Gender Identity Nondiscrimination Laws in Public Accommodations: a Review of Evidence Regarding Safety and Privacy in Public Restrooms, Locker Rooms, and Changing Rooms

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Introduction

North Carolina's Public Facilities Privacy & Security Act, also known as H.B. 2, introduced much of the United States to a debate regarding the use of public restrooms that had previously largely gone unnoticed. In an emergency session, the North Carolina legislature passed H.B. 2 in one day, legally requiring sex-segregated restrooms and changing facilities to be limited to use based on the sex on a person's birth certificate (Philipps, 2016). While this law would have no legal impact on restroom use among cisgender (i.e., nontransgender) people, it meant that transgender people who had transitioned from their sex assigned at birth to a different gender would be required to use the restroom of their sex assigned at birth unless they had legally changed their birth certificate. The new law also opened up the possibility of increased harassment and policing, both social and actual, of gender nonconforming people in public restrooms, whether they were transgender or not. H.B. 2 was passed as a direct reaction to a local nondiscrimination ordinance that the City of Charlotte passed that included gender identity as one of the protected classifications in public accommodations, legally codifying the rights of individuals to use the public restroom that corresponded to their gender identity, even if that did not match their sex assigned at birth (Philipps, 2016). The primary argument levied against the passage of public accommodations nondiscrimination policies that protect trans- gender people is that the policy creates a loophole for sexual predators to access women's public restrooms and locker rooms, thus decreasing women's and girls' safety and privacy in such spaces. For example, at a floor hearing on H.B. 2, Senator E. S. "Buck" Newton stated:

> [T]he City Council of Charlotte lost their mind, and decided to embark upon a very radical course … of radical political correctness. And in so doing, created a real public safety risk … would allow men into the locker rooms and the bathrooms of females – of our daughters, of our wives … And that common sense tells us that men don't belong in the ladies' bathroom. It's a matter of public safety. Under this ordinance that they've put forward, anyone, quite frankly, with – with that intent, could use this Charlotte ordinance as an excuse to be somewhere that we all know they don't belong." (House Bill 2: Senate Floor Session, 2016).

On the other hand, there were those who argued that such nondiscrimination laws had already been enacted in localities across the United States with no noticeable change in criminal activity in public accommodations. For example, Representative Rodney Moore stated in the H.B. 2 House floor debate:

> [W]hat you have here is – you have fear-stoking. The LGB – I've done the research. This ordinance is in over 200 cities, as it was referenced before, and there has not, to my knowledge, been any catastrophic incident of as- saults, of rapes in these bathrooms or anything, and so the argument that this is such a grave challenge or a grave issue of public safety, just doesn't – just doesn't mesh; doesn't – doesn't pan out based upon the data." (House Bill 2: House Floor Debate, 2016).

While H.B. 2 was partially repealed in 2017, the debates, legislation, and litigation about restroom access and safety continue. For example, the Commonwealth of Massachusetts is now facing a ballot measure in the 2018 elections asking its citizens to decide whether to repeal a recently passed statewide public accommodations nondiscrimination law that is inclusive of gender identity. It is important to evaluate the empirical validity of the underlying claims to assess whether nondiscrimination laws are actually related to privacy and safety in restrooms, evidence of which has yet to be provided. We sought to empirically assess such claims through the analysis of police records of safety and privacy crimes in public restrooms, locker rooms, and changing rooms.

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Legal Background

State and local employment and public accommodations non- discrimination statutes and ordinances have included gender identity for over 20 years. In 1993, Minnesota passed the first statewide nondiscrimination law that included gender identity (Minn. Stat., 1993). Currently, 20 states and over 200 towns, cities, boroughs, and counties have nondiscrimination laws and ordinances that are inclusive of gender identity (Movement Advancement Project, 2017; Human Rights Campaign, 2016). In theory, employment nondiscrimination laws that include gen- der identity would apply to restroom use in the workplace, and public accommodations nondiscrimination laws that include gender identity would apply to public restrooms; however, the specific language, interpretation, and implementation of such laws and ordinances have varied throughout the country.

There is no federal law that prohibits discrimination in employment or public accommodations based on gender identity. However, some federal agencies and courts[3] have interpreted laws that prohibit discrimination based on sex to include gender identity. For example, the Equal Employment Opportunity Commission held that Title VII's prohibition on sex discrimination in employment also prohibits discrimination based on gender identity in employment, including by requiring that employers allow employees to use restrooms in the workplace that are consistent with their gender identity (Lusardi v. Dep't of the Army, 2015). The Department of Housing and Urban Development has issued regulations to ensure equal access to shelter housing and restrooms without discrimination based on gender identity (Department of Housing and Urban Development, 2016),[4] and the Occupational Safety and Health Administration has issued guidance instructing employers to allow employees to have access to restrooms based on their gender identity (Occupational Safety and Health Administration, 2015). In 2016, the Civil Rights Divisions of the Department of Education and the Department of Justice issued guidance that students should have access to restrooms that correspond to students' self-identified gender identity (U.S. Department of Justice & U.S. Department of Education, 2016). That guidance was repealed less than a year later (U.S. Department of Justice & U.S. Department of Education, 2017). In June of 2017, an instructional letter was sent to Department of Education Civil Rights Office regional directors stating that sex discrimination complaints from transgender stu- dents should be evaluated based on Title IX and its implementing regulations, as interpreted in decisions of federal courts and other Office for Civil Rights guidance documents, but specifically excluding the repealed guidance (Jackson, 2017). By February of 2018, a Department of Education spokesperson asserted that the department would no longer accept discrimination complaints from transgender students who are blocked access to restrooms in accordance with their gender identity (Holden, 2018).

The 2015–2016 state legislative sessions across the country saw increases in proposed legislation seeking to prohibit access to public restrooms based on gender identity (Kralik, 2017). Some of these policies sought to roll back protections granted by municipal governments (Fausset, 2017; Kralik, 2017). In addition, some localities such as Anchorage, Alaska and Houston, Texas sought repeal of protective policies through public ballot measures (Fernandez & Smith, 2015; Kelly, 2016). Additionally, some states that did not have any statewide laws related to public accommodations access, such as North Carolina, sought to pro- actively prohibit any future enactment of gender identity nondiscrimination laws at the state or local level that would allow transgender people to access restrooms that correspond with their gender identity (Kralik, 2017).

