Published in final edited form as:

J Gay Lesbian Soc Serv. 2019 ; 31(3): 314–331. doi:10.1080/10538720.2019.1616023.

The LGBTQ Supportive Environments Inventory: Methods for Quantifying Supportive Environments for LGBTQ Youth

Amy L. Gower, PhD^{a,*}, Elizabeth M. Saewyc, PhD, RN, FSAHM, FCAHS, FAAN^b, Heather L. Corliss, MPH, PhD^c, Len Kne, MGIS^d, Darin J. Erickson, PhD^e, and Marla E. Eisenberg, ScD, MPH^a

^aUniversity of Minnesota, Division of General Pediatrics and Adolescent Health, 717 Delaware St. SE, Minneapolis, MN, 55414, USA.

^bUniversity of British Columbia, Stigma and Resilience Among Vulnerable Youth Centre, School of Nursing, T201-2211 Wesbrook Mall, Vancouver, BC, V6T 2B5, CANADA.

^cSan Diego State University, Graduate School of Public Health and Institute for Behavioral and Community Health, 9245 Sky Park Court, Suite 100, San Diego, CA, 92123, USA.

^dUniversity of Minnesota, U-Spatial, Research Computing, Office of Vice President for Research, 267 19th Ave. S, Minneapolis, MN, 55455, USA.

^eUniversity of Minnesota, Division of Epidemiology and Community Health, 1300 S 2nd St, Minneapolis, MN 55454, USA.

Abstract

The social environment in which lesbian, gay, bisexual, transgender, and queer (LGBTQ) youth live influences health and wellbeing. We describe the development of the LGBTQ Supportive Environments Inventory (LGBTQ SEI), designed to quantify the LGBTQ-inclusiveness of social environments in the US and Canada. We quantify aspects of the social environment: 1) Presence/quality of LGBTQ youth-serving organizations; 2) LGBTQ-inclusive Community Resources; 3) Socioeconomic and Political environment. Using GIS tools, we aggregated data to buffers around 397 schools in 3 regions. The LGBTQ SEI can be used to assess the role of the social environment in reducing health disparities for LGBTQ youth.

Keywords

community climate; LGBTQ youth; measurement; supportive climate

Lesbian, gay, bisexual, transgender, and queer (LGBTQ) youth experience a range of health disparities relative to their straight and/or cisgender (i.e. those whose gender identity and birth-assigned sex are congruent) peers. Higher rates of emotional distress, suicidality, substance use, and health risk behaviors have been documented among LGBTQ young

*Corresponding author: gowe0009@umn.edu.

Disclosure Statement

The authors have no conflicts of interest to disclose.

people compared to their peers (Eisenberg et al., 2017; Hatzenbuehler & Pachankis, 2016; Institute of Medicine, 2011; Marshal et al., 2011; Russell & Fish, 2016; Veale et al., 2017). Eliminating these disparities requires an understanding of how social environments can support LGBTQ young people. The Institute of Medicine (2011) described multilevel social influences on LGBTQ people (e.g., schools, workplaces, religious institutions, community organizations) as critical social determinants of health in this population. Grounded in the social ecological model, we describe the development of the LGBTQ Supportive Environments Inventory (LGBTQ SEI), a novel research tool designed to measure the supportiveness of multiple aspects of the social environment for LGBTQ youth.

Theoretical and Empirical Background

The social ecological model (Bronfenbrenner, 1979; McLeroy et al., 1988) conceptualizes individuals at the center of increasingly distal levels of influence. Intrapersonal factors sit at the center of the model. Family and peer environments at the interpersonal level are followed by institutional factors, including schools, community organizations, and religious institutions. Community factors, such as the norms of a given community are followed at the most distal level by societal factors, including public policy. Each level influences and is influenced by health and health risk behaviors. Numerous measures of support at the interpersonal level, particularly family support, already exist and are documented to protect LGBTQ youth (Katz-Wise et al., 2018; McConnell et al., 2016; Olson et al., 2016; Rosario et al., 2014a, 2014b; Saewyc et al., 2009; Watson et al., 2016). In this paper, we are particularly interested in the ways in which community factors are related to wellbeing for LGBTQ youth (Figure 1) as these are prime settings for public health initiatives to support this population.

