

The Lavigator – Team 6

Project Team Members

1. **Summary /Conclusion Writer & Overall Editor:** Emmett Sier
 2. **Market Researcher:** Di'Anny Santana
 3. **Product Designer:** Adam Shaw
 4. **Devil's Advocate/Critic/"Jack of all Trades":** Adon Smith Griffin & Takeshi Tatsumi
-

1. Executive Summary (Overview)

Signage can be confusing, preferences between people vary, bathrooms can be hidden- it's imperative to have something that cuts through the crap and gets straight to the porcelain. *The Lavigator* is a high tech physical device that, using a traditional compass look, helps users find bathrooms nearby. Connected to the companion app, it uses crowdsourced data to collect information like bathroom ratings, business, and accessibility. This device would be particularly helpful for travelers lost in a new area, disabled individuals who have unique bathroom needs, and gender nonconforming individuals who feel more comfortable in gender neutral spaces.

2. Need Justification

Everybody needs to use the restroom, with people using the bathroom on average 4 to 10 times a day ([Bladder & Bowel Community](#)). However, there are some who need to use the restroom more often, such as those with urinary incontinence, pregnant people, older people, and those with UTIs. In the US alone, 13 million people are affected by urinary incontinence ([National Library of Medicine, 2024](#)). Certain drinks, such as those including caffeine, and certain medicines, like antidepressants, can also make you more likely to use the restroom ([Cleveland Clinic, 2025](#)). Additionally, people use the bathroom for other purposes, such as changing their period products or their child's diaper.

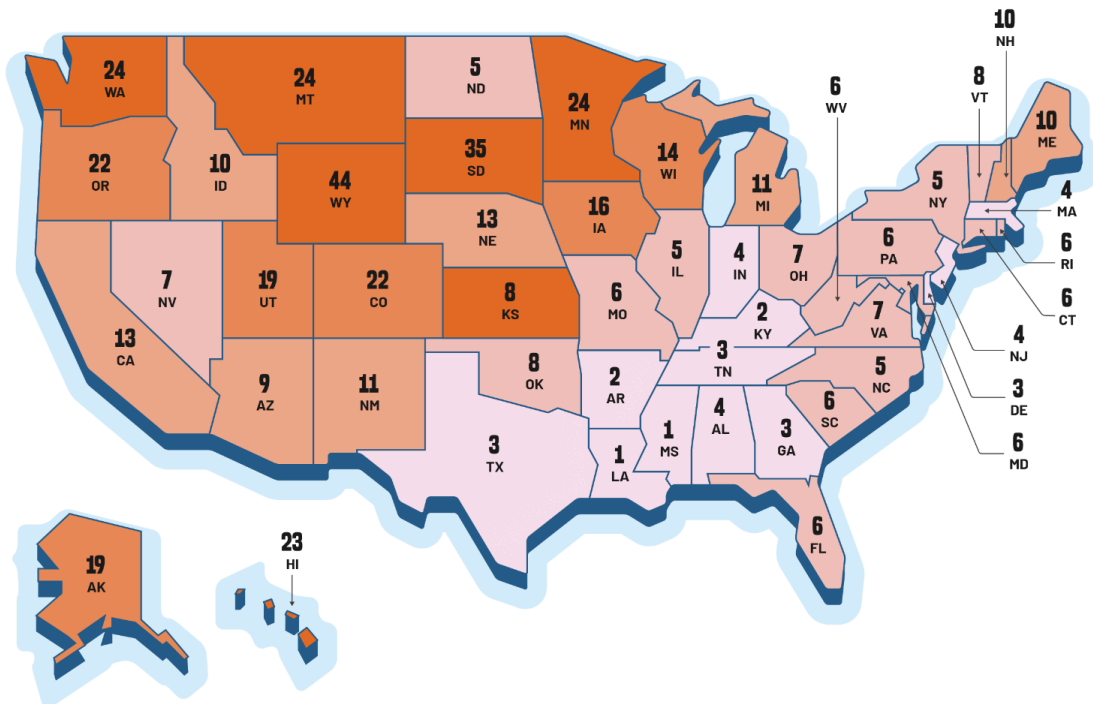
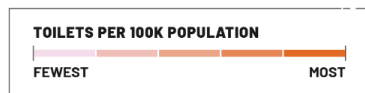
Despite this need for public restroom accessibility, it is increasingly difficult for people to find bathrooms, whether it is time, being accessible, or having the proper facilities. 19 states have passed legislation that makes it harder for transgender and gender-non conforming people from

