



College of Art and Design

**Image Permanence Institute**

# **Preliminary Findings from 3D Printing and 3D Printed Objects in Collecting Institutions Survey**

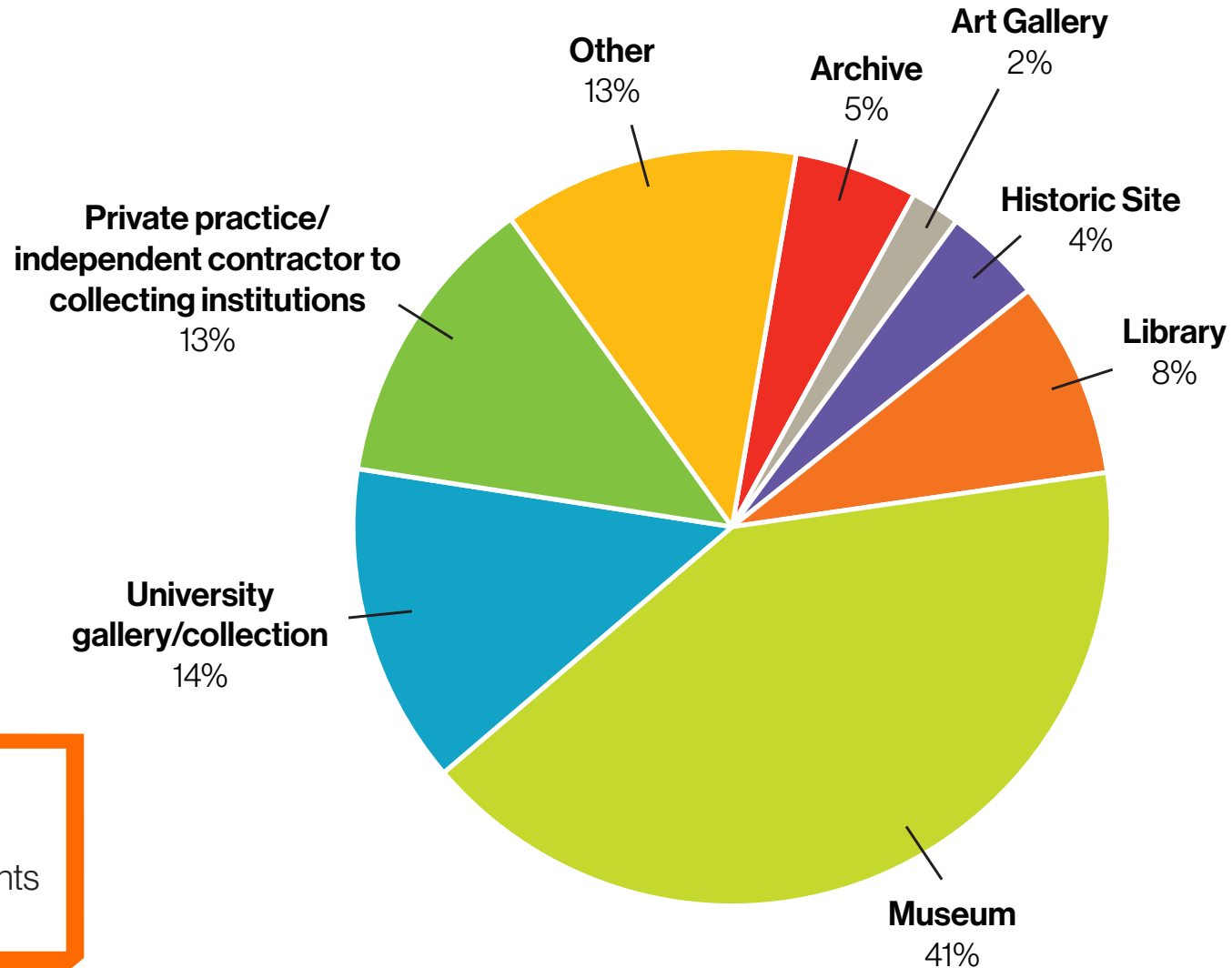
## **Introduction**

The Institute of Museum and Library Services awarded the Image Permanence Institute at Rochester Institute of Technology a National Leadership Grant for Museums to support a three-year research project aimed at building a foundational understanding of how museums are creating, collecting, and consuming 3D printed objects. In May-June 2022, IPI conducted an online survey assessing how collecting institutions are using 3D printing and interacting with 3D printed objects and materials across a broad range of activities. Participants were able to choose different sections of the survey to take depending upon their professional experience with 3D printing. Highlights and preliminary findings from the survey are summarized in this initial report. A full length report will be forthcoming and will be made available at <https://www.imagepermanenceinstitute.org/research/3d.html>.