Existing research has identified a number of protective factors at the school and community levels for LGBTQ youth. School policies that explicitly protect LGBTQ students from bullying/harassment, organized support groups (e.g., gay-straight alliances or similar clubs), professional development for teachers related to LGBTQ student issues and incorporating LGBTQ figures in curriculum are several examples (Gower et al., 2017; Hatzenbuehler, 2011; Hatzenbuehler et al., 2012b; Heck et al., 2011; Konishi et al., 2013; Kosciw et al., 2015; Russell, 2011; Saewyc et al., 2014; Toomey et al., 2011). These policies and practices are related to lower rates of suicidality, substance use, bullying, and other health-related behaviors and experiences among LGBQ¹ youth and in some cases in straight youth as well (Coulter et al., 2016; Gower et al., 2017; Konishi et al., 2013; Saewyc et al., 2014).

Schools also operate in a broader community, which must be considered. Community-level factors may influence wellbeing for LGBTQ youth both directly and indirectly. LGBTQ youth have noted both positive and negative aspects of community and neighborhood contexts, differentiating more general supports from LGBTQ-specific resources (Eisenberg et al., 2018; Higa et al., 2014). For example, organizations may provide key support specifically to LGBTQ youth through social, advocacy, and health promoting programs. Qualitative studies with LGBTQ youth document the desire for a wide range of community

¹Variation in the LGBTQ/LGBQ/LGB acronyms reflect differences in the sample characteristics of studies cited.

supports for youth and their families, such as parent support programs, mental health access, LGBTQ-specific spaces, and LGBTQ community events (Davis, Saltzburg, & Locke, 2009; Eisenberg et al., 2018). These resources could support youth's efforts to cope with minority stressors such as stigma and harassment (Hendricks & Testa, 2012; Meyer, 2003). Indirectly, the number, quality, and openness of LGBTQ-supportive resources not only reflect the supportiveness of a community, but they also have the ability to shape that supportiveness in positive or negative ways (Oswald et al., 2010). This concept, termed community climate, is theorized to reflect the overall messages LGBTQ people receive in their social environments through interactions with religious, legal, economic, and social structures (Oswald et al., 2010).

Empirical evidence indicates that supportive community climates are largely protective (c.f. Woodford et al., 2015). For example, LGBQ youth living in areas with more people attending LGBTQ-accepting religious institutions reported less alcohol use and fewer sexual partners (Hatzenbuehler et al., 2012a). Youth in neighborhoods with more LGBT hate crimes engaged in more marijuana use (Duncan et al., 2014) and reported more relational and cyberbullying victimization (Hatzenbuehler et al., 2015a) than those in neighborhoods with fewer LGBT hate crimes. Using an index of community climate that included both school supports and the proportion of same-sex couples, Hatzenbuehler et al. (2012b) noted reduced tobacco use among LGB adolescents living in more supportive climates.

At the state-level, Doyle and Molix (2015) demonstrated that associations between discrimination and loneliness and relationship strain were weaker among LGBQ adults living in states with more LGBT-affirming public policies (e.g., employment nondiscrimination, second parent adoption, marriage equality, hate crimes laws) than less affirming policies, suggesting that these policies can buffer the effects of discrimination. Disparities in tobacco and substance use between LGBQ and straight adults are smaller in states with less structural stigma, operationalized at multiple levels, such as school policies, state laws, proportion of same-sex couples, public opinion (Hatzenbuehler et al., 2015b, 2014). Hatzenbuehler et al. (2009) also noted similar associations with state laws buffering the emotional distress of LGB adults. When participants are asked how they perceive the LGBTQ-supportiveness of their community, hostile perceptions are consistently related to health compromising behaviors (e.g., Pacey et al 2017), which underscores the utility of operationalizing, assessing, and testing community climate in relation to the well-being of individuals living in those settings.

The specific aspects of community climate measured in these studies are broad and vary in their proximal relevance to youth (e.g., marriage and employment laws), even though the policies and laws likely reflect the social climate more generally. Assessments regarding specifically youth-focused aspects of the community have generally examined school policies and practices (e.g., Coulter et al., 2016; Gower et al., 2017; Kosciw et al., 2013; Marx & Kettrey, 2016). While schools are critical developmental contexts for LGBTQ youth, the role of the broader community climate also contributes to youth health and, when supportive, has the opportunity to act as a protective factor. Furthermore, where these measures of community climate do exist, they have not been created with input from LGBTQ youth or rely heavily on publicly-available data (e.g., laws, policies, hate crime

reports, religious institutions' public stances). Understanding community characteristics using data collected specifically for that purpose, and that also incorporates the perspective of LGBTQ youth, is imperative for the development of a measurement tool that can inform programs and social supports aimed at promoting health equity among this population.

