

# Team Dehydrated

[006 - 02]



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## Abstract

Toilet paper as a primary means of personal hygiene results in excessive water waste, to address this problem use of bidets can be an effective measure for reduced water consumption while keeping up with similar personal hygiene regimes. Although alternatives like bidets also incur some environmental costs from the use of water, on the whole, they are significantly less resource-hungry and waste-producing than the process of making toilet paper.

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## Executive Summary

This research investigates water conservation in regards to use of toilet paper and explores bidets as a sustainable alternative to mitigate excessive water waste. Some aspects detailed are concerning societal attitudes, cultural differences, lack of motivation emphasizing its potential to reduce water consumption while maintaining effective personal hygiene practices.

Stakeholders including consumers, water utilities, manufacturers, and infrastructure companies, underlining the diverse interests in sustainable hygiene practices.

### *Methods:*

Our methodology incorporates various data sources, such as interviews, surveys, articles, academic papers, social media insights, and consultations with subject matter experts. The combination of quantitative and qualitative methods ensures a comprehensive understanding of the toilet paper usage and bidet adoption.

### *Key findings:*

The study identifies biases associating bidets with non-masculinity, hindering acceptance among certain demographics. Additionally, societal acceptance is growing, particularly among the younger population, driven by environmental consciousness. However, barriers such as cost and limited implementation knowledge impede widespread adoption. Personal hygiene choices are influenced by experiences, social media exposure, and medical recommendations, reflecting an emerging openness to bidet alternatives. The historical context underscores the slow evolution of bidet acceptance due to cultural biases and insufficient government initiatives since the 1960s. The societal attitude is shifting positively, with bidets seen as symbols of luxury and hygiene. While cost remains a barrier, the study emphasizes the potential for market growth and educational initiatives.

### *Next steps:*

This research proposes several feasible, low-impact next steps. These involve initiating an on-campus awareness campaign, collaborating with university administration for bidet installations, and hosting workshops with bidet manufacturers. These steps aim to influence perceptions and habits within the university community, aligning with the broader movement towards sustainable hygiene practices.

## Introduction

It takes up to 37 gallons of water to make a single roll of toilet paper. If the average person typically uses 1 roll of toilet paper per week this is 52 rolls per year. Even if each roll only required 12 gallons of water to produce this is still 624 gallons of water used to produce the toilet paper. Toilet paper culture in America causes more environmental harm outside of the states than most Americans are aware.

### Updated Problem Statement:

Toilet paper as a primary means of personal hygiene results in excessive water waste, to address this problem use of bidets can be an effective measure for reduced water consumption while keeping up with similar personal hygiene regimes. Although alternatives like bidets also incur some environmental costs from the use of water, on the whole, they are significantly less resource-hungry and waste-producing than the process of making toilet paper.

### Research Questions:

- Why is the American population more inclined towards using toilet paper despite the significant research indicating the over-consumption of water incurred while manufacturing and using it?
  - How can we decrease water consumption while maintaining effective personal hygiene practices?
- What is the motivation behind people already using alternatives like bidets?
  - What are the options and factors that they took into consideration and how did they make their choice?
  - Is there enough awareness and education present for consumers to consider bidets?

### Important Stakeholders:

- **Consumers:** People who use bathrooms and make choices about their personal hygiene methods are primary stakeholders. They may be interested in the effectiveness, comfort, and convenience of bidets compared to toilet paper, as well as any cost considerations.
- **Water Utilities:** Organizations responsible for providing and managing water resources in a region may have an interest in understanding how bidet usage can impact water consumption and wastewater treatment.
- **Manufacturers and Distributors:** Companies that produce and sell bidet products have a significant stake in this research, as their business depends on consumers' preferences and perceptions regarding bidets.
- **Plumbing and Infrastructure Companies:** Companies involved in plumbing and sanitation infrastructure may have an interest in the research, as the widespread adoption

of bidets could impact plumbing systems and water usage patterns.

- **Wastewater Treatment Facilities:** Facilities responsible for treating wastewater may be interested in understanding how changes in hygiene practices, such as increased bidet usage, can affect their operations.

