

Composting Toilets in the Sonoran Desert

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Abstract

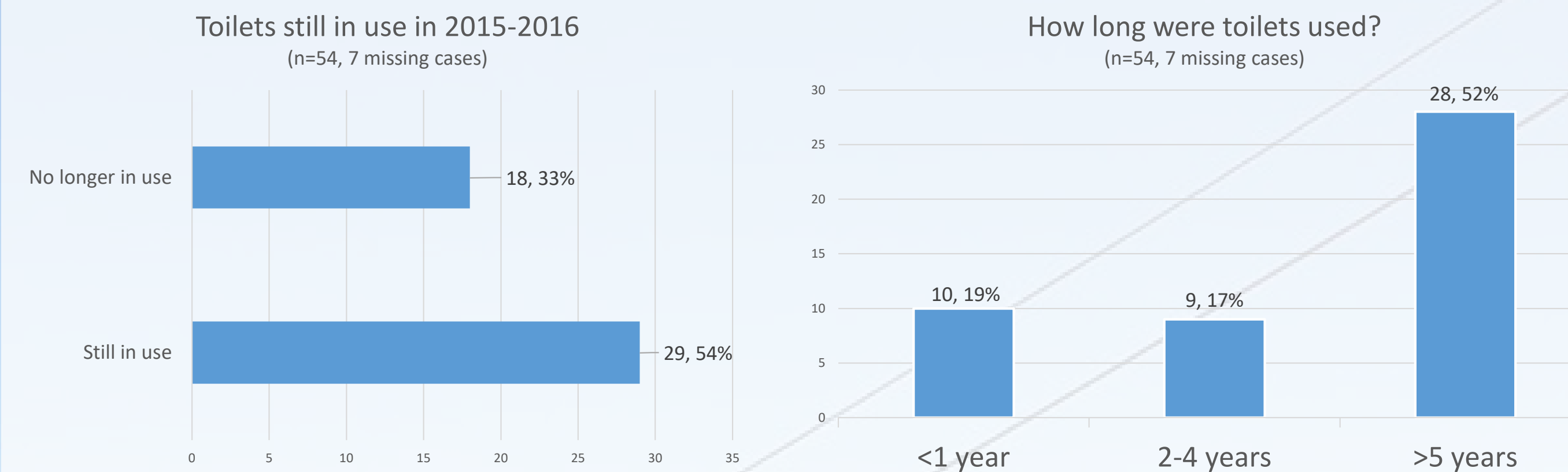
For the past two decades, University of Arizona's Bureau of Applied Research in Anthropology (BARA) has maintained partnerships with several sustainability-oriented organizations in Nogales, Sonora. One such partnership resulted in the installation of composting toilets in the *colonia* Colinas del Sol, funded through the Border 2012 initiative. Since installation, research teams of BARA undergraduate and graduate students have conducted three rounds of surveys to assess the community's satisfaction with the toilets. This poster: **(1)** provides an overview of the composting toilet initiative and of the results of the most recent round of surveying; and **(2)** addresses the logistics of cultivating and maintaining relationships with organizations across the border.

Background

In 2008, with funding from the EPA's Border 2012 initiative, BARA collaborated with partner organizations in Nogales, Sonora to build composting toilets in the *colonia* Colinas del Sol. This *colonia* is not connected to the municipal sewer system, and community collaborators identified composting toilets as a more sanitary and sustainable alternative to pit latrines. Toilets were constructed in two phases. The first phase was led by partner organizations in Nogales and BARA researchers. In the second phase, the *municipio* of Nogales constructed toilets. Surveys were conducted in 2008-2009, 2012-2013, and 2015-2016 to understand usage of and satisfaction with the toilets over time.