Aims of the LGBTQ Supportive Environments Inventory

The primary goal of this paper is to describe the development of a new, theoretically and empirically grounded instrument to measure the supportiveness of the environments in which LGBTQ youth live, the LGBTQ Supportive Environments Inventory (LGBTQ SEI). The LGBTQ SEI was designed to measure both the contexts youth might directly experience (e.g., LGBTQ youth-serving organizations) as well as other indicators of the broader climate of a community that youth may not access directly (e.g., LGBTQ-inclusive bars, domestic violence services). These climate indicators can be combined with student surveys and data from other social-ecological contexts (e.g., surveys of school personnel) for multilevel analysis. A key objective of the measure was to facilitate assessment of communities from afar, which allows for more cost-effective research and a greater number of communities rated than an in-person assessment.

Development Process

The LGBTQ SEI was developed through a three-step process involving qualitative interviews, literature reviews, and input from expert researchers in the field of LGBTQ youth health and community professionals who work with or on behalf of LGBTQ youth. Qualitative go-along interviews with 66 LGBTQ youth aged 14–19 years were conducted between 2014 and 2015 in British Columbia, Canada (BC) and Massachusetts (MA) and Minnesota (MN; US; Porta et al., 2017). Youth were diverse with respect to sexual orientation, gender identity, and race/ethnicity; youth from urban, suburban, small city, and rural locations were represented at each site. Interviews focused on the supports and resources available to LGBTQ youth in their communities and the supports they wished existed. Results have been previously published and are summarized briefly here as they relate to the development of the LGBTQ SEI (Eisenberg et al., 2018).

Youth discussed the need for a variety of resources, some of which targeted the LGBTQ community specifically (e.g., culturally competent mental health providers, events such as Pride parades) and others that are available regardless of sexual orientation (e.g., youth community center programming, sexual health services). Additionally, youth desired both problem-focused (e.g. homeless shelters, HIV testing) and youth development-focused resources (e.g. after-school activities, comfortable places to spend time with friends). These insights from youth guided development of the LGBTQ SEI. Specifically, both LGBTQ youth-specific resources and general resources (e.g. coffee shops, health care providers) that are explicitly LGBTQ-inclusive were included in the instrument. Further, efforts were made to catalog resources that met a variety of needs (e.g., places of worship, housing, social groups, and restaurants/bars), in keeping with the wide-ranging list of resources and supports identified by participants.

Our team undertook an extensive process to develop the LGBTQ Supportive Environments Inventory. Based on our team's research expertise, qualitative interview results, and a comprehensive review of the literature regarding supports for LGBTQ youth (as described above), a lengthy list of potential indicators of supportive climate was compiled (including events, organizations, and other community resources and characteristics). This list was evaluated for the feasibility of measurement. For example, youth at all three sites mentioned during the qualitative interviews that spaces with comfortable couches, presence of counterculture (e.g., a barista's bright hair color), and LGBTQ-related signs (e.g., rainbows) indicated that a space was LGBTQ youth-inclusive. Some of these were not quantifiable remotely (e.g., couches, counterculture); however, we were able to assess others (e.g., using Google Street View to assess presence of LGBTQ-related signage). From this list of quantifiable indicators, a draft of the LGBTQ Supportive Environments Inventory was created.

This draft was shared with external scientific reviewers who are well-versed in the research literature on protective factors for LGBTQ young people as well as professionals who work with or on behalf of LGBTQ youth in communities. The LGBTQ SEI was modified based on this feedback and underwent pilot testing by a six member data collection team, with two coders from each of the three study sites (British Columbia, Minnesota, Massachusetts), to confirm that each measure could indeed be assessed via online searching or phone calling (as needed). Changes were made after pilot testing, such as clarifying variables (e.g., further specification of whether an organization met criteria for inclusion, whether an event was community-wide or specific to an organization) and search procedures. Biweekly coding team meetings resolved any additional differences, adding clarifications to the manual; this process resulted in the LGBTQ Supportive Environments Inventory reported here.