At the same time, litigation across the country has sought to determine the extent of state, local, and federal powers to either prohibit or mandate restroom access based on gender identity. For example, after the Departments of Education and Justice issued the initial federal school bathroom guidance in 2016, states and representatives from Texas and 12 other states filed a lawsuit against the federal government. The District Court granted a preliminary injunction against implementation of the guidance in 2016, and in 2017, the federal government withdrew its initial appeal (Texas v. U.S., 2016, 2017). At the same time, a transgender student has been engaged in litigation against his local school board for access to school restrooms in accordance with his gender identity. That case had been accepted to be heard by the Supreme Court but was remanded to the Fourth Circuit Court for reevaluation in response to the repeal of the federal school restroom guidance (G. G. v. Gloucester County School Board, 2017). After the student graduated from high school with- out having a final court decision, he amended his complaint to request a declaration that the school board violated his rights under Title IX and the Equal Protection Clause and to allow him to use male restrooms when he returned to school grounds for alumni activities (American Civil Liberties Union, 2017). Nebraska and nine other states filed a case similar to the Texas case that was stayed pending a ruling in the G.G. case and later was voluntarily dismissed by the plaintiffs without prejudice, in other words, with the right to reinstate the case later (Nebraska v. U.S., 2016, 2017). Several other lawsuits specific to transgender student restroom access are currently winding their way through state and federal courts. Concerns about restroom privacy and/or safety have been considered in all of these cases (G.G. v. Gloucester County School Board, 2015; Nebraska v. U.S. First Amended Complaint, 2016; Texas v. U.S., 2016).

[3] See, e.g., EEOC v. Harris Funeral Homes, 2018, which affirmed the Sixth Circuit's previous holdings that discrimination against a transgender individual is illegal sex discrimination under Title VII. In that case, a funeral home director was fired after she told her employer that she was transgender and planned to transition and begin wearing women's work clothing on the job. The court also stated that religious beliefs and the Religious Freedom Restoration Act do not overrule the nondiscrimination requirements of Title VII. The last paragraph in this section discusses court cases that directly address sex discrimination as it applies to transgender individuals in the context of restroom access.

[4] The Department of Housing and Urban Development has slowed support for this Equal Access Rule in the last year. Online training materials meant to support homeless shelters in the implementation of the rule were ordered removed from the department's website (MacGillis, 2017).

Literature Review

Using new policy proposals continues to be a central strategy between the LGBT rights social movement and countermovement. Stone (2012) describes different forms of tactical innovation the Religious Right has taken on sexual orientation and gender identity public policy. These innovations vary in terms of venue (e.g., local, statewide, or national), strategy (e.g., legislative, direct initiative, or referendum), and issue (e.g., gay teachers, same-sex marriage, transgender inclusion in public accommodations). As such, the Religious Right has played a large role in controlling the issue agenda of the LGBT rights movement (Fetner, 2008). The present case of carving out gender identity protections in public accommodations policies may be seen as another form of tactical innovation. As is the case of other issues of LGBT rights, many times these policies are seen as seeking solutions to problems that may not really exist, which may be linked to social perceptions of sexual and gender minorities as deviants (Fejes, 2008). For example, Anita Bryant's campaign and the Briggs Initiative to prohibit gay and lesbian school teachers are key moments when public policy and the general public were targeted for policy advancement against the rights of LGBT people.

The movement counter to the advancement of LGBT rights has increased its focus on transgender people (Andersen, 2017). The discursive strategy on transgender rights remains similar to gay rights discourses with a focus on the harms gender identity inclusive policies pose primarily to children. A social constructionist framework of social policy (Shneider and Ingram, 1993) would consider both the political power and social favorability of transgender people in the consideration of the types of policies getting passed. As Westbrook and Schilt (2014) identify, issues involving sex- segregated spaces become overly focused on biologic sex and anatomy, which increases the "gender panic" people experience relating to transgender people. By focusing on public accommodations, the discourses focus on sex-segregated spaces in ways that exacerbate "gender panics" which would further lower the social valence of transgender people (see also Miller et al., 2017). Thus, arguments against the inclusion of gender identity protections in such sex-segregated spaces are likely motivated by such social constructions of a politically powerless and negative valence group.

Critiques of anti-LGBT policies are abounding. Fogg Davis (2017), for example, argues for the abolishment of using sex as a criterion for separating facilities. In other LGBT policy areas, scholars have marshaled evidence that the claims made by those advocating against LGBT rights are unfounded in the arenas of marriage and family (Herek, 1991, 2006) and in employment (Badgett, 2001; Herek, 1991). The arguments used to justify anti-LGBT policies tend to be emotionally stirring, though of- ten lack empirical validity.

Given the recently targeted focus on transgender rights, it is important to understand and evaluate both the motivations for policy, as well as its negative externalities. The asserted motivations for proscribing transgender inclusion in public ac- commodations are the perceived negative externalities of in- creased harassment and victimization in public spaces such as bathrooms and locker rooms. The current project examines the policy motivation portion. In essence, we ask: "Are inclusive transgender public accommodations laws associated with these negative externalities?" If not, then public policy may be seeking a policy solution to solve a problem that does not exist or that would exist even if policies changed.

Some research has suggested that states with more supportive gay rights policies overall correlate with lower sexual orientation hate crimes and discrimination (Levy & Levy, 2017; Hasenbush, Flores, Kastanis, Sears, & Gates, 2014). Local gender identity accommodation protections may be one of many indicators that may, counter to arguments against such laws, reduce victimization rates with respect to sexual and gender minorities, which could make a discernable reduction in overall victimization rates. Given this research we propose three hypotheses:

H0: The passage of gender identity accommodations policies will have no effect on victimization rates.
H1: The passage of gender identity accommodations policies will reduce victimization rates.
H2: The passage of gender identity accommodations policies will increase victimization rates.

H0 is motivated both by previous scholarship dispelling myths in other areas of LGBT rights as well as the insufficiency of single policies to lead to vast changes in victimization. H1 is motivated by Levy and Levy (2017) who note that inclusive policies in localities indicate supportive environments where victimizations are lower. H3 is motivated by the standard arguments made by opponents to gender identity inclusive nondiscrimination policies.