using public restrooms ([Movement Advancement Project, 2025](#)), and one can expect that number to increase under the new presidential administration. Adding this to how little public toilets there are in the US, with New York in particular only having 5 toilets per 100 thousand people ([QS Supplies, 2021](#)), it creates a big demand to know where the nearest bathroom you can safely use is.

THE STATES WITH THE MOST & FEWEST PUBLIC TOILETS?

The **US** is the country with the third-highest population in the world, behind China and India. But a country with a high population, and high tourism rates, needs plenty of amenities. When it comes to public toilets, which states are the easiest and hardest places to locate the nearest restroom?

The 10th largest state by area but also the least populated, **Wyoming** has more public toilets per 100k people than any other state. Its 44 public toilets is a stark difference to Louisiana and Mississippi who both have one public toilet per **100k people**.



METHODOLOGY

We pulled the number of public toilets in every US state using PeePlace. We then collected the population data for each to calculate the number of public toilets per 100k people. We excluded states with fewer than 250,000 people.



This image is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License - www.creativecommons.org/licenses/by-sa/4.0



2.1 Competitors

To remedy this problem, there have been bathroom location apps, with the most popular being Flush. Other apps, such as Bathroom Scout and Charmin's Sit or Squat, are recommended by the [National Association for Continence \(NAC\)](#), but they don't have good reviews. A more detailed look at our competitors and their flaws is below.

Competitor App 1- Google Maps

- Not as specialized (Does not focus on just bathrooms)
- Unintuitive when it comes to finding bathrooms (You have to manually type it in)
- Only lists public bathrooms (Tends to mostly list gendered bathrooms, misses a lot of bathrooms entirely)
- When it does list restrooms, it sorts it by relevance instead of distance, creating problems
- Steals your data
- No fun extra features (Just displays the location and reviews, if there are any)

Competitor App 2- [Flush](#)

- No way to indicate if a bathroom has a changing table
- Can't update info on a bathroom
- Bathroom locations are often wrong
- Hard to pin a location on a bathroom
- Can only add bathrooms if you are physically at the site of the bathroom
- Can't read the info on the bathroom pins
- No pictures or "street view" of bathrooms

Competitor App 3- [Bathroom Scout](#)

- App costs \$ 0.99
- Missing many bathrooms
- Map is difficult to navigate
- Only shows a limited number of bathrooms around the user

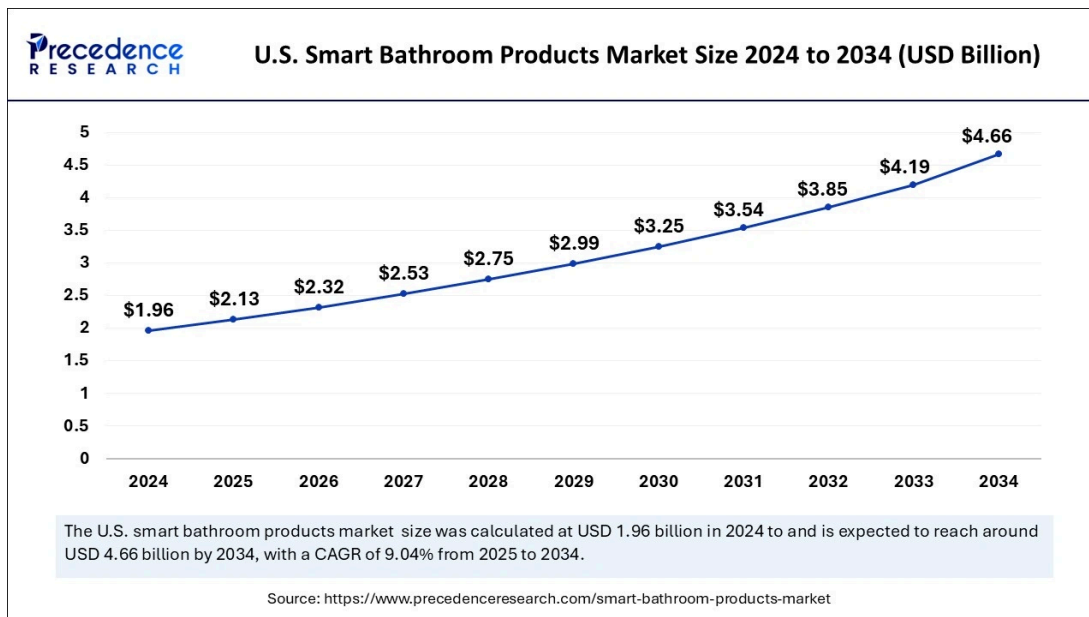
Competitor App 4- [Charmin's Sit or Squat](#)

- Taken off of the company's website
- Had small amounts of user input
- Hard to navigate map
- Glitchy
- Up to 3 separate terms and service agreements and the user has to connect their Facebook or Twitter account before even using the app
- No description of toilets
- Only uses yes or no questions

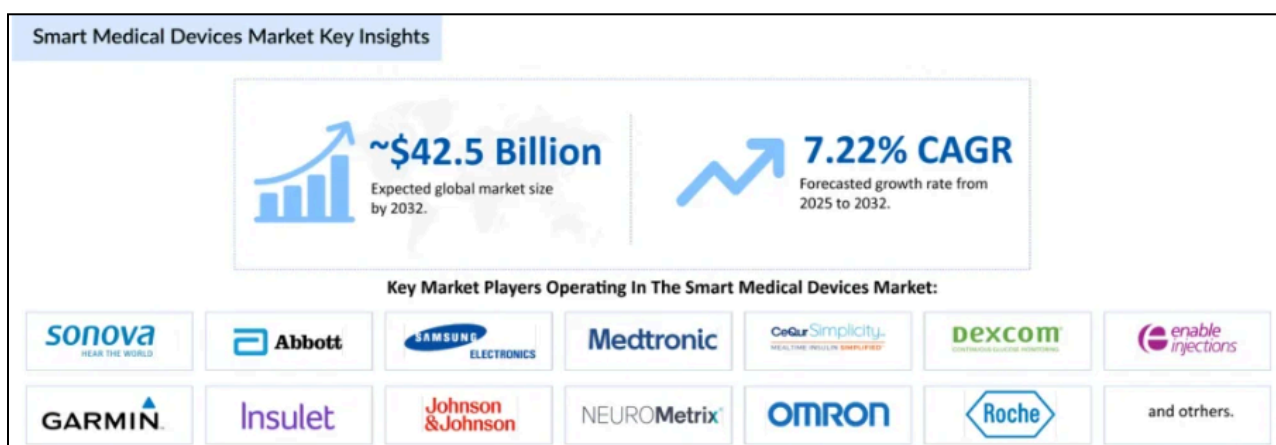
- Does not have a lot of public restrooms
- Commonly refers to toilets as non-existent

2.2 Market Research

It is also important to note that our product is not just an app, but a physical product as well that would assist in locating bathrooms with a companion app. Physical bathroom products are always going to be in demand, especially as technology advances and more bathroom products become smart. The market is expected to grow by 9.04% by 2034 ([Precedence Research, 2025](#)).



In addition to the rising population age of the US, where 1 in 6 people are 65 or older ([United States Census Bureau, 2023](#)), you can expect the rise of bladder related conditions to increase as people's bodies get weaker. Having a product that can help our aging population find bathrooms is in our best interest financially.