The final tool includes measures of LGBTQ youth-serving organizations (10 items, Table 1), community resources (14 items, Table 2), and socioeconomic/political environments (11 items, Table 3). Data come from a comprehensive web searching protocol, existing large-scale data sources (e.g., the Canadian Census/StatsCanada, the United States Census, and the American Community Survey), and election results. We first describe the procedure for defining the communities and then the measures and search procedures.

Defining “community buffers”

Because our ultimate goal was to link assessments of environments to student surveys administered within schools, we aimed to define the community around each school in our sample: Massachusetts (n=111 schools), Minnesota (n=81), and British Columbia (n=442). We defined these areas around each school as the distance one can reach in 30 minutes by car from each school. This 30 minute community buffer is consistent with past research considering drive times longer than 30 minutes to constitute a high travel burden for accessing health services (Probst et al., 2007). These community buffers were used for all data collection efforts described below unless otherwise noted. Importantly, the buffer length can be adjusted based on the needs of the study, such as research questions (e.g., influence of resources within easy walking distance) or location (e.g. proximity and density of communities).

Three steps were taken to define the community buffers: (1) geocoding the school address to place them on a map; (2) creating a 30-minute buffer around the school; and (3) identifying “cities” (i.e. cities, county subdivisions, census subdivisions, dissemination area, depending on location) that intersected the school buffers. These identified cities were used to search for LGBTQ community resources, as described below. Using Esri ArcGIS Desktop 10.4.1, a CSV file containing the school street addresses was added as a layer and Esri’s World Geocoding Service was used to match the addresses. This service scores an address on how well the text matches known locations in the World Geocoding Service. Addresses with a score lower than 80 were manually checked for possible errors within the address. In addition, because there were a reasonably small number of schools in the sample, we were able to confirm and edit if needed by comparing the results with current satellite imagery.

In the next step, we defined the 30-minute buffer using the “Create Drive-Time Areas” tool in ArcGIS Online (Esri, 2018a). The Drive-Time tool uses a predefined network dataset; starting at each school, the tool travels every route option for 30 minutes. The result is a buffer we used to define the community. For our project, we used a travel-time model that did not consider traffic or time of day but did follow traffic laws (i.e. speed limit, one-way streets, etc.).

The final step was to spatially join the 30-minute community buffers with appropriate administrative units to define what “cities” would be included in the analysis. The appropriate administrative unit varies because of how cities are legally defined in the three sample locations. In BC, Census Subdivisions (municipalities) were used, county subdivisions in MA, and cities in MN. If the centroid of the administrative unit was within the 30-minute buffer, that city and its population were used in data collection and analysis.

Measures

LGBTQ Youth-Serving Organizations

An organization was considered an LGBTQ Youth-Serving Organization if it met one of three criteria: 1) primary mission includes working with LGBTQ youth, 2) primary mission includes serving LGBTQ people, with one or more services specifically for LGBTQ youth, or 3) primary mission includes serving youth, with one or more services specifically for LGBTQ youth. Once identified, each organization’s name, address, and website were recorded, along with the criterion it met above. The orientation of the organization was recorded as primarily problem-focused (e.g., mental health problems, violence, substance use), primarily healthy youth development-focused (e.g., opportunities to hang out, engage in community, practice leadership, etc.), or a combination of both, based on review of the organization’s website and social media presence. The organizations were then described based on the presence or absence of nine different characteristics reflecting convenience and available services (Table 1), which could be summed to create a summary score for LGBTQ Youth Organizations. The sum of youth organization characteristics within each community buffer is conceptualized as an indicator of the strength and quality of these organizational resources in a community.