Methods

We sought to empirically assess whether reports of safety or privacy violations in public restrooms, locker rooms, and dressing rooms change in frequency in localities that have gender identity inclusive public accommodations nondiscrimination ordinances (GIPANDOs) as compared to matched localities without GIPANDOs. Massachusetts was selected as a case study for this analysis, because, for a period of time, Massachusetts had a statewide nondiscrimination law that was inclusive of gender identity in employment and housing, but not public accommodations. Thus, these conditions created an optimal context in which to compare rates of public restroom privacy and safety incidents in localities that had passed local GIPANDOs with matched localities that had not. All data col- lection, analysis, and results are inclusive of criminal incidents in public restrooms,

public locker rooms, and public changing rooms. For simplicity's sake, authors may refer to only "restrooms" when describing the results of this study.

Victimization rates can fluctuate both over time and place. Using matched pairs and difference-in-differences analysis allows a comparison between different locations over time in order to determine whether any changes can be attributed to normal fluctuations over time or whether the changes can be attributed to some distinct difference in one location versus the other (see e.g., Dimick & Ryan, 2014; Raifman, Moscoe, Austin, & McConnell, 2017). A difference-in-difference analysis was used in this study to compare similarly-situated localities in MA to determine whether differences in restroom crime rates over time can be attributed to the introduction of a GIPANDO.

Unlike some trends over time, crime rates do not consistently increase or decrease. Small fluctuations in crime rates over time may be based on random variability and may not be attributable to any one specific policy change. Using a matched pairs analysis allows timewise comparisons across policy con- texts to seek out differences that appear to be due to more than just small random fluctuations. The matched pairs analysis ensures that the localities being compared to each other in the difference-in-difference analysis are similar enough to make appropriate comparisons. For example, Fig. 1 shows the violent crime rates across five New England states as documented by the U.S. Department of Justice. The matched pairs design of this study accounts for such temporal instability in crime rates by finding localities that have the most similar trends. In Fig. 1, it would be more appropriate to draw comparisons between Massachusetts and Connecticut because they follow a similar trend, and it would be inappropriate to compare Massachusetts to New Hampshire because they do not. Likewise, the selection of comparison localities was designed in a way to minimize differences to draw accurate comparisons.

Selection of Localities The Commonwealth of Massachusetts has had a broad nondiscrimination policy protecting against sexual orientation discrimination since 1989 (Mass. Gen. Laws, 1989). Massachusetts also passed a law in November 2011 extending nondiscrimination protections for transgender people in employment, housing, credit, and services (Gender Identity Act, 2011). However, that extension of the law did not contain any explicit protections for transgender people in public accommodations. Some individual localities within Massachusetts expanded upon state law by incorporating explicit gender identity protections in public accommodations laws, which includes protections in public restrooms, locker rooms, and changing rooms. This allowed for a between- localities study, comparing localities that passed GIPANDOs with matched localities within the state that did not have GIPANDOs, but otherwise had gender identity nondiscrimination protections in employment, housing, credit, and services.[5] The matched pairs strategy means that the distinguishing factor between these localities is the existence or absence of a public accommodations-specific nondiscrimination law that applied to gender identity.

[5] Boston and Cambridge both had a GIPANDO prior to the 2011 state law. Neither locality is included in this analysis.

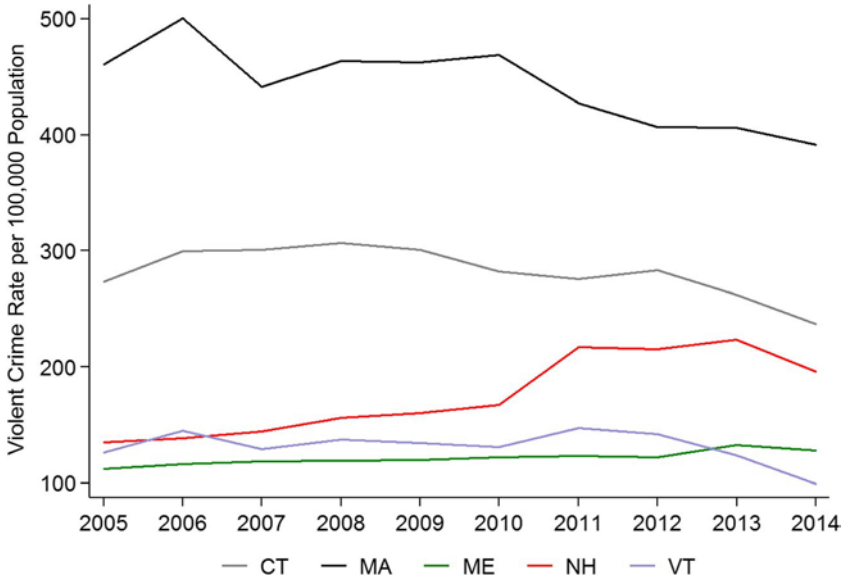

Fig. 1 Violent crime rate across New England states, 2005 to 2014. Source: Uniform Crime Reporting Statistics, FBI, U.S. Department of Justice

Table 1 reports the localities within Massachusetts that have ordinances that contain language that includes gender identity protections and the date when those ordinances went into effect. There were seven localities that had identifiable nondiscrimination ordinances relating to gender identity protections in public accommodations. Two other localities in close geographic proximity to the GIPANDO localities were also identified as having some gender identity protections, though their coverage was not as extensive as the seven other localities. Cambridge includes gender identity protections in public accommodations except for restroom access, which is of primary concern to this study. Brookline law contains a gender identity resolution, but it is unclear the extent to which this resolution resulted in actionable changes or any enforcement mechanism within the locality.

In October 2016, a new Massachusetts state law went into effect to provide for protection against discrimination in public accommodations based on gender identity (Transgender Anti- Discrimination Act, 2016). However, results of the public re- cords requests in this study did not overlap with the time that Massachusetts had this statewide gender identity inclusive public accommodations nondiscrimination law in effect, and thus, enable this study to focus on the period when localities introduced GIPANDOs in the absence of statewide protections.

Notably, after the law went into effect, enough signatures were gathered to put a repeal measure on the 2018 ballot to allow Massachusetts residents to vote on whether to repeal the non- discrimination law (Young, 2016).