## Methods

Two main data collection methods were used

1. **Quantitative Data Analysis:** Analyze existing data on water consumption patterns in regions where bidets are commonly used compared to areas where toilet paper is the primary personal hygiene.
2. **Documentation Review:** Review academic studies, reports, and research papers on bidet usage and environmental impacts. Additionally, finding research papers on the concerns regarding antimicrobial-resistant bacteria in bidet toilets to understand the health limitations of bidet systems regarding public space.

### Interviews:

Each member of our team engaged in the primary data collection process by conducting interviews with general citizens from Michigan. A unique interview guide was created, specific to the general public, to ensure that we adhered to a uniform interview guideline and yielded consistency in our data. After conducting the interviews, we synthesized the key points and observations, creating an affinity wall that visually represented the main themes and patterns. This collaborative mapping allowed us to discern connections between different data sources and gain a holistic understanding of the multifaceted issues surrounding water consumption in regards to the use of toilet paper. The interviews not only provided depth to our research but also offered a human perspective, adding a qualitative dimension to our findings.

Below are brief descriptions of the anonymised individuals we interviewed:

- A married woman, aged 47, who lives in the household of 3 comprising her husband, child and her. She is a working professional in the education industry living in Ann Arbor. She is very enthusiastic about environmentally friendly options and has actively participated in it to ensure a low carbon footprint; although she is critical of green products that cause inconvenience.
- An international student, in his early twenties, who has lived in the United States for over five years and comes from a country that predominantly uses alternatives like bidets as their primary personal hygiene practice. He has lived in different US states for extended periods of time and is confident in drawing parallels between the different cultures in his lived experiences.

- A local Chinese student, she has lived in the United States for more than ten years, and she often goes back to China to live, and has a good understanding of the culture and living habits of the two countries. While living in the United States, she has also traveled to many different states, and she has a lot of different views on natural resources and living habits between states. She had lived for many years in southern states that were not as water-rich as Michigan. So she's a big proponent of a water-saving lifestyle.
- A law student at the University of Michigan with a rich international living experience. Having resided in Ann Arbor for four years, she primarily uses toilet paper but is also familiar with bidets. Additionally, she has lived in Greece, gaining a broader perspective through her experiences in both the EU and Asia.
- A 19 year old college student raised in the United States. Primarily uses toilet paper however is aware of bidet use and has used it. She is not aware of much environmental impacts pertaining to the use of toilet paper.

#### Survey:

We also conducted a survey by distributing the Google Form to our peers and peers of peers, ensuring a wide audience. The survey was split in 3 segments: first, focussing on demographic details such as age, ethnicity, religion, residency; second, focussing on their environmentally friendly practices and their toilet paper usage and then lastly, their experience and views towards bidets.

From the survey we gathered metrics for following:

- The average toilet paper usage per person
- Perception on water consumption of toilet paper
- Willingness to adopt green products
- Active participation towards eco-friendly measures
- Source of awareness of bidet
- Attitude towards water saving
- Awareness of advocacy by government departments

#### Articles:

Contemporary news articles were used as a valuable source of secondary data collection. Four articles were strategically selected, highlighting the ongoing discourse surrounding the water crisis. The dynamic nature of news articles ensured that the data was current and reflective of the evolving nature of daily water consumption, with a diverse perspective. Main points from each article were highlighted and later used to visually map and categorize the interconnected themes and patterns within all data.

#### Academic Sources:

Multiple academic research studies across different domains were used to formulate opinions and base the validity of inferences drawn throughout the project, starting right from the background research. The explored investigations included studying the toilet paper manufacturing process, the medical publications on the effects of using toilet paper, and the benefits of using alternatives like bidets for hygiene purposes and rehabilitation of dependent patients. The effects of toilet paper on the waste water processing systems were also explored. There was a common theme of understanding the environmental impacts of using toilet paper in the context of its entire life cycle and the current viewpoint of the public on altering existing personal hygiene habits as a way of conserving water or reducing the overall water consumption.

#### Social Media:

Forums on subreddit were identified as an important source of gathering views on awareness around water wastage, their reaction to it and alternative solutions to hygiene such as bidet. Any claims made were double checked with data sources from official sources such as NRDC and ones which cited public papers to strengthen the claims made on forums which are susceptible to misinformation.