Community Resources

Information on the presence of four specific events in each city was gathered: Pride parade or related activity, a Transgender Day of Remembrance event, some type of anti-LGBTQ bullying day or activity, and a Parents and Friends of Lesbians and Gays (PFLAG) meeting. Presence (1) or absence (0) of at least one of each of these events was recorded, yielding a score for each type of event; these can be summed for an events score or examined separately. Then, thirteen types of community resources were cataloged, such as coffee shops, health care, and advocacy organizations (Table 2). When these resources were found (and they did not have a program or service specific only to LGBTQ youth), we recorded the name, address, and website. Additionally, each community resource was given a score to indicate how outwardly LGBTQ-inclusive they were. Resources that were included on resource lists created by others or had LGBTQ-positive user reviews, for example, but did not specifically indicate or mention their LGBTQ inclusiveness on their own website or outward facing materials though text or images (e.g., rainbow flag, same-sex couples) received a score of 1. Resources that indicated they were LGBTQ-inclusive or noted LGBTQ-specific topics openly on their website received a score of 2. If an organization provided services in more than one category, it was coded based on the nature of the services specifically identified as LGBTQ-inclusive and the primary mission and activities of the organization. For example, several organizations engaged in advocacy efforts around LGBTQ issues and provided social opportunities for LGBTQ youth to gather in community. These organizations would be coded as advocacy if that function was highlighted in their mission and the bulk of their events were advocacy-related. On the other hand, if most events were social in nature, and advocacy was a secondary mission, the organization would be coded as a social resource.

Socioeconomic-Political Environment

Data from existing, large-scale sources (e.g., Census, Statistics Canada, election data) were used to quantify the Socioeconomic-Political Environment. Data included measures of population, economic indicators, demographic indicators, election results, and alcohol sales, which were theoretically or empirically relevant to health and risk behaviors among LGBTQ youth. Data sources for each measure are included in Table 3. To obtain more reasonable estimates at the block group geography, the American Community Survey 5-year averages (2010–2014) were used. Due to the available data and characteristics at each location, some differences in measurement and availability of variables exist (as noted in Table 3).

These data were spatially joined with the community buffers using the Enrich Layer tool in ArcGIS Online (Esri, 2018b). This method aggregates data from smaller geographic units into larger geographic units using dasymetric apportionment (Esri, 2018a), a process that uses additional data layers to estimate population density. For BC, data from the 2011 Canadian Census were obtained at the geographic unit of the dissemination area (unless otherwise noted). Much of the data for MN and MA comes from the American Community Survey at the block group geographic unit. Data Enrichment looks for which of the geographic unit centroids are within the community buffer and includes these data in the aggregated result.

There were several instances when a community buffer crossed state or provincial boundaries. As school enrollment does not cross these boundaries, areas outside of BC, MA and MN were not included when aggregating population and election data. In some instances, aggregating to the community buffer was not feasible. For example, the GINI coefficient, a measure of income inequality, cannot be weighted across geographic units. For this measure, we used GINI coefficients for the census subdivision in which the school was located for BC and the coefficient for the census tract in which the school was located in MA and MN.

Data Collection Procedures

To assess LGBTQ Youth-Serving Organizations and Community Resources (events and organizations) in each community buffer, an internet search protocol was developed, which was documented in a coding manual used by the entire data collection team. Using the list of cities specified for each location above, cities were grouped by geographic proximity in clusters of 4–6, and two coders, from a team of 13, independently coded each city in the cluster as described below. Once completed, the project director (ALG) cleaned the data to match resources coded by both people and reconcile any discrepancies in scores (e.g., to update organizations coded with older and newer addresses or that had merged). To obtain the most comprehensive list of resources and services, community resources and LGBTQ youth-serving organizations were included if they met criteria and were found in online searching by at least one coder. It should be noted that there were several cases where the community buffer crossed state or provincial boundaries. In BC and Massachusetts, we did not search across state/provincial lines. In Minnesota, we included cities from neighboring states when the population was above 10,000 (two additional cities).

Coders first assessed the presence of the four specific events in each city. For each event, a list of search terms was provided in the codebook (e.g., [city name] Pride, [city name] “pink shirt day,” [city name] “day of silence”). For the remaining community resource coding, coders used a list of 19 general search terms (Table 4) to systematically explore and identify LGBTQ-inclusive community resources in each city. The two cities with the largest populations in each cluster were searched first using the full 19 search term list. An abbreviated 12 term list was used for the remaining cities in each cluster (Table 4), because the majority of the resources in the smaller cities were identified when searching the largest cities (e.g., surrounding resources were cataloged during the searches with the full list of terms). The first 30 results returned by google for each term were explored, with any follow up searching conducted as necessary (e.g., finding the website of an organization mentioned in a newspaper article or on an LGBTQ-inclusive resource list). When critical information was not available on the internet (e.g., only a phone number given for an LGBTQ youth-serving organization with no details on its activities or resources), one coder for the city would make a telephone or email inquiry, depending on the contact information available, to attempt to obtain the information.