Matched Pairs Design After identifying the localities with GIPANDOs, we used quantitative models to identify localities within Massachusetts to match for comparison. Matched localities were in the same geographic regions of Massachusetts as the GIPANDO localities and were matched on demographic and other characteristics that may relate to the likelihood that locations would pass a GIPANDO as well as characteristics that may be predictive of criminal incidents (or a lack thereof) in public restrooms. We started the matched pair locality selection by identifying a full list of localities within Massachusetts that did not have GIPANDOs and that were in the same regions of Massachusetts as the localities with GIPANDOs.[6] We then collected pre-policy introduction information about both the GIPANDO localities and the candidate pool of potential matched localities. These covariates included: population size, the percent of the population over the age of 65, the percent of population that is non-Hispanic white, the percent of population earning more than $200,000, median income, the percent of the population living below the poverty line, the percent of the population that identifies as Born Again, percentage of the vote for Barak Obama in the 2012 presidential election, and a composite crime score based on numerous indices.[7] Since all of the metrics of crime were highly intercorrelated, a composite score was created based on a factor analysis. The researchers then used a covariate balancing approach to create a propensity score to identify the most fitting matched localities for each of the GIPANDO localities (Imai & Ratkovic, 2014). The fitted propensity score was extracted and used in addition to the covariates in a genetic matching procedure (Diamond & Sekhon, 2013; Sekhon, 2011). The genetic matching procedure identifies appropriate comparison localities by examining the full distribution of covariates, which may improve the matching procedure that other matching processes may worsen.

[6] The initial design also planned to identify contiguous localities, treating boundary lines as regression discontinuities (Keele & Titiunik, 2015). However, since the occurrence of the crimes sought was rare, there was insufficient analytical power to utilize geographic variation to the full extent possible. Instead, the researchers opted for simpler analytical methods relying on data preprocessing and case selection to reduce analytical assumptions. However, the matched localities were limited to localities that had a shared boundary with at least one of the GIPANDO localities.

[7] The indices were: the Neighborhood Scout Crime Index (retrieved from https://www.neighborhoodscout.com/ma/crime/), violent crimes per 1000 residents and property crimes per 1000 residents, the USA.com Crime Index (retrieved from http://www.usa.com/massachusetts-state-crime-and-crimerate.htm), and the City Data.com 2012 Index (retrieved from http://www.city-data.com/crime/crime-Massachusetts.html).

Table 1 Localities within MA that contain GIPANDOs

Locality	GIPANDO	Date in effect	Statute
Boston	Yes	October 30, 2002	Bos., Mass., Code § 12−9.7 (2002).
Medford	Yes	December 16, 2014	Medford, Mass., Rev. Ordinances part 1, ch. 50, div. 2, § 50−61 (2014).
Melrose	Yes	December 17, 2014	Melrose, Mass., Code ch. 15, art. X, § 15−50 (2014).
Newton	Yes	October 14, 2014	Newton, Mass., Ordinances ch. 12, art. V, § 12−50 (2014).
Salem	Yes	February 27, 2014	Salem, Mass., Code part III, ch. 2, art. XVI, §2−2056 (2014).
Somerville	Yes	May 29, 2014	Somerville, Mass., Code ch. 2, art. V, div. 6, § 2−237 (2014).
Swampscott	Yes[a]	February, 18, 2015	Swampscott, Mass. Nondiscrimination Policy (Feb. 18, 2015).
Cambridge	Yes, but contains a restroom exception	February 24, 1997	Cambridge, Mass., Code tit. 2, ch. 2.76, §§ 2.76.030; 2.76.120 (1997).
Brookline	Unclear, a gender identity ʙresolution^ exists	November 18, 2014	Brookline, Mass. Code, part III, art. 3.9 § 3.9.2 (2014).

Note:

[a] Swampscott was identified as a locality with a GIPANDO for these analyses. Record requests failed because the Swampscott Police Department records division lacked sufficient staff and capacity to perform the requested search. Therefore, public records requests were not sent to their matched localities (Marblehead and Milton)

While Cambridge and Brookline were categorized as limited GIPANDO localities and selected because of their geographic proximity to the clear GIPANDO localities, a few other localities in the state that were not in close geographic proximity to the clear GIPANDO localities also had gender identity ordinances that were unclear or limited as related to restroom access. These were: Northampton, Amherst, and Worcester, and they were not included in this analysis, since it was originally designed to include a boundary regression discontinuity that would have required localities to share physical borders. Northampton, Massachusetts has a Human Rights Commission with a voluntary advisory committee that does not have any investigative or enforcement authority. It is also unclear whether their Human Rights Commission prohibits discrimination based on gender identity (Simmons, 2015). Amherst, Massachusetts prohibits the denial of "any rights" based on gender identity (Human Rights Bylaw, 2009). However, the town's director of human resources and human rights, who investigates complaints of discrimination, was unable to confirm whether such rights included access to public accommodations and/or public restrooms (Radway, 2015). Worcester, Massachusetts has a local ordinance that states that its policy is "to assure that every individual shall have equal access to and benefit from all public services, accommodations and employment opportunities to protect every individual ..." and that, "behavior which denies equal treatment to any of our citizens as a result of their … gender identity …undermines civil order and deprives persons of the benefits of a free and open society." (Worcester, Mass., Rev. Ordinances §9(c), 2014). However, the local human rights commission only has explicit authority to investigate complaints of discrimination "based on race, color, religious creed, national origin, gender, age, ancestry, marital status, parental status, sexual orientation, disability or source of income." (Worcester, Mass., Rev. Ordinances §18(c)(1), 2014). Matched localities were selected for all of the localities with clear GIPANDOs that applied to public restrooms. The final GIPANDO localities and their matched localities for two different analyses are listed in Table 2.

Data

Public Record Requests Through a thorough reading of municipal ordinances and consultation with local human rights commissions, town and city clerks, and attorneys, we ascertained an exhaustive list of all of the localities in Massachusetts with GIPANDOs. Localities with GIPANDOs and matched localities received two sets of public records requests from the investigators. In July 2015, a first set of requests under the Massachusetts Public Records Law (M.G.L.A. c. 66, §10, 2016) was sent to target localities. These letters requested, "All records documenting complaints made to [the local police] agency and records of crimes alleged or committed or incidents … that took place in a public bathroom, public restroom, public locker room, or public changing room."