3. Product Description

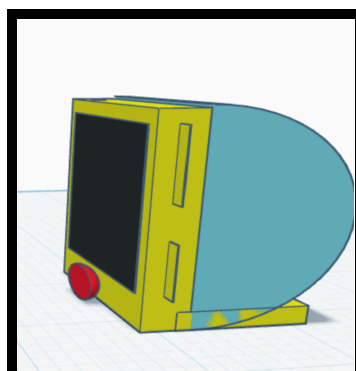
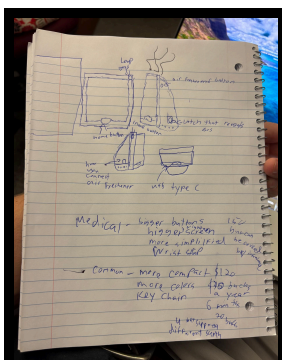
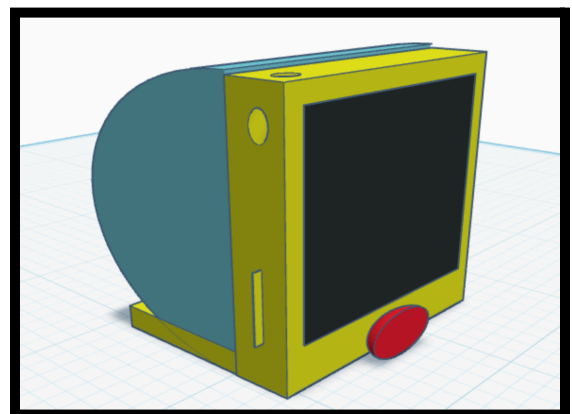
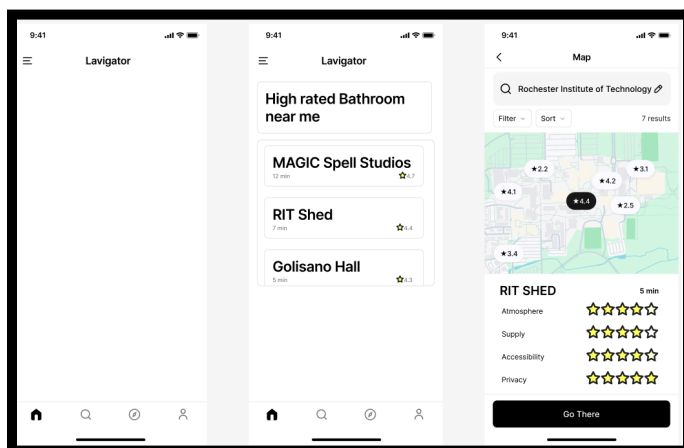
The app and companion device have multiple features, these features are:

Companion App Features

- The app will be kept free
- Find nearby bathrooms
- See and review bathrooms on four categories
 - Atmosphere (comfort, noise level, safety)
 - Supply (amount and quality of bathroom essentials)
 - Accessibility (disability access, family bathrooms)
 - Privacy (how big the doors are, how much soundproofing there is)
- Bathroom Population (how many people in it at any time)
- Bathroom journal w/ integrated calendar (diary feature)

Device Features

- The device will be from 20-40 dollars, depending on the version
- Acts like a compass that allows users to navigate to closest restrooms easily
- Displays simplified versions of the ratings
- Air freshener built into the device that uses pods that we produce
- Medical Variant (bigger buttons for medical devices, more accessible colorways)
 - SOS feature (with a safety) Essentially built in life alert for the elderly
- Blind/Low vision variant (braille buttons, higher contrast images, audio prompts)
- Loop gap for keychains
- Simplified UI to make easy for everyone



[App Mockup](#)

4. Possible Issues and Counterarguments

- Other countries and their own biases
 - Only launch in Canada and US
- How do we figure out what bathrooms are busy?
 - Similarly to google maps, the phones and or physical devices will be used to figure out the traffic at certain restrooms by analyzing where they are located and how busy the spot is at certain times.
- Potential overcomplication and usage confusion
 - Simple UI that only shows bathrooms within a small radius of you, still allows preferences but very simple for everyone and devices for older people with larger buttons and screen. Rigorous testing will be performed to ensure intuition.
- Size! It is hard to fit everything into such a small keychain.
 - The device was designed using similar technology to an ipod nano, so it exists and is usable.
- Cost—is this free? How do we make money?
 - Air freshener pod subscription service
 - Device costs 20-40 dollars
 - Advertisements on the phone app
- Accidental SOS calling
 - Add a safety on the SOS button
- Make sure user doesn't accidentally spray themselves
 - We will add colored markers to the holes and will have it come out facing away from the screen orientation, so if the screen is pointed at the user, the spray comes out the top of the back.
- Privacy issues/leak
 - We won't be requiring much data, but for the data that we do store, email, number, location, etc, we will partner up with a cybersecurity company to make sure our users data stays as secure as a lock on a bathroom door.