All searches were conducted with [google.com](https://www.google.com). Because coders were in different geographic locations, we conducted side-by-side comparisons of google search results for search terms in three cities as well as compared the resources ultimately identified by coders in different

locations when searching the same city with the same protocol. Although there were slight differences in the position of webpages within the google results list, the results and number of organizations identified were the same in the three cities where we specifically tested for these google location variations. Organizations and events occurring between 2010 and 2017 were recorded, even if they closed or ended during that period, as student-level data were collected in 2013 in BC and MN and 2013–17 in MA, and Inventory data collection occurred from 2016–2017. In communities with few resources, the full search protocol in one city took approximately one hour to complete per coder. As more resources were identified, time increased (ranging up to 50 hours in very rare cases for major metropolitan areas).

Validity

We established content validity through academic and community expert review of the developing instrument. Correlations among relevant sets of community variables were examined to begin documenting convergent validity. Across sites, the summed scales of 1) the four community events (e.g., PFLAG, Pride), 2) community resources, and 3) LGBTQ youth-serving organization characteristics were all significantly positively correlated. For example, community events and community resources were correlated $r(81)=.95$ in MN, $r(442)=.67$ in BC, and $r(111)=.87$ in MA (all $ps < .001$). Further, the number and quality of the organizations and resources were positively correlated with voting patterns and the proportion of same sex couples in a community buffer as well. Specifically, LGBTQ youth-serving organization quality was correlated with the proportion of same-sex couples in a community buffer $r(81)=.85$ in MN, $r(442)=.75$ in BC, and $r(111)=.30$ in MA, all $ps < .01$. Together, these significant, positive correlations provide preliminary data to indicate that these multiple indicators are measuring the underlying construct of the LGBTQ inclusive climates of these communities.

Limitations

The LGBTQ SEI is limited by its reliance on information that is publicly available through internet searching and phone calls. In areas where LGBTQ-inclusive resources are primarily covert (e.g., location and meeting times not disclosed, rotating location to avoid disclosure, existence only spread through word of mouth with no online presence), the LGBTQ SEI may underestimate the actual number of resources present. However, the resulting data for these locations accurately reflects the less supportive climate of the locations. Likewise, this strategy is similar to what many LGBTQ youth have available to them to search and locate supportive resources in their community, and therefore may capture the information that will influence their perceptions of their community's climate. This approach also may offer opportunities to create systematic online directories of LGBTQ-youth supportive services by geographic location.

LGBTQ youth of color have particular needs for community support around these intersecting identities that may be unaddressed by some LGBTQ-focused community resources (Kuper, Coleman, & Mustanski, 2014). The LGBTQ SEI is unable to assess whether the LGBTQ-inclusive resources are specifically safe and welcoming to people of color. Future research should examine whether the identified resources are protective for

LGBTQ youth of color and explore additional measurement strategies to rate the inclusiveness of people of color among LGBTQ resources. Relatedly, the LGBTQ SEI was developed in three specific geographic regions. Although these regions were diverse in some ways and included urban, suburban, small town, and rural areas, there were notable limitations. For example, all three locations had laws supporting LGBTQ rights and may have been less racially/ethnically diverse than other areas (e.g., Southern United States). Measures should be pilot tested in other areas to ensure all relevant dimensions of community support are included.

Application and Conclusions

The LGBTQ Supportive Environments Inventory is a promising research tool for quantifying the broader community environment for LGBTQ youth in the United States and Canada. The manualized LGBTQ SEI has a variety of strengths. It is customizable to the specific research questions under study and data available at each location, and it can be compiled remotely, allowing for assessment of a wide variety of locations without the cost or burden of travel. Critically, the LGBTQ SEI allows researchers to identify actionable community protective factors and to make specific recommendations around ways to improve the broader social environment for LGBTQ youth.

Once created, the LGBTQ SEI can be mapped onto population-based youth health surveys, to analyze the link between more supportive climates and specific health outcomes. Results can be used to identify which types of services or environmental factors contribute more clearly to supporting LGBTQ youth health, to help guide communities with limited resources to prioritize decisions around creating more supportive environments for LGBTQ youth health.