Table 2 Localities with GIPANDOs and matched localities

GIPANDO Locality	Matched locality (1)	Matched locality (2)
Boston	Cambridge[b]	Chelsea[c]
Medford	Beverly	Watertown
Melrose	Beverly	Beverly
Newton	Brookline	Arlington
Salem	Revere[b]	Waltham
Somerville	Cambridge[b]	Waltham
Swampscott[a]	Marblehead[a]	Milton[a]
Brookline (unclear enforceability)		Arlington
Cambridge[b] (restroom exclusion)		Everett

Notes:

[a] Swampscott was identified as a locality with a GIPANDO for these analyses. Record requests failed because they lacked sufficient staff and capacity to perform the requested search. Therefore, public records requests were not sent to their matched localities

[b] Cambridge and Revere were unable to supply results of the public records requests after repeated attempts over the course of nine months. Therefore, data from their matched localities, Salem, Somerville, Boston, and Everett were excluded from analyses that required the missing data

[c] Chelsea's results were excluded due to an incomplete response to the request

The request covered a one- to two-year timespan before and after the gender identity inclusive public accommodations nondiscrimination law had gone into effect in the localities that had such an ordinance and the same time period for the localities that were matched localities. In some cases, the local ordinance had been passed less than one or two years prior to the public records request. In those instances, records were requested "through the present." If matched localities were matched to more than one GIPANDO locality, the matched locality records request would cover the matching timespan for both of the GIPANDO localities to which they were matched. The total timespan covered (either two or four years) was selected based on the size and crime rate of the locality; smaller localities or those likely to have fewer incidents were given longer timespans to search, and larger localities or those in which more incidents were likely to occur were given shorter timespans. The investigators requested information on the type of crime/incident alleged, the gender of the victim(s) and the perpetrator(s) (as applicable), the date of the incident, and the address of the public bathroom, restroom, locker room, or changing room in which the alleged incident took place.

After mailing public records requests, follow-up emails and phone calls were placed with all of the records custodians to facilitate the process of data collection. Some larger localities were able to comply with the requests relatively quickly and easily, while others did not have the tools necessary to perform a key word search that would make such a request possible or feasible. Several record clerks noted that the cost to pay for staff time to complete a search by hand would be prohibitively expensive. After assessing the initial completed responses, the investigators noted that the majority of incidents occurring in restrooms were not related to the types of crimes that are the subject of concern related to public accommodations nondiscrimination ordinances. In other words, the fears projected as potential problems related to such ordinances are related to violations of safety and privacy, but most incidents were related to vandalism and drug use in public restrooms and theft in locker rooms.

Given the mismatching scope between the search and the crimes of concern and the challenges for smaller localities to respond to the public records requests, the researchers completed a second round of public records requests with a narrower scope in February 2016. In the second round of requests, the investigators requested, "All records documenting complaints

made to [the local police] agency and records of crimes alleged or committed or incidents … involving conduct that took place in a public bathroom, public restroom, public locker room, or public changing room" regarding criminal codes related to: murder, manslaughter and attempts; assault or assault and battery and attempts; theft involving assault or battery and kidnap- ping; rape, stalking, harassment, indecent exposure, public sex and voyeurism; and solicitation. The individual Massachusetts General Law sections were cited in the request. The full updated request was sent to all police departments that had not fully responded to the first round of public records requests. For those who had responded, but for whom the timespan was still continuing until "the present," a modified request was sent for any new records that may have arisen since the first round of requests.

Follow-up phone calls and emails were again used to assist in the facilitation of data collection until all of the localities had either responded with the results of their search or made it clear that they were unable to complete the search. By the end of the second round of data collection, two localities were unable to complete the search at all, and one locality provided an incomplete response. Records were then organized and reviewed to ensure only inclusion of incidents under the narrower scope related to assault, sexual assault, rape, voyeur- ism, public sex (including sex work), lewd behavior, and in- decent exposure.

As a result of the data collection, we received public re- cords of incidents occurring within our selected municipalities. The unit of analysis in this collection is an incident. Consistent with previous research, we transformed these incidents to average annual incident rates per 100,000 individuals. This normalizes our measure accounting for varying size of municipalities and time period.

Analysis and Results

The first round of analysis was a simple comparison of the average annual number of incidents before and after the pas- sage of GIPANDOs in the localities with such nondiscrimination ordinances and their comparable matched localities. This comparison was made to determine whether the rate of reported incidents in public restrooms and locker rooms over the timespan in which the GIPANDOs were passed was different between the places with the ordinances and their matched localities. Since we use matched pairs for our analyses, we did not employ additional controls, and since time frames were equal between the GIPANDO localities and their matched localities, time is also controlled by design. The results are shown in Table 3. When a matched locality had missing results, the GIPANDO locality's results were excluded from the count.

Table 3 provides a contingency table showing the average number of incidents per year. There were fewer average annual incidents in the localities with clear GIPANDOs when compared to their matched localities. The differences in incident rates over time (comparing before and after GIPANDO passage) were not statistically significant in the GIPANDO localities or among the matched localities. Most importantly, a Fisher's exact test of the difference in crime rates between places with and without GIPANDOs before and after GIPANDOs were passed indicates no statistically significant relationship (at a one-sided alpha level of 0.10) between GIPANDO policy passage and victimization. A comparison of the change in the number of criminal incidents after passage of public accommodations protections between GIPANDO localities and their matched localities also showed no statistically significant difference. In these comparisons, there does not appear to be a relationship between passage of GIPANDOs and criminal incidents in restrooms between localities.

A finding of no difference between the GIPANDO localities and the matched localities may be driven by the small number of localities included in the analysis. However, we are able to assess whether our finding of no difference was a result of our small sample size. A power analysis shows that we would likely still find no statistically significant difference between the GIPANDO localities and matched localities even with a larger sample size. If there was a sample with 50 matched pairs with observed effect size at 90% power, then a one-tailed alpha would be 0.108, suggesting that there is no difference between the GIPANDO localities and the matched localities. By increasing the number of matched pairs, the inference with the observed effect size would increase the probability that GIPANDO localities have *lower* annual crime rates than their matched localities, though this inference would barely satisfy less stringent accounts of statistical significance. Beyond before-and-after differences, we can also assess trends in crime rates in public bathrooms between these localities. This way, it can be assessed whether trends in crime rates increase in GIPANDO localities compared to their matched localities. Figure 2 provides the timeframe from 24 months before to 24 months after the passage of the local GIPANDOs. A 24-month window was chosen because all localities in this analysis were asked to provide incidents within a four-year timeframe. Unlike a change in the annual incident rate before and after the introduction of GIPANDOs, this model compared the change in the average monthly incident rates in GIPANDO and matched localities. If the argument about GIPANDOs negatively impacting safety and privacy in restrooms is correct, then an increase in reported incidents among localities with GIPANDOs, above and beyond any increase in localities without GIPANDOs, would be expected after the introduction of such policies.