5. Conclusion and Recommendations

In a new place, it can be confusing and overwhelming to find a comfortable place to use the bathroom. Using the Lavigator, you can locate restrooms ANYWHERE! Users will be able to find bathrooms quickly and safely without the danger of wandering. It's important for its use to be

highly advertised and commonplace due to its crowdsourced nature. It is essential to the flow of our world (and our bathrooms) to develop this device and app due to the increase of life quality. Invest now!

6. Appendix

Apple App Store. *Flush App Reviews*.

<https://apps.apple.com/us/app/flush-toilet-finder-map/id955254528?see-all=reviews>

Some of the top reviews for the Flush app.

Apple App Store. *Bathroom Scout App Reviews*.

<https://apps.apple.com/us/app/bathroom-scout/id581657578?see-all=reviews>

Some of the top reviews for the Bathroom Scout app.

Bladder & Bowel Community. "Urinary Frequency – How Often Should You Pee?" Bladder & Bowel Community,

<https://www.bladderandbowel.org/bladder/bladder-conditions-and-symptoms/frequency/>.

Accessed 10 September 2025.

Caplan, Zoe. "2020 Census: 1 in 6 People in the United States Were 65 and Over." *U.S. Census Bureau*,

25 May 2023,

<https://www.census.gov/library/stories/2023/05/2020-census-united-states-older-population-grew.html>. Accessed 10 September 2025.

Cleveland Clinic. "Urinary Incontinence: Causes, Leakage, Types & Treatment." *Cleveland Clinic*, 5

March 2025, <https://my.clevelandclinic.org/health/diseases/17596-urinary-incontinence>.

Accessed 4 September 2025.

Google Play Store. *Charmin's Sit or Squat App Reviews*.

<https://web.archive.org/web/20170611103414/https://play.google.com/store/apps/details?id=com.charmin.sitorsquat>

A Wayback Machine link to Charmin's Sit or Squat reviews.

Leslie, Stephen W., et al. "Urinary Incontinence - StatPearls." *NCBI*, 11 August 2024,

<https://www.ncbi.nlm.nih.gov/books/NBK559095/>. Accessed 10 September 2025.

Movement Advancement Project. "Bans on Transgender People Using Bathrooms and Facilities

According to their Gender Identity." *Movement Advancement Project* |, 9 September 2025,

https://www.lgbtmap.org/equality-maps/nondiscrimination/bathroom_bans. Accessed 10 September 2025.

National Association for Continence. "The Best Bathroom Locator Apps." *National Association For*

Continence, <https://nafc.org/bhealth-blog/the-best-bathroom-locator-apps/>. Accessed 10 September 2025.

Shaw, Adam. "Login - Tinkercad." *Tinkercad*, 6 Sept. 2025,

www.tinkercad.com/things/4sycAYlibW5-amazing-jarv/edit?returnTo=https%3A%2F%2Fwww.tinkercad.com%2Fdashboard&sharecode=6_BC3uhcCDvyap3ckosZwnWU9DHX-5nfj2fkWPyfJhY. Accessed 9 Sept. 2025.

Shivarkar, Aditi. "Smart Bathroom Products Market Size to Hit USD 17.88 Billion by 2034."

Precedence Research, 24 January 2025,

<https://www.precedenceresearch.com/smart-bathroom-products-market>. Accessed 4 September 2025.

Tatsumi, Takeshi. "Figma." *Figma*, 2025,

www.figma.com/design/NAKGKqbKNv2oK3eRz2EQtY/Lavigator-Mockup?node-id=0-1&t=EjL6nXqEOUFsYGGf-1. Accessed 9 Sept. 2025.

Wall, Kylie. "Which Cities Have The Most and Fewest Public Toilets?" *QS Supplies*, 11 October 2021,
<https://www.qssupplies.co.uk/the-public-toilet-index.html>. Accessed 10 September 2025.