The health of all adolescents is influenced by where they live, learn, work, and play, and the relationships they form within communities that promote health and well-being. For LGBTQ adolescents, health is also influenced by the ways communities and institutions acknowledge their existence and specifically support their well-being. The LGBTQ Supportive Environments Inventory is one strategy to help identify key environmental supports for LGBTQ young people in communities, set benchmarks, and offer ideas of how communities can be safer and more supportive for LGBTQ youth.

Acknowledgements

We thank Mark L. Hatzenbuehler, Steven T. Russell, and several community-based reviewers for critical feedback on an early version of the LGBTQ Supportive Environments Inventory.

Funding

This work was supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development of the National Institutes of Health under Award Number R01HD078470. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

- Bronfenbrenner U, 1979 The ecology of human development: experiments by nature and design. Harvard University Press, Cambridge, MA.

- Coulter RWS, Birkett M, Corliss HL, Hatzenbuehler ML, Mustanski B, & Stall RD (2016). Associations between LGBTQ-affirmative school climate and adolescent drinking behaviors. *Drug and Alcohol Dependence*, 161, 340–347. 10.1016/j.drugalcdep.2016.02.022 [PubMed: 26946989]
- Davis TS, Saltzburg S, & Locke CR (2009). Supporting the emotional and psychological well being of sexual minority youth: Youth ideas for action. *Children and Youth Services Review*, 31, 1030–1041. doi:10.1016/j.childyouth.2009.05.003
- Doyle DM, & Molix L, 2015 Perceived discrimination and social relationship functioning among sexual minorities: Structural stigma as a moderating factor. *Analyses of Social Issues and Public Policy*, 15, 357–381. 10.1111/asap.12098 [PubMed: 26807046]
- Duncan DT, Hatzenbuehler ML, & Johnson RM (2014). Neighborhood-level LGBT hate crimes and current illicit drug use among sexual minority youth. *Drug and Alcohol Dependence*, 135, 65–70. 10.1016/j.drugalcdep.2013.11.001 [PubMed: 24326203]
- Eisenberg ME, Gower AL, McMorris BJ, Rider GN, Shea G, & Coleman E (2017). Risk and protective factors in the lives of transgender/gender nonconforming adolescents. *Journal of Adolescent Health*, 61, 521–526. 10.1016/j.jadohealth.2017.04.014 [PubMed: 28736148]
- Eisenberg ME, Mehus CJ, Saewyc EM, Corliss HL, Gower AL, Sullivan R, & Porta CM (2018). Helping young people stay afloat: A qualitative study of community resources and supports for LGBTQ adolescents in the United States and Canada. *Journal of Homosexuality*, 65, 969–989. 10.1080/00918369.2017.1364944 [PubMed: 28820667]
- Esri (2018a). Data apportionment [WWW Document]. URL <https://developers.arcgis.com/rest/geoenrichment/api-reference/data-apportionment.htm> (Accessed March 7th, 2018).
- Esri (2018b). Enrich layer [WWW Document]. URL <https://doc.arcgis.com/en/arcgis-online/analyze/enrich-layer.htm> (Accessed March 7th, 2018).
- Gower AL, Forster M, Gloppen K, Johnson AZ, Eisenberg ME, Connett JE, & Borowsky IW (2018). School practices to foster LGBT-supportive climate: Associations with adolescent bullying involvement. *Prevention Science*, 19, 813–821. 10.1007/s11121-017-0847-4 [PubMed: 29032496]
- Hatzenbuehler ML (2011). The social environment and suicide attempts in lesbian, gay, and bisexual youth. *Pediatrics*, 127, 896–903. 10.1542/peds.2010-3020 [PubMed: 21502225]
- Hatzenbuehler ML, Duncan D, & Johnson R (2015a). Neighborhood-level LGBT hate crimes and bullying among sexual minority youths: A geospatial analysis. *Violence Victimization*. 30, 663–675. 10.1891/0886-6708.VV-D-13-00166
- Hatzenbuehler ML, Jun HJ, Corliss HL, & Austin SB (2015b). Structural stigma and sexual orientation disparities in adolescent drug use. *Addictive Behavior*, 46, 14–18. 10.1016/j.addbeh.2015.02.017
- Hatzenbuehler ML, Jun HJ, Corliss HL, & Austin SB (2014). Structural stigma and cigarette smoking in a prospective cohort study of sexual minority and heterosexual youth. *Annals of Behavioral Medicine*, 47, 48–56. 10.1007/s12160-013-9548-9
- Hatzenbuehler ML, Keyes KM, & Hasin DS (2009). State-level policies and psychiatric morbidity in lesbian, gay, and bisexual populations. *American Journal of Public Health*, 99, 2275–2281. 10.2105/AJPH.2008.153510 [PubMed: 19833997]
- Hatzenbuehler ML, & Pachankis JE (2016). Stigma and minority stress as social determinants of health among lesbian, gay, bisexual, and transgender youth: Research evidence and clinical implications. *Pediatric Clinics of North America*, 63, 985–997. 10.1016/j.pcl.2016.07.003 [PubMed: 27865340]
- Hatzenbuehler ML, Pachankis JE, & Wolff J (2012a). Religious climate and health risk behaviors in sexual minority youths: A population-based study. *American Journal of Public Health*, 102, 657–663. 10.2105/AJPH.2011.300517 [PubMed: 22397347]
- Hatzenbuehler ML, Wieringa NF, & Keyes KM (2012b). Community-level determinants of tobacco use disparities in lesbian, gay, and bisexual youth. *Archives of Pediatrics and Adolescent Medicine*, 165, 527–532.
- Heck NC, Flentje A, & Cochran BN (2011). Offsetting risks: High school gay-straight alliances and lesbian, gay, bisexual, and transgender (LGBT) youth. *School Psychology Quarterly*, 26, 161–174. 10.1037/a0023226

