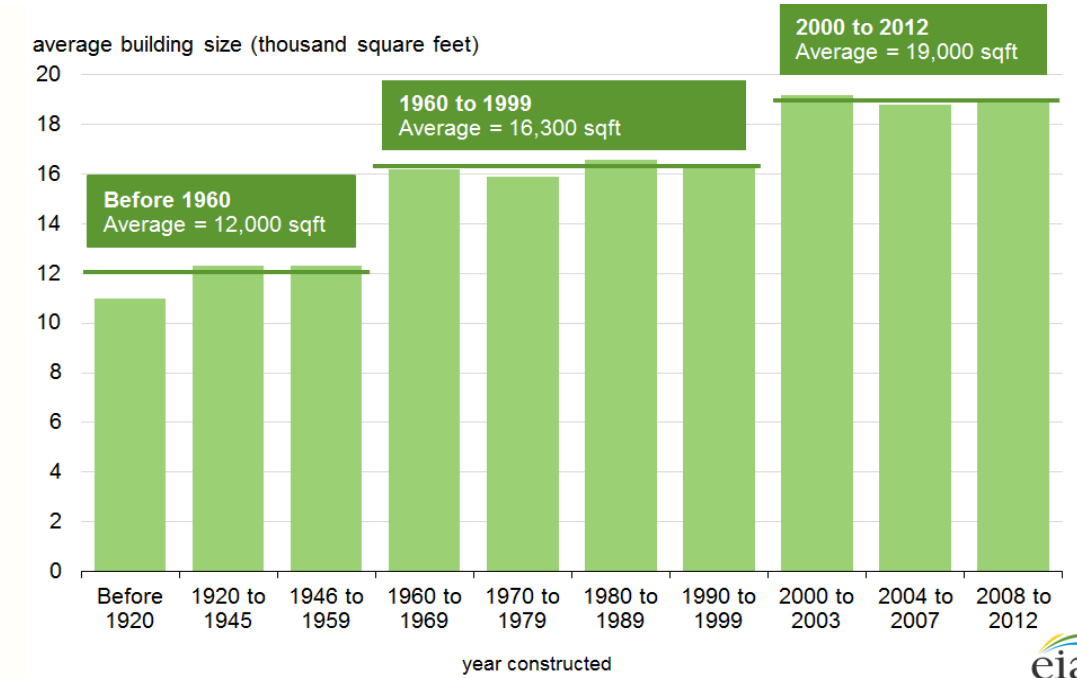


Figure 2. Display of Commercial Buildings' Size Over the Last Century
 Source: U.S. Energy Information Administration, 2012 Commercial Buildings Energy Consumption Survey (EPA).