In Fig. 2, the model included the difference between localities with clear enforceable GIPANDOs that applied to restrooms and their matched localities. As can be seen in the graph, the rates over time showed no significant increases in victimization rates in GIPANDO localities compared to matched localities. To the contrary, localities introducing GIPANDOs had slightly, yet significantly, lower rates of criminal incidents than their matched localities at the time these ordinances were introduced. About 10 to 20 months after GIPANDO passage, the difference appeared to increase; during that time, the average monthly proportion of criminal incidents remained rather stable in GIPANDO localities but slightly increased among matched pairs. By 24 months after GIPANDO passage, rates between the two sets of localities appeared to have little difference.

Table 3 Average number of incidents per year documented by police departments by localities with clear GIPANDOS and matched pairs before and after policy passage

	Localities with clear GIPANDOs	Matched localities without GIPANDOs	Difference per 100,000 (clear-matched)
Before passage	0 (0 per 100,000) [0 per 100,000, 0 per 100,000]	3.5 (2.54 per 100,000) [2.53 per 100,000, 2.55 per 100,000]	− 2.54 per 100,000 [− 2.55 per 100,000, − 2.53 per 100,000]
After passage	0.5 (0.62 per 100,000) [− 0.49 per 100,000, 1.73 per 100,000]	5.5 (4.50 per 100,000) [1.22 per 100,00, 7.78 per 100,00]	− 3.88 per 100,00 [− 7.34 per 100,000, − 0.42 per 100,000]
Change per 100,000 (After − before)	0.62 per 100,000 [− 0.49 per 100,00, 1.73 per 100,000]	1.96 per 100,000 [− 1.32 per 100,000, 5.24 per 100,000]	− 1.35 per 100,000 [− 4.30 per 100,00, 1.60 per 100,000]
Total annual average	0.25 (0.31 per 100,000) [− 0.25 per 100,000, 0.86 per 100,000]	4.5 (3.52 per 100,000) [1.86 per 100,000, 5.19 per 100,000]	

Notes: Average annual crime rate in incidents per 100,000 people are in the parentheses; 90% confidence intervals are in the brackets; $\chi^2_1 = 0.62$; $p = 0.43$; Fisher's exact = 1.00; one-sided Fisher's exact = 0.632.; difference-in-difference = − 1.35 bootstrapped S.E. = 1.80, $p = 0.454$

Discussion

Opponents of gender identity nondiscrimination laws and policies have cited fears of attacks and privacy violations against women and children in restrooms as one of their main reasons for resistance to them, while proponents have asserted that such laws are necessary to protect transgender people and cause no increase in these kinds of crimes. However, no study, to our knowledge, has examined crime report data to assess changes in rates of crime before and after the introduction of GIPANDOs. This is the first study to do so. While this analysis initially chose Massachusetts as a case study because of its unique legal paradigm, it has taken on more direct importance in that state, because over the course of the data collection and analysis, Massachusetts passed a statewide public accommodations law that includes gender identity and that law is now up for repeal on the November 2018 ballot. By using public records and statistical modeling, we found no evidence that privacy and safety in public restrooms change as a result of the passage of GIPANDOs.[8]

The inclusion of GIPANDOs may signal a more inclusive context and thus relate to lower victimization rates, which we propose in H1. Based on previous empirical work on dispel- ling the myths to oppose LGBT rights in marriage, family, and employment, we suspected in H0 that GIPANDOs would have no relationship with victimization rates. We find greater support for H0. The inclusion of GIPANDOs had little relationship with victimization rates. Complimentary to research on hate crimes policies, sometimes, policy-specific provisions have little relationship to victimization. The cumulative addition of legal inclusion of marginalized groups may, however, reduce victimization rates (Levy & Levy, 2017).

Limitations Limitations of this study include issues inherent with the data source. For example, the data used to represent safety and privacy violations in public restrooms were police records of criminal incidents. While these records should have a relatively high level of reliability in their objective accuracy in recording the existence of such incidents, they fail to include any incidents that were not reported to local law enforcement. For example, it is estimated that only 30 to 35% of rapes and sexual assaults are reported to the police (Truman & Langton, 2014). Nevertheless, by assessing trends over time and using a matched pairs analysis, the authors sought to control for any issues related to unreported incidents. There is no reason to assume that incidents are more or less likely to be reported in a locality with a GIPANDO than in a matched locality.

The crime reports also were not recorded in a way that allows a reviewer to distinguish between incidents involving cisgender people and transgender people. Police departments generally do not distinguish between sex assigned at birth and gender identity. Therefore, there is no way to identify if there were any incidents that involved transgender people being attacked in public restrooms because of their externally perceived gender. A 2008 survey of 93 transgender people in the Washington, DC metropolitan area found that 9% reported experiencing physical assault in a public restroom (Herman, 2013). There was also no way to identify if there were incidents of transgender people or people pretending to be transgender accessing restrooms with intent to harm others. Among the incidents that had notes attached providing more detail, there was no evidence of transgender people being either victims or perpetrators of crimes or of people pretending to be transgender in order to harm others in public restrooms.