#### Past Survey by LSG-SG:

Access was requested to aggregate survey results from a previously conducted study by the College of Literature, Science, and the Arts Student Government to understand the general need and opinion on bidets and similar alternatives across the student body at the University of Michigan. The resolution documented coagulated results of how the lack of toilet paper alternatives like bidets in the public campus buildings negatively impacted the experience of the student bodies, especially those belonging to religious and cultural identities known to predominantly use bidets as a part of their personal hygiene regimen, like the Asian and Muslim populations.

#### Subject Matter Experts (SMEs):

Most of our SME data wasn't directly relevant to our study however, they presented us with interesting insight on the infrastructure. Among the SMEs, to quote Evan Pratt and Molly Maciejewski, excelling in the area of water infrastructure, stated how anything besides toilet paper, especially "Flushable Wipes" are hazardous to the water pipeline. The interview with Noah Urban also helped us form opinions, identify and solidify our understanding of data collected to curate our research questions.

### Secondary Interviews:

Multiple parts of the interview video resources are based on the attitude towards using bidets and the public awareness of the benefits to personal hygiene and water conservation of using the bidets and other alternatives of toilet paper. Also, a green treatment of toilet paper is used to free up energy and water and reduce environmental pollution is contained in our video research part. We found that the public is somewhat aware of the environmental impact of toilet paper and the waste of water. In addition, as an alternative to toilet paper, the public's use of bidets is more about personal hygiene.

Once all data was collected through secondary and primary sources and with amalgamation of all data types all the findings were curated into an affinity wall. The affinity wall not only serves as a synthesis of our collective insights but also enables us to identify relationships and dependencies among all the major themes.

## Findings

### Five major findings:

1. In the US, cultural and homophobic biases limit bidet awareness and acceptance, with a lack of governmental promotion further affecting their adoption.
2. Societal acceptance of bidets is on the rise due to environmental consciousness among the young, yet cost and lack of implementation knowledge are barriers.
3. Individuals' personal hygiene choices are influenced by their experiences, social media exposure, and medical recommendations, with emerging openness towards alternatives like bidets.
4. Growing public interest in eco-friendly alternatives for personal hygiene is hindered by the limitations of existing infrastructure.
5. Increasing awareness among people about the environmental implications of toilet paper has started showing a shift in lifestyle choices.

### Biases:

The data analysis brought light to an unexpected aspect of water consumption in the United States, the presence of homophobic biases, as bidets are sometimes associated with being effeminate or non-masculine. These biases contribute to a reluctance among certain demographics to embrace bidet technology.

Moreover, the lack of governmental promotion emerged as a substantial factor influencing bidet adoption rates. In contrast to some countries where bidets are actively promoted as environmentally friendly alternatives, the U.S. lacks a cohesive effort to encourage their use. Recognizing these cultural and systemic challenges is crucial for devising strategies to promote



bidet awareness, overcome biases, and foster a more sustainable approach to personal hygiene that minimizes water consumption associated with the widespread use of toilet paper in America. Historical context becomes particularly relevant when examining the contemporary landscape, as our research identified a concerning gap in active governmental efforts to promote healthier bidet practices among the masses. While the 1960s marked an initial attempt to introduce bidets to the American market, the subsequent decades have seen limited advancements in the promotion of bidet adoption on a broader scale. The lingering cultural biases and lack of governmental initiatives have contributed to a slower evolution in bidet acceptance than initially envisioned, emphasizing the importance of addressing historical perceptions and actively promoting bidet usage for its health and environmental benefits in the present day.

#### Societal acceptance:

Our exploration into the societal acceptance and obstacles surrounding bidet usage in the United States reveals a collective shift towards openness to alternatives such as bidets. This change, predominantly among the younger demographic, views bidets as symbols of luxury, hygiene, and affluence. Our analysis suggests that broader societal acceptance and mainstream adoption could significantly influence individual decisions to embrace bidet technology.

While 42% of the younger population associates bidets with cleanliness and luxury, the actual rate of adoption is curtailed by high costs and limited availability of cost-effective options. A general unawareness of more affordable models intensifies this perception of bidets as luxury items rather than daily necessities. This gap in knowledge and accessibility, while a barrier, also presents a pivotal opportunity for change. Increased mainstream presence and availability of bidets could play a crucial role in overcoming these hurdles.

Environmental considerations also emerge as a vital aspect in this scenario. The pandemic has heightened the quest for eco-friendly choices, but a substantial 47.4% of participants need more clarity on the environmental impact of their toilet paper use. This underscores a need for better information dissemination regarding sustainable hygiene practices, including bidet usage. With 45% of Americans showing an interest in researching different bidet options, there is an apparent demand for more accessible and comprehensive information to guide informed choices.

The societal attitude towards bidets is progressively shifting towards a more positive and accepting viewpoint. This trend, coupled with the data suggesting a willingness to adopt bidets if they were more mainstream and readily available, underscores a significant potential for market growth and educational initiatives.

While acknowledging the current limitations, such as cost and lack of implementation knowledge, the rising societal acceptance of bidets, particularly among the young, is a positive indication of changing attitudes. This evolving mindset and a growing environmental consciousness lay a foundation for reevaluating and refining strategies to promote bidet use. The findings from our investigation highlight a promising trajectory for integrating bidets into mainstream personal hygiene practices, emphasizing the need for continued research and adaptive approaches that respond to these emerging trends and societal preferences.

Growing interest towards green products:

People have shown a trend of awareness on green practices and products. Millennials, especially, have shown more attention to evaluating and using eco-friendly products. Generation Z, in spite of the high interest in eco-friendly products, is currently limited by their affordability. Moreover, talking about products such as bidet, there is a lack of awareness and concern over installment and legal policies around plumbing modifications, which restrict people from using bidet. Additionally, current infrastructure doesn't support "flushable wipes" in its pipeline due to its non-disintegrable nature, which are also an environmental hazard.

While there has been a growing trend in popularity of bidet among consumers, this is not restricted to them and has been increasingly included in hotel, motel and hospital/homes. This growing trend facilitates adoption of bidet on a wider scale as people would highly prefer to be able to use this outside their homes. People have indicated that adoption in public spaces can encourage this practice, as the lack of inhibits it.

## **Next Steps**

Building on our findings, the next practical steps for a college student team involve initiating an on-campus awareness campaign. This campaign would feature information booths, distribute educational materials, and showcase various bidet models, emphasizing their environmental benefits and cost-effectiveness. Collaborating with campus sustainability clubs could enhance the impact of this initiative. A strategic partnership with university administration to pilot bidet installations in select campus restrooms is also recommended. This hands-on experience could significantly boost bidet acceptance and interest among the campus community.

Furthermore, hosting workshops or seminars with sustainability and hygiene experts, including bidet manufacturers, can deepen the understanding and engagement of students and faculty. These sessions would provide a platform for dispelling myths and promoting informed decisions about bidet usage. Bidet companies can also benefit from promoting the water conservation/savings over toilet paper apart from cost savings.

These steps, focused on education and direct experience, are well within the reach of a college student team and have the potential to significantly influence the perceptions and habits of the university community, aligning with the broader shift towards sustainable hygiene practices.

In the long term, a pivotal and impactful step would be to develop and promote affordable bidet options. This directly addresses the key barrier of cost, making bidets more accessible. By positioning bidets as both cost-effective and water-conserving, they become attractive eco-friendly alternatives for the growing environmentally conscious population.

Engagement with government and policy stakeholders is crucial. Advocating for policies that support bidet installation in both public and private spaces is essential. Such initiatives would not only enhance bidet visibility and normalize their use but also align with broader environmental sustainability objectives.

These strategies, though challenging, are vital for altering public perception and boosting bidet adoption. They tackle the primary hurdles of cost, limited knowledge, and cultural hesitance. The impact of these measures extends beyond promoting sustainable hygiene practices; they also contribute to shifting deep-rooted cultural norms. Implementing this comprehensive plan would foster a richer understanding and more effective tactics to mainstream bidet usage in the United States.

## **Conclusion**

Our research indicates that broad adoption of bidets in the United States faces certain challenges, primarily cultural biases, homophobia, and lack of governmental support. However, an increasing environmental consciousness, especially among the younger demographic, and a shift in societal attitudes prefix a potential uptick in acceptability of bidets as a sustainable alternative to toilet paper. Despite this, higher costs and lack of knowledge about practical implementation serve as significant barriers.

To address these hurdles, measures such as on-campus awareness campaigns, advocacy for supportive policies, and development of affordable bidet options can be effective. While these strategies potentially amplify public acceptance of bidets and contribute to environmental sustainability, they would also involve tackling deep-seated cultural norms. The university can play an instrumental role in driving this change.

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## Appendices

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