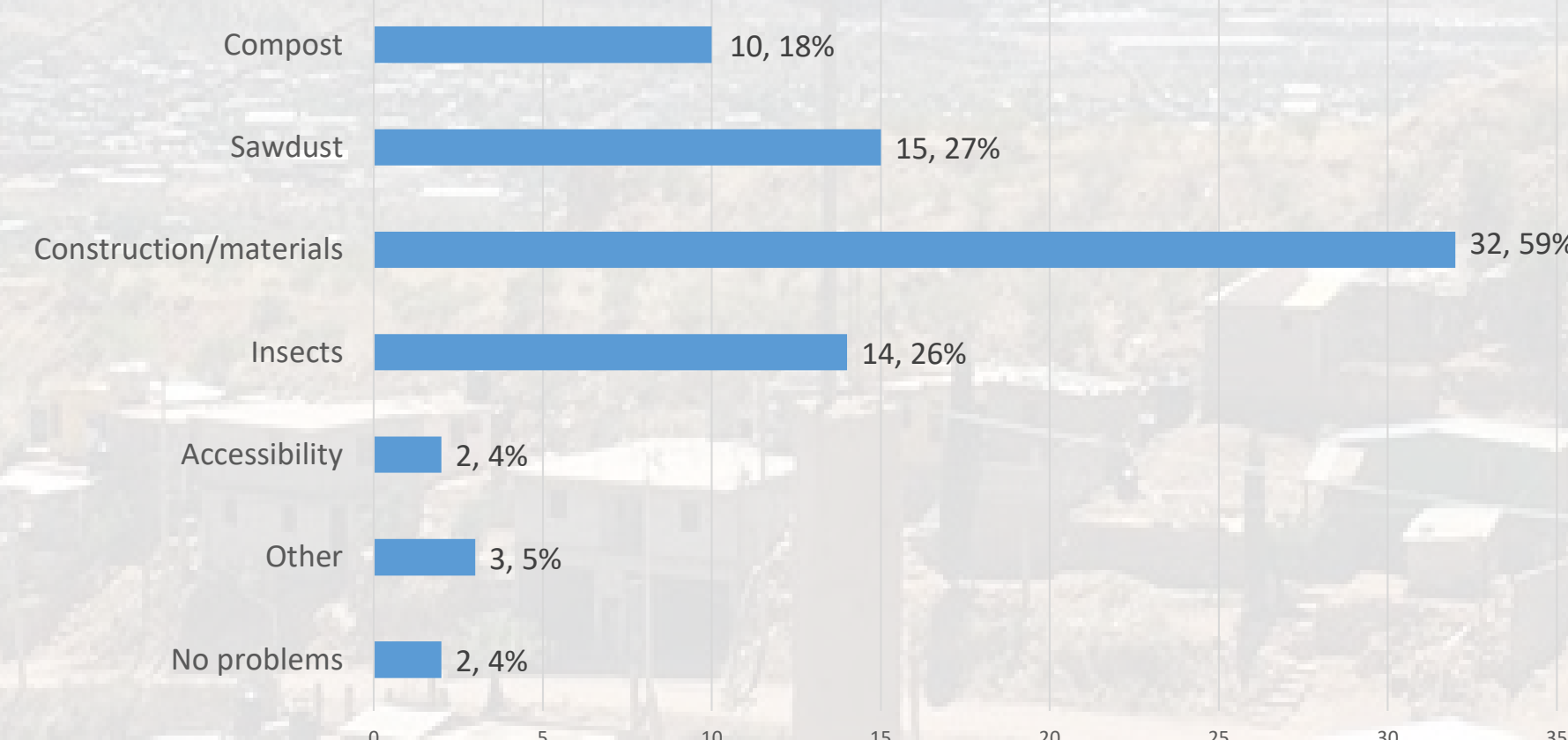


Key Results of 2015-2016 Monitoring



- A majority (54%) of survey respondents still used their composting toilets in 2015-2016.
- Composting toilets were considered more economical than flush toilets; sawdust costs less than water trucked to the colonia.
- 4 respondents altered the structure to install a flush toilet, 3 went back to a pit latrine, and 7 used the structure for storage.
- A majority (52%) of respondents used their toilets for more than 5 years.
- 17% of respondents used the toilets for 2-4 years but stopped using them for a variety of reasons (see below).
- 19% of respondents used the toilets briefly, for one year or less.

Overall Problems with Completed and Ever Used Toilets (n=54)



- When explaining problems with toilets, respondents could and did list more than one problem.
- Sawdust: The community center in Colinas del Sol initially provided free sawdust for composting toilet users, in later years this service was discontinued, and it became more difficult for toilet owners to obtain sawdust.
- Compost: Some survey respondents noted that they were not sure what to do with their compost. These respondents ended up throwing away the compost, meaning that a technology designed to minimize solid waste production did not serve one of its intended functions.
- Insects: Insects are a common topic of trouble-shooting for composting toilets because they can emerge as a result of the chambers being too wet, not well ventilated enough, or not completely sealed.
- The following measures would improve composting toilets: (1) a simpler method of removing the compost, (2) keeping the composting chamber well-sealed before removal, and (3) using a material other than sheetrock for the top of the composting chamber, where users sit.

BARA Internship Program & Long-Term Partnerships

In the BARA internship program, teams of graduate research assistants (RAs) and undergraduate interns are tasked with a particular project, the goals of which may be pre-determined by the partner or discussed collaboratively with the research team. Despite student turnover, projects and partnerships are sustained primarily via three mechanisms: (1) graduate students serve as research assistants for several years and update first-year RAs and interns on recently completed research via research groups created following Lev Vygotsky's theory of scaffolding; (2) each year all research teams contribute field notes, survey and interview protocols and other relevant documents to shared folders, contributing to institutional memory; (3) Dr. Diane Austin, the coordinator of the internship program, maintains dynamic relationships with all of the community partners who work with BARA.

Logistics of Binational Research

The militarization of the U.S.-Mexico border has made the process of travel between Arizona and Sonora more challenging. Nevertheless, BARA researchers and organizations in Nogales continue to collaborate on a variety of initiatives. As it can be more difficult for Mexican citizens to cross into the United States than the other way around, many meetings are hosted in Nogales, Sonora. Travel from Tucson to Nogales, Son. presents its own challenges. Presently, the U.S. State Department has a travel advisory in effect for U.S. travelers to Mexico. Before each trip, BARA researchers must record their travel with the University and submit additional paperwork to reserve a University vehicle. School of Anthropology and BARA administrative staff are key to the facilitation of this bureaucratic journey that takes place weeks before any physical travel.



An installation by French artist, JR, in Tecate, California

Source: <https://www.newyorker.com/news/as-told-to/the-artist-jr-lifts-a-mexican-child-over-the-border-wall>

Conclusions

This technology represents a viable option for people in similar situations who lack access to sewer systems. Modifications to the design and/or mechanisms to support similar pilot projects past initial phases could successfully address problems experienced by users.

The political contours of the border have changed over the last two decades, and will likely continue to change. Carrying out research in border regions therefore requires flexibility and sensitivity to these shifting political tides. Effective strategies in this case have included building strong and long-lasting partnerships with community organizations, and developing a scaffolded, supportive process for training students in research methods. This type of research would not be possible without the support of administrative staff who deftly navigate institutional channels.

Acknowledgements

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Diagram of a double-chamber composting toilet, the model used in Colinas del Sol