[8] We conducted a second analysis using a matching procedure that included localities with clear GIPANDOs, localities with limited GIPANDOs, and matched localities that clearly did not have a GIPANDO. This second analysis found similar results to the analysis presented above. See Appendix for a description and results of this second analysis

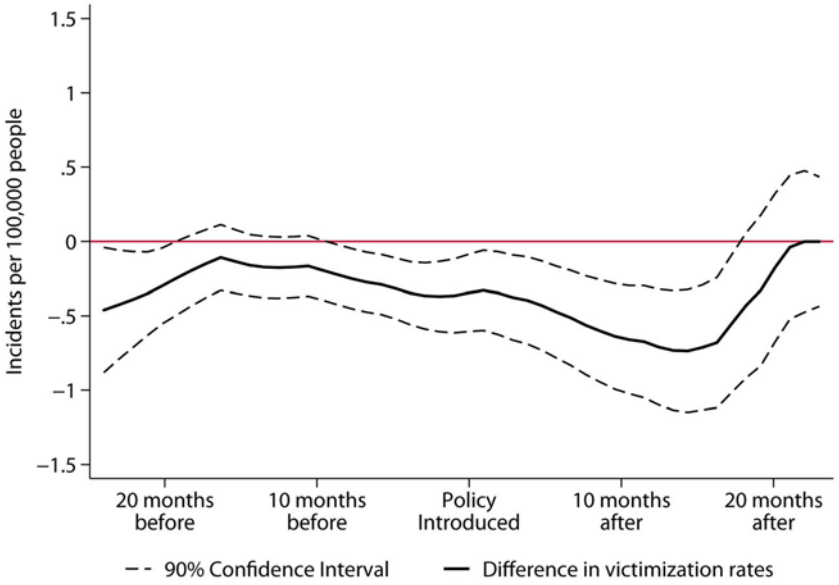

Fig. 2 Difference in the average monthly rate of criminal incidents in public restrooms, locker rooms, and changing rooms between localities with clear GIPANDOs and matched localities. Note: Dashed lines represent 90% confidence intervals; negative values show lower rates of victimizations in GIPANDO localities compared to matched localities before, during, and after policy introduction

It is also important to note that violent and other privacy- related crimes in public restrooms, locker rooms, and changing rooms are exceedingly rare. As a point of comparison, our findings indicated that reports of privacy or safety violations in these public spaces occurred annually at most at a rate of 4.5 per 100,000 population in the jurisdictions we studied; in the Commonwealth of Massachusetts in 2015, violent crimes were reported at a rate of 390.1 per 100,000 population, and rapes were reported at a rate of 32.6 per 100,000 (Federal Bureau of Investigation, 2016). While this may be comforting to those who have safety and privacy related concerns about those spaces, the rarity of such incidents may act as a limitation to this analysis. Nevertheless, the matched pairs design was used intentionally to compensate for limited data. The data were requested from 15 different police departments of different sizes and geographies. Each had its own individual record keeping system, policy for responding to public records requests, and records clerks. Some departments responded by sending extra data and allowing the researchers to search through to find the relevant incidents, while others sent tables with dates and criminal codes. Some appeared to have the ability to search electronically while others had to search manually. Therefore, we are unable to determine whether every single search was equally thorough and turned up every single incident that matched the researchers' search criteria. For example, the locality that showed the highest limitation to this analysis. Nevertheless, the matched pairs design was used intentionally to compensate for limited data. The data were requested from 15 different police departments of different sizes and geographies. Each had its own individual record keeping system, policy for responding to public records requests, and records clerks. Some departments responded by sending extra data and allowing the researchers to search through to find the relevant incidents, while others sent tables with dates and criminal codes. Some appeared to have the ability to search electronically while others had to search manually. Therefore, we are unable to determine whether every single search was equally thorough and turned up every single incident that matched the researchers' search criteria. For example, the locality that showed the highest number of restroom incidents was the locality in which the police department sent their full criminal logs to the researchers and allowed the researchers to review the records to find incidents that met their search criteria. The higher number of incidents might be more likely to indicate that the researchers performed a more detailed and exhaustive search than the other searches performed within police departments, rather than that there were actually more incidents in that locality. That locality was a matched pair locality, so this may have contributed to the greater number of incidents reported in matched pair localities, as compared to GIPANDO localities. However, the difference-in-difference approach would account for any such bias because we do not rely on the numbers of individual incidents reported for the analyses, but instead rely on the differences within jurisdictions before and after passage of GIPANDOs. We can assume that data collection efforts were consistent within each jurisdiction, and therefore, our calculations produce differences that are comparable across jurisdictions.

Table 4 Average number of incidents per year as documented by police departments by localities with clear GIPANDOs, limited GIPANDOs and matched localities before-and-after policy passage

	Localities with clear GIPANDOs	Localities with limited GIPANDOs	Matched localities without GIPANDOs	Difference per 100,000 (clear-matched)
Before passage	1.0 (0.26 per 100,000) [− 0.91 per 100,000, 1.44 per 100,000]	1.5 (2.55 per 100,000) [− 0.07 per 100,000, 5.18 per 100,000]	2.5 (1.07 per 100,000) [− 0.00 per 100,000, 2.15 per 100,000]	− 0.81 per 100,000 [−2.40 per 100,000, 0.78 per 100,000]
After passage	1.5 (0.63 per 100,000) [− 0.54 per 100,000, 1.81 per 100,000]	0.5 (0.85 per 100,000) [− 1.78 per 100,000, 3.48 per 100,000]	3 (1.32 per 100,000) [0.24 per 100,000, 2.39 per 100,000]	− 0.68 per 100,000 [−2.27 per 100,000, 0.91 per 100,000]
Change per 100,000 (after−before)	0.37 per 100,000 [− 1.29 per 100,000, 2.03 per 100,000]	− 1.70 per 100,00 [− 5.42 per 100,000, 2.01 per 100,000]	0.24 per 100,000 [− 1.27 per 100,000, 1.76 per 100,000]	0.13 per 100,000 [−2.12 per 100,000, 2.38 per 100,000]
Total annual average	1.25 (0.45 per 100,000) [0.05 per 100,000, 0.85 per 100,000]	1.0 (1.70 per 100,000) [0.24 per 100,000, 3.16 per 100,000]	2.75 (1.19 per 100,000) [0.29 per 100,000, 2.10 per 100,000]	

Notes: Average annual crime rate in incidents per 100,000 people are in the parentheses; 90% confidence intervals are in the brackets; χ^2_2¼ 1:42; p ¼ 0:49; Fisher's exact ¼ 0:658. Difference-in-difference = 0.41, bootstrapped S.E. = 1.05, p = 0.699

Finally, though all of the requests were worded and followed up upon in the same manner, the depth of the results may have varied. Three localities were unable to provide complete incident data, which may decrease the internal validity of the current study. Cases where there was missing data from a matched locality led to the exclusion of the locality with a GIPANDO from the analysis because of the lack of comparable data, which may impact the external validity of the current study.

Despite these limitations, this study is able to empirically assess the relationship between nondiscrimination laws that are inclusive of gender identity in public accommodations and safety and privacy in public restrooms. While criminal incidents do, in fact, rarely occur in such spaces, these findings suggest that concerns over the safety in those spaces should be more generally related to community safety and policing, and not related to nondiscrimination laws.

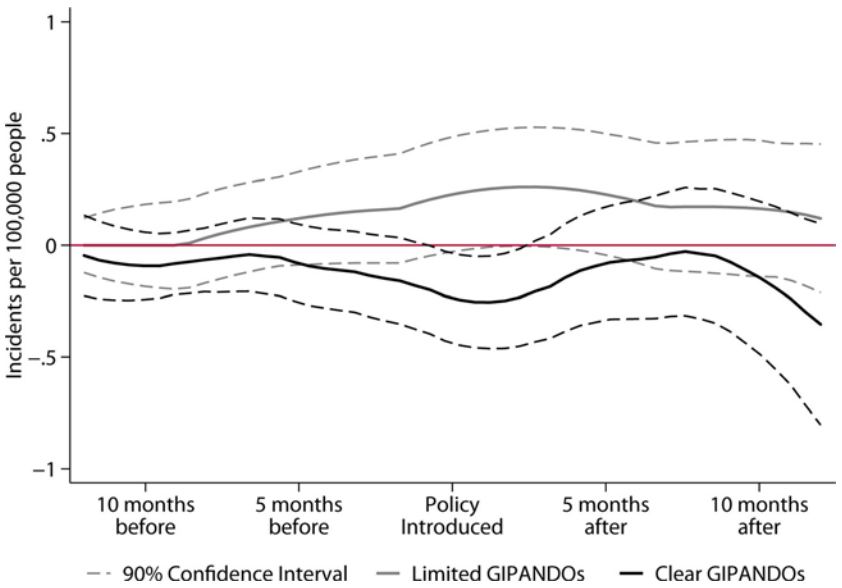

Fig. 3 Differences in the average monthly rate of criminal incidents in public restrooms, locker rooms and changing rooms among localities with clear GIPANDOs and limited GIPANDOs compared to matched localities without GIPANDOs. Notes: 90% confidence intervals represented by dashed lines; negative values show lower rates of victimizations in GIPANDO localities compared to matched localities before, during, and after policy introduction.

Conclusion

Opponents of gender identity nondiscrimination laws in public accommodations have largely cited fear of safety and privacy violations in public restrooms, locker rooms, and changing rooms if such laws are passed, while proponents have argued that the laws do not increase danger or harm in such spaces. To date, no evidence has been gathered to empirically test the hypothesized effect of these laws. This is the first study to collect public records and analytically compare the safety of public restrooms, locker rooms, and changing rooms in localities that have gender identity inclusive nondiscrimination laws that apply to public restrooms and matched localities that do not have such laws. The results show that the passage of such nondiscrimination laws is not related to the number or frequency of criminal incidents in such public spaces. Additionally, the results show that reports of privacy and safe- ty violations in public restrooms, locker rooms, and changing rooms were exceedingly rare and much lower than statewide rates of reporting violent crimes more generally. This study provides evidence that fears of increased safety and privacy violations as a result of nondiscrimination laws are not empirically grounded.

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Compliance with Ethical Standards

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors. An IRB exemption was obtained by the authors for use of de-identified criminal record data (IRB#15-001060).

Conflict of Interest Amira Hasenbush declares that she has no conflict of interest. Andrew Flores declares that he has no conflict of interest. Jody Herman declares that she has no conflict of interest.

Appendix: Placebo Matched Pairs Analysis

The analysis was re-conducted using a second matching procedure. Localities with clear GIPANDOs were matched to localities that clearly did not have a GIPANDO, and localities with limited GIPANDOs (i.e., Brookline and Cambridge) were also matched to localities that clearly did not have a GIPANDO (see Table 2). The limited GIPANDOs offer a type of placebo comparison, where a policy was introduced but not clearly inclusive of the protections that are afforded in localities with clear GIPANDOs.

Table 4 provides a contingency table showing the average annual number of incidents, similar to the analysis in the re- port. For this analysis, there were three levels of treatment: a group of localities with clear GIPANDOs, a limited GIPANDO group that introduced a gender identity policy, but made exceptions or lacked clarity on restrooms, and the matched localities group without GIPANDOs. There were fewer overall incidents in the group with clear GIPANDOs when compared to the matched localities, but there were no apparent patterns of an increase in victimization in the timeframe after passage. These differences were also not significantly different from one another. A Fisher's exact test indicated that there was no significant relationship between GIPANDOs and restroom crimes. An estimate of the before- and-after changes between the localities with clear GIPANDOs and their matched pairs of the average proportion of monthly incidents in locations also showed no statistically significant difference. There does not appear to be a relation- ship between policy introduction and restroom incidents. Again, here, even if there were many more localities, a statistical power analysis found that it is unlikely that there would be a statistically significant difference between GIPANDO localities and matched localities. If there was a sample with 50 matched pairs with observed effect size at 90% power, then a one-tailed alpha would be 0.85, suggesting that the null hypothesis of no difference would also fail to be rejected with a greater number of matched pairs.

Similar to before, we assessed trends in crime rates be- tween these localities. This way, it could be assessed whether trends in crime rates increased in clear GIPANDO localities and limited GIPANDO localities, as compared to their matched localities. The figure limits the timeframe to 12 months before and 12 months after the passage of the local GIPANDOs. A 12-month window was chosen because some localities in this analysis were asked to provide incidents with- in a two-year timeframe, so we restrict the plot to the timeframe common to all localities.

In Fig. 3, the model included differences between localities with clear enforceable GIPANDOs that applied to restrooms and their matched localities (black line), and differences be- tween the limited GIPANDOs with unclear enforceability or restroom exceptions and their matched localities (gray line). The local regressions showed a lot of overlap between and across these three groups. As opposed to the analysis in the body of the report, which showed slightly lower crime rates in the GIPANDO localities as compared to their matched pairs after policy introduction, there was no statistically significant difference in the average monthly proportion of criminal incidents in restrooms both over time and across contexts.

These results indicate that changes in the average rate of criminal incidents are not related to the passage of GIPANDOs. The limited GIPANDOs provide another source of comparison, and these additional comparisons indicate that clear GIPANDOs are not uniquely related to increases in aver- age rates of criminal incidents.

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