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# **Overall Survey Demographics**

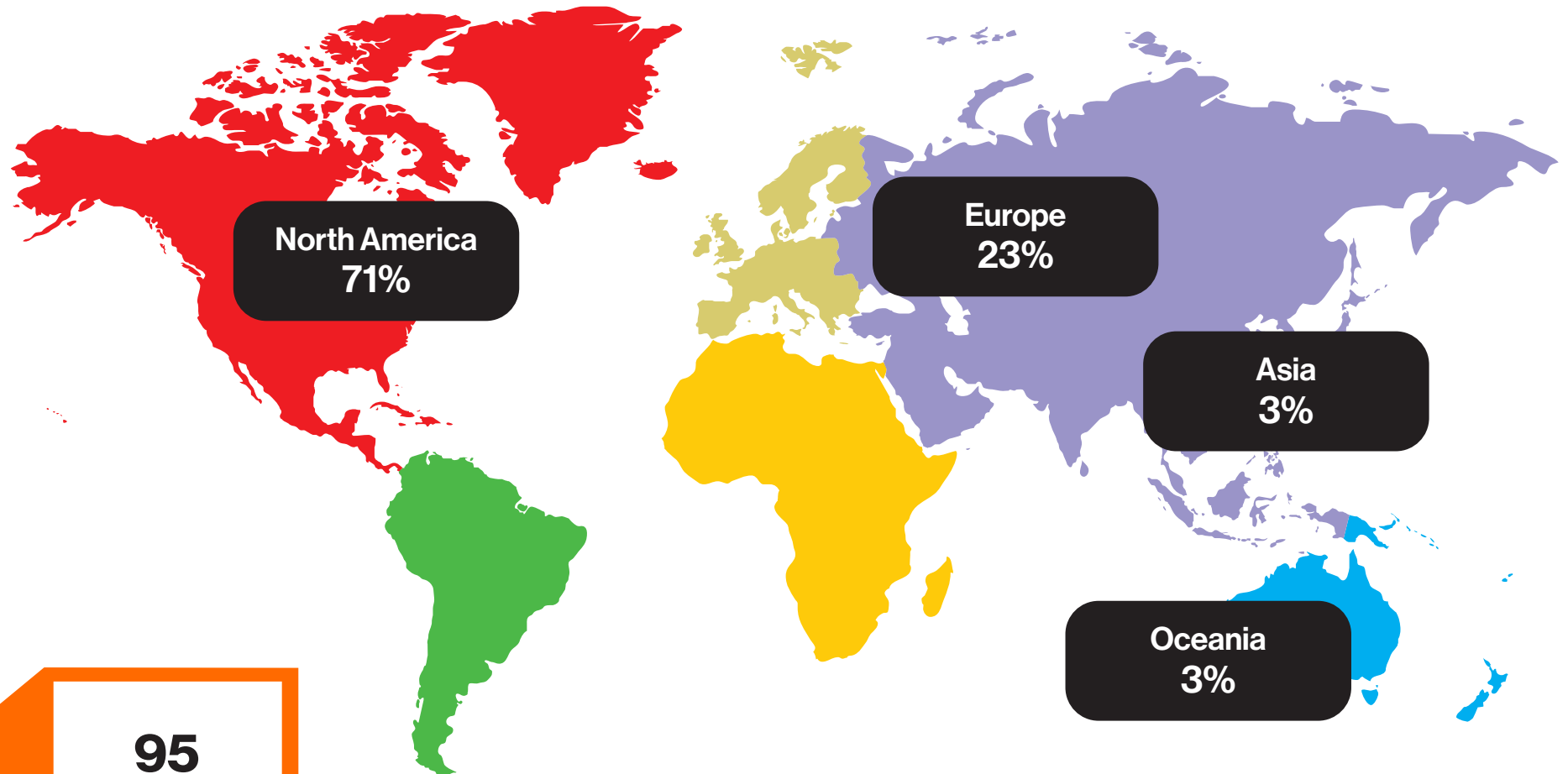
## What type of institution do you work for?



**95**

Respondents

## Where is your institution located?



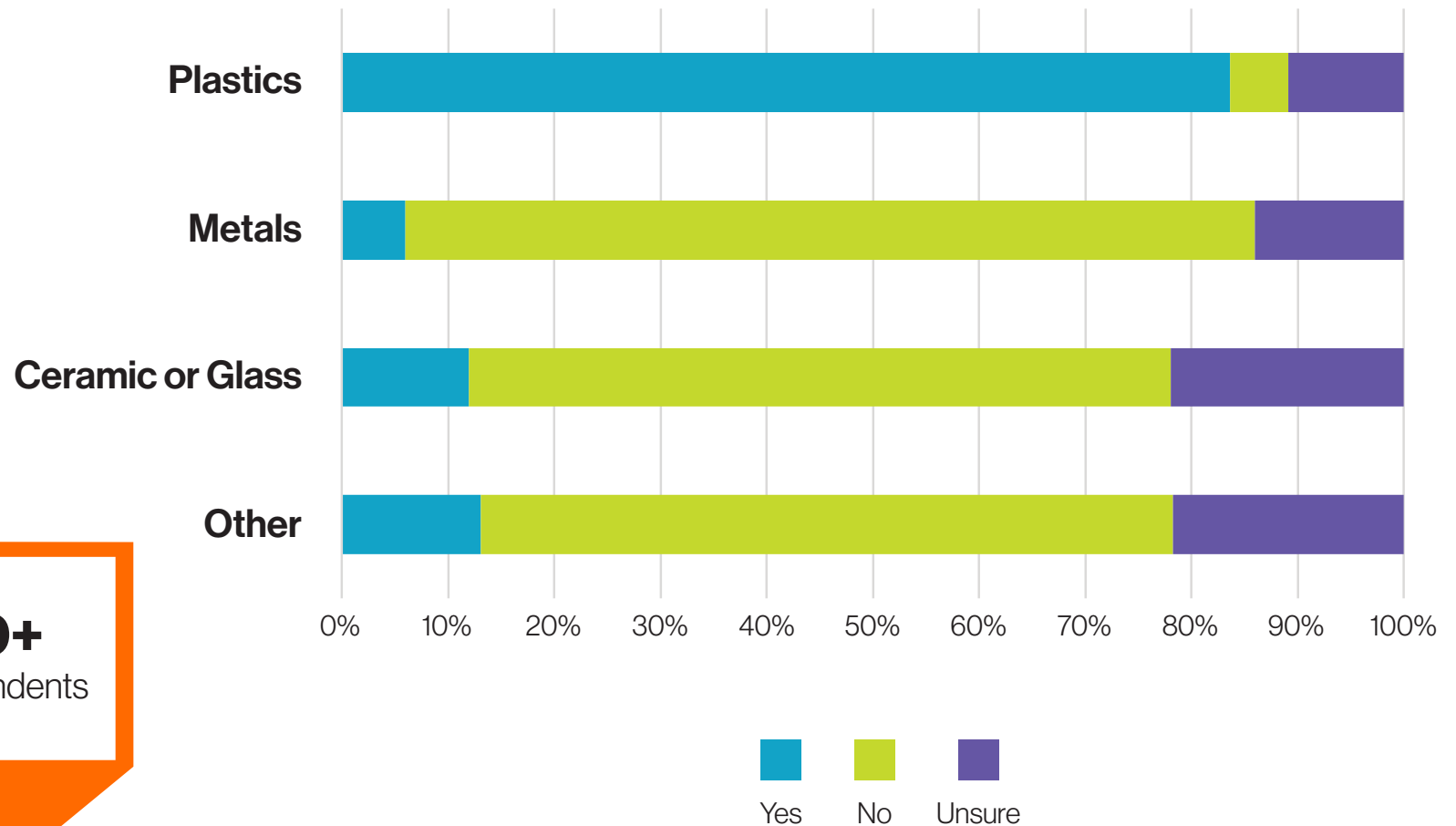
**95**  
Respondents



# **3D Printed Objects in Collecting Institutions: Highlights**

Respondents who chose to take the section of the survey on 3D printed objects in collections indicated that 3D printed **plastic objects** were most commonly represented in their institution's collection.

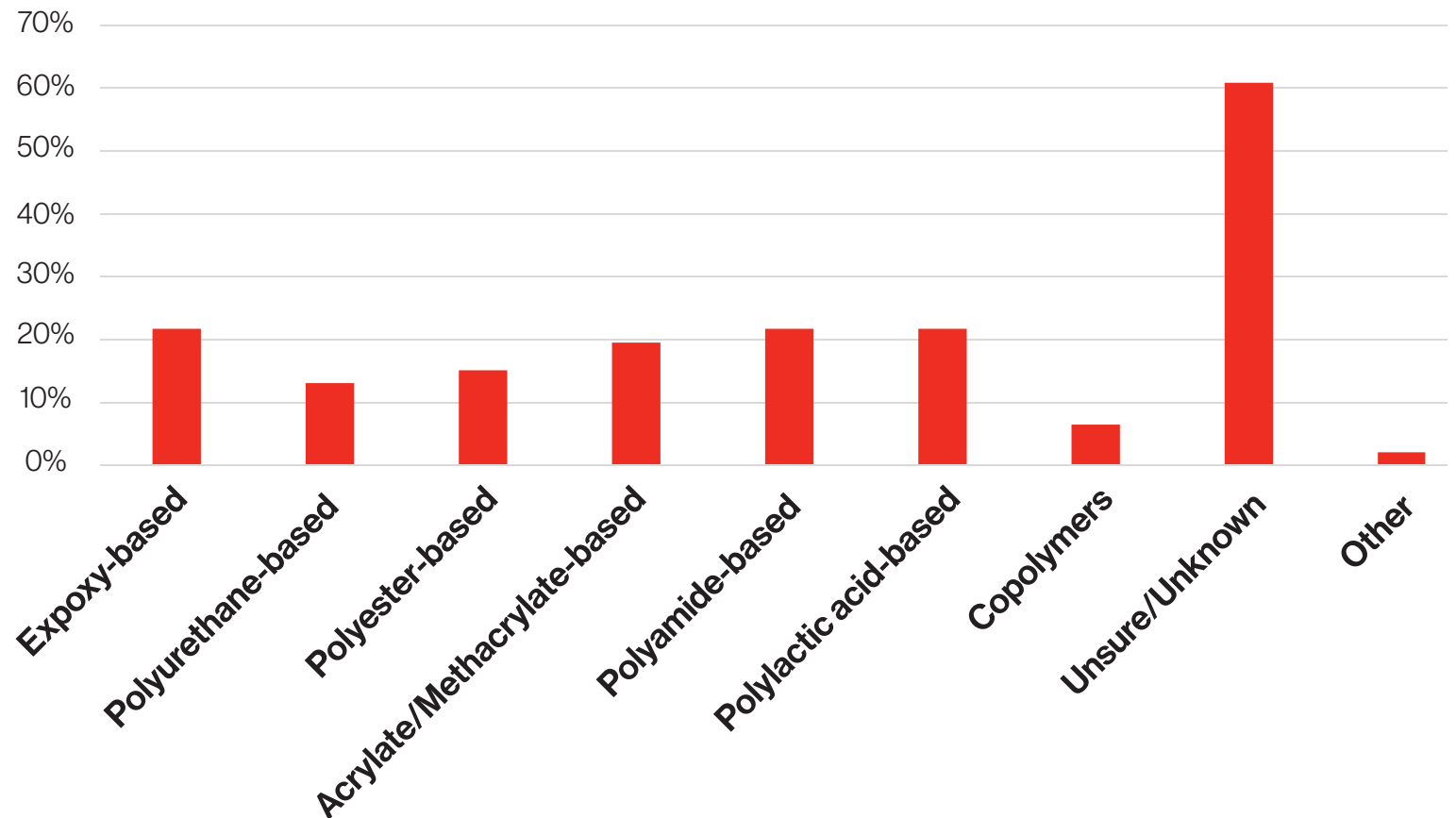
**Are the following categories of 3D printed objects represented in your institution's collection?**



**50+**  
Respondents

Of the respondents that indicated 3D printed plastic objects were present in their institution's collection, the identity of a majority of the plastic types remain **unidentified or unknown**.

### What classes of 3D printed plastics are represented in your institution's collection?

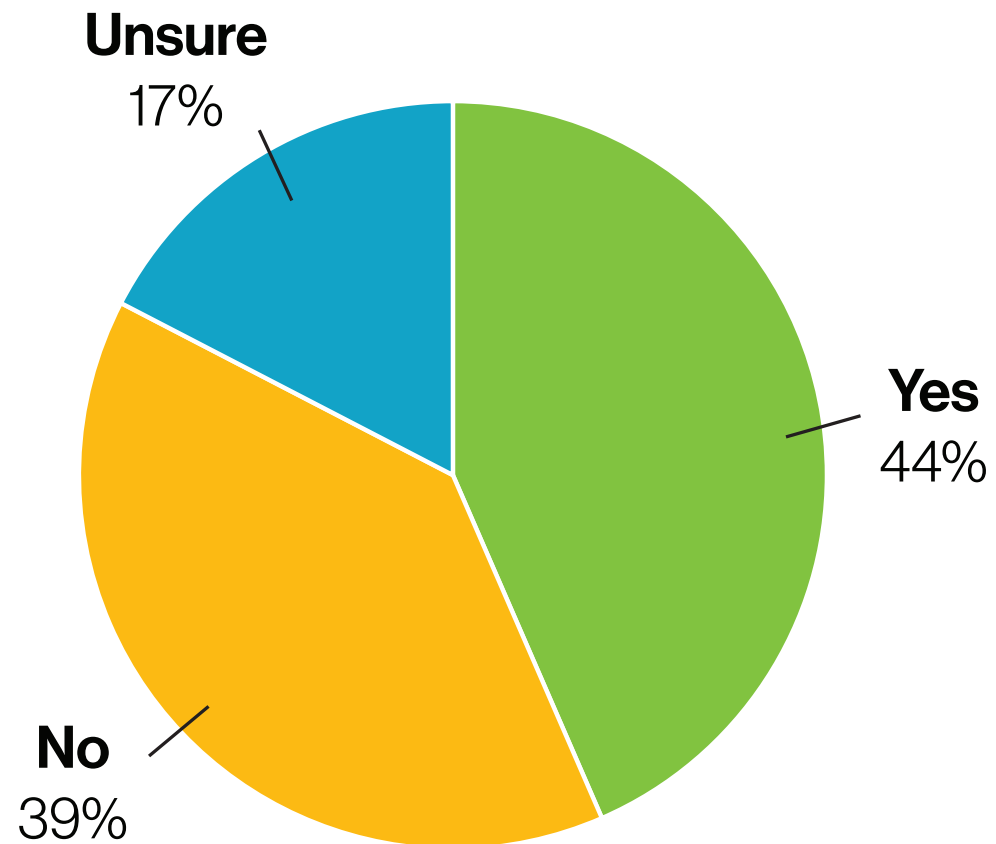


**46**

Respondents

Respondents have collected digital assets (e.g. object files, g-code, etc.) associated with 3D printed objects.

### **Has your institution collected digital assets (e.g. object files, g-code, etc.) associated with 3D printed objects?**



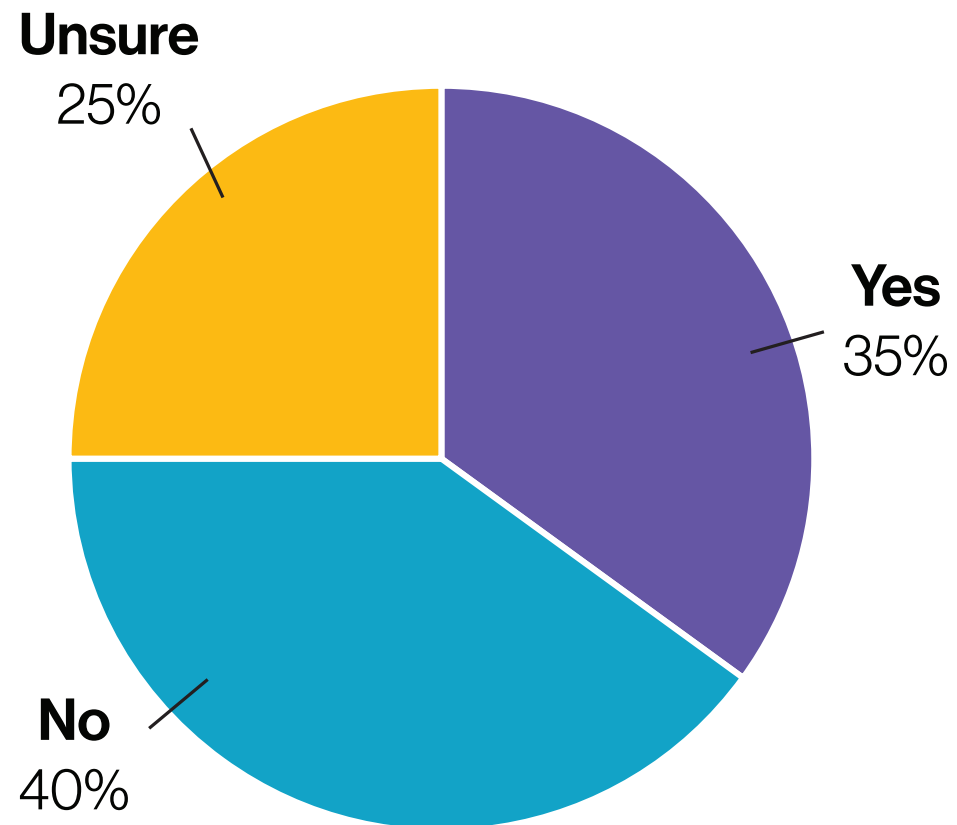
**44**

Respondents



Of respondents that said yes to having collected these digital assets, 35% have collected them alone, ***without*** the associated 3D printed object.

### Has your institution collected digital assets (e.g. object files, g-code, etc.) without the associated 3D printed object?



**44**

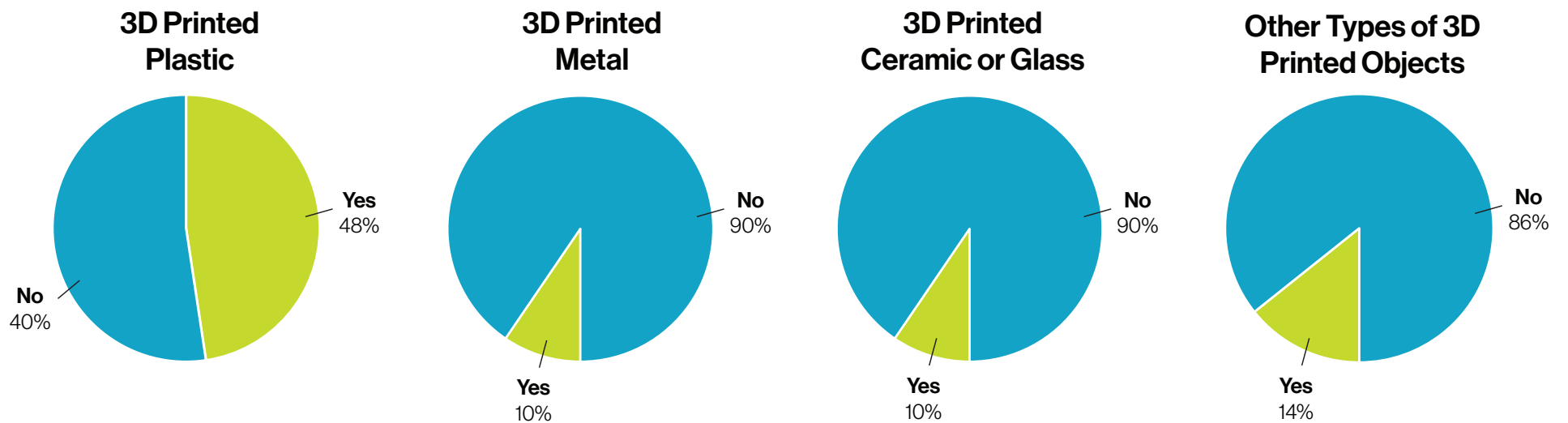
Respondents



# **Conservation Treatments of 3D Printed Objects: Highlights**

Respondents who chose to take the section of the survey on conservation treatments of 3D printed objects were most likely to have performed a conservation treatment on a 3D printed plastic object.

## Have you performed a conservation treatment on the following types of 3D printed objects?



**20+**  
Respondents

## 10 respondents provided information on the types of treatments they performed on 3D printed plastic objects:

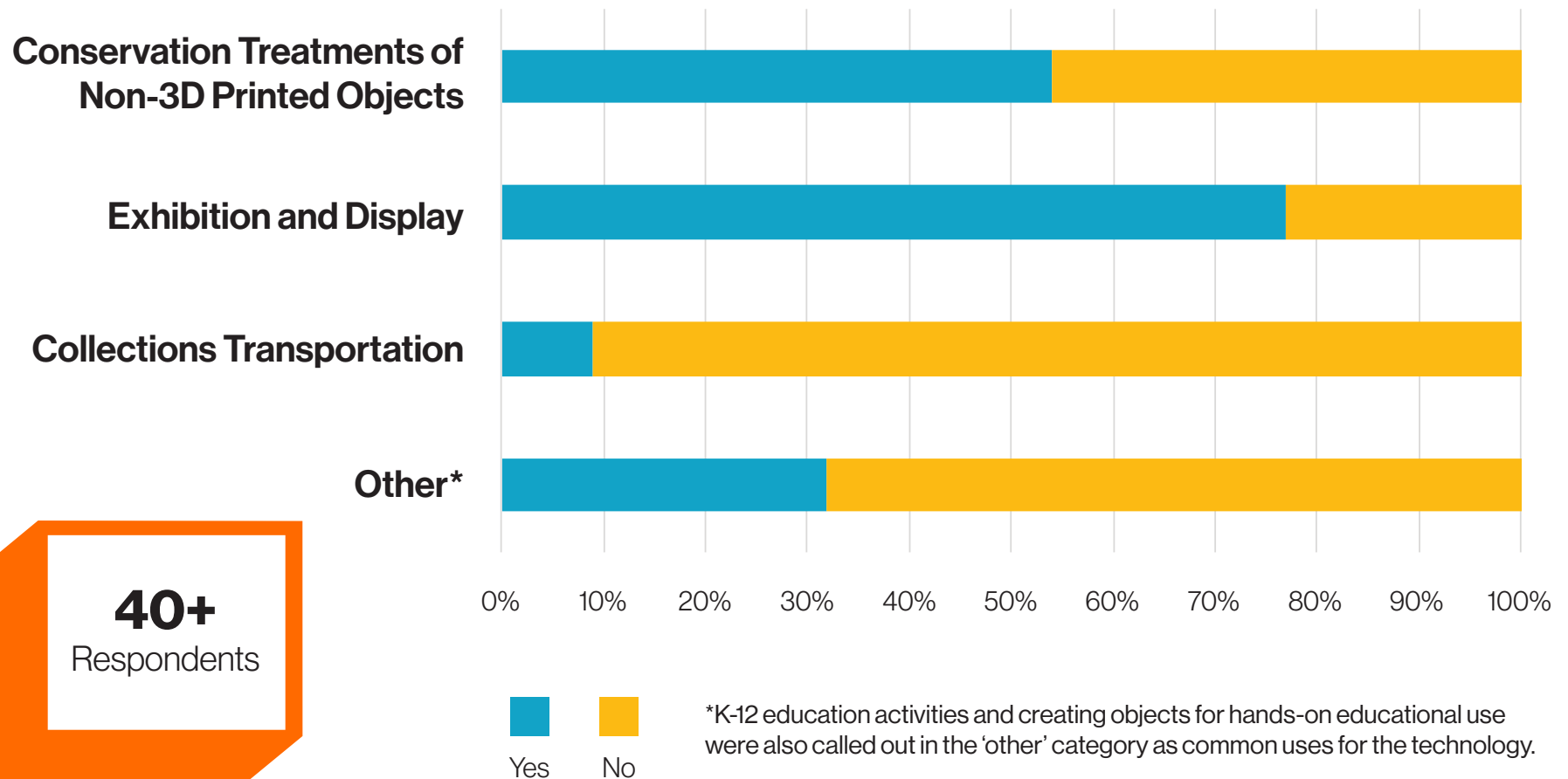
3D Printed Plastic Type	Type of Treatment	Materials Used to Treat the Object
Polylactic acid-based	Physical repair	Cyanoacrylate adhesive
Polylactic acid-based; Polyamide-based	Surface cleaning-debris removal; Physical repair	Brushes, dustcloths, PVAc emulsion adhesives
Polyamide-based	Surface cleaning-debris removal; Inpainting; Physical repair; Infilling	Epoxy putty, watercolors
Polyamide-based	Resurfacing/polishing; Physical repair	Emulsion, cyanoacrylate
Polyamide-based; Acrylate/Methacrylate-based	Surface cleaning-debris removal; surface cleaning-reduction of migration of additives; Physical repair	Swabs coated with Lascaux dried to remove surface debris. Plexigum PQ611 in Shellsol T.
Acrylate/Methacrylate-based	Inpainting; Physical repair; Infilling	Epoxy resin, carbonate mineral fillers;
Acrylate/Methacrylate-based; Epoxy-based; Copolymer	Consolidation; Physical repair	Gesso, and shellac.
Copolymer; Polyester-based	Surface cleaning-debris removal; surface cleaning-reduction of migration of additives	
Polyurethane-based	Surface cleaning-reduction of migration of additives	
Polyurethane-based	Physical repair	



# **3D Printing in Preservation and Access Activities: Highlights**

Respondents who chose to take the section of the survey on preservation and access activities indicated using 3D printing primarily to support exhibition and display activities, followed by conservation treatments of non-3D printed objects.

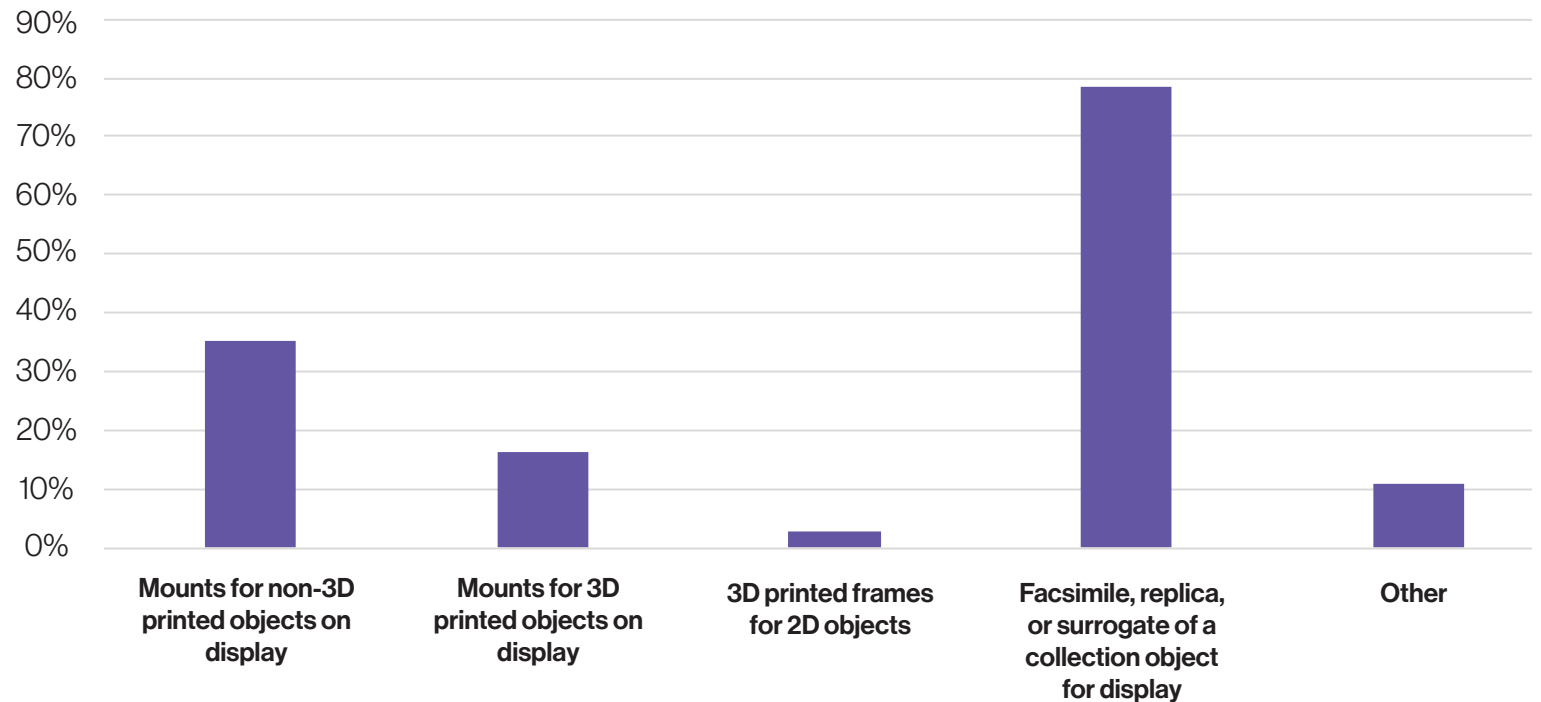
### Have you used 3D printing to support the following preservation and access activities?



**40+**  
Respondents

Of the respondents who use 3D printing for exhibition and display activities, a majority have used the technology to create a **facsimile, replica, or surrogate** of a collection object for display purposes.

### What type of exhibition display needs have you used 3D printing to support?

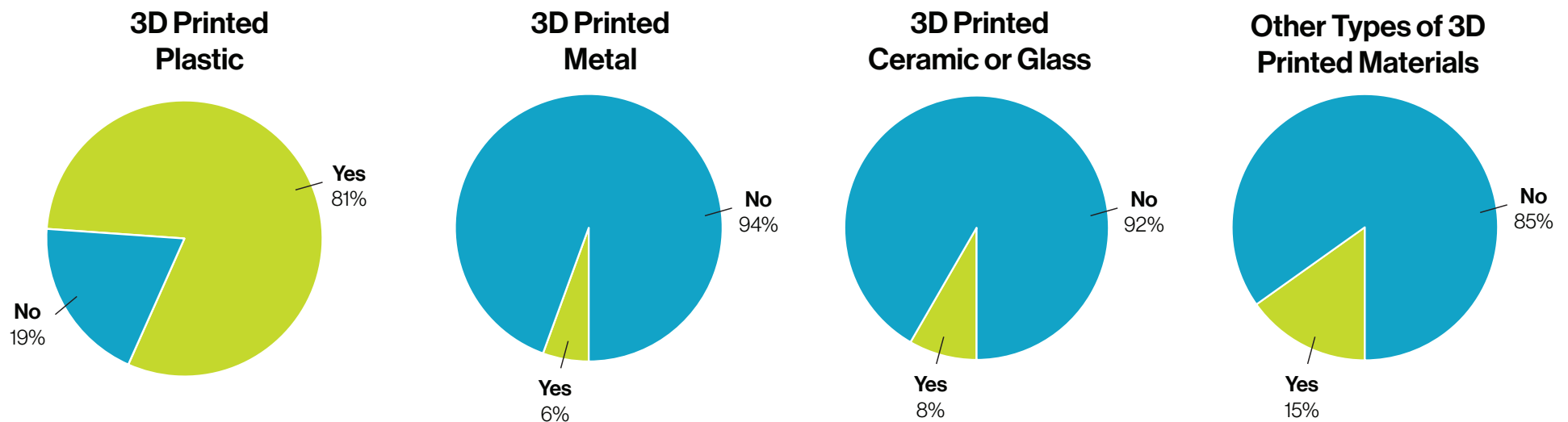


**37**

Respondents

A majority of respondents indicated using 3D printed plastic materials for exhibition display needs. 3D printed plastics remain common throughout all use categories.

## Have you used the following types of 3D printed materials for exhibition display needs?



**30+**  
Respondents



## **Next Steps: Continued Survey Analysis**

The data summarized in this preliminary report represents a small fraction of the information gathered by the survey. IPI will continue analyzing survey data and will release a complete report summarizing all of the survey findings. The full report will be made available at <https://www.imagepermanenceinstitute.org/research/3d.html>.

Full results of the survey will be used to inform preservation research agendas specific to 3D printed materials and technologies, will guide the development of a web-based resource that will be made available for free from IPI's website, and will aid in the creation of a 3D printed study collection consisting of the most commonly identified materials and technologies indicated by the survey. Together, these resources will support continued research and education for professionals responsible for preserving objects created by these emerging technologies.

## Acknowledgments

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