- Hendricks ML, & Testa RJ (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the minority stress model. *Professional Psychology: Research and Practice*, 43, 460–467. 10.1037/a0029597
- Higa D, Hoppe M, Lindhorst T, Mincer S, Beadness B, Morrison DM, Wells EA, Todd A, & Mountz S (2017). Negative and positive factors associated with the well-being of lesbian, gay, bisexual, transgender, queer, and questioning (LGBTQ) youth. *Youth & Society*, 46, 663–687. doi: 10.1177/0044118X12449630
- Institute of Medicine (2011). *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. Washington, D.C.
- Katz-Wise SL, Ehrensaft D, Vettters R, Forcier M, & Austin SB (2018). Family functioning and mental health of transgender and gender-nonconforming youth in the Trans Teen and Family Narratives Project. *Journal of Sex Research*, 55, 582–590. 10.1080/00224499.2017.1415291 [PubMed: 29336604]
- Konishi C, Saewyc E, Homma Y, & Poon C (2013). Population-level evaluation of school-based interventions to prevent problem substance use among gay, lesbian and bisexual adolescents in Canada. *Preventive Medicine*, 57, 929–933. 10.1016/j.ypmed.2013.06.031 [PubMed: 23850517]
- Kosciw JG, Greytak EA, Giga NM, Villenas C, & Danischewski DJ (2015). *The 2015 National School Climate Survey: The experiences of lesbian, gay, bisexual, transgender, and queer youth in our nation's schools*. GLSEN, New York.
- Kosciw JG, Greytak EA, & Diaz EM (2009). Who, what, where, when, and why: Demographic and ecological factors contributing to hostile school climate for lesbian, gay, bisexual, and transgender youth. *Journal of Youth and Adolescence*, 38, 976–88. 10.1007/s10964-009-9412-1 [PubMed: 19636740]
- Kosciw JG, Palmer NA, Kull RM, & Greytak EA (2013). The effect of negative school climate on academic outcomes for LGBT youth and the role of in-school supports. *Journal of School Violence*, 12, 45–63. 10.1080/15388220.2012.732546
- Kuper LE, Coleman BR, & Mustanski BS (2014). Coping With LGBT and racial-ethnic-related stressors: A mixed-methods study of LGBT youth of color. *Journal of Research on Adolescence*, 24, 703–719. doi:10.1111/jora.12079
- Marshall MP, Dietz LJ, Friedman MS, Stall R, Smith HA, McGinley J, Thoma BC, Murray PJ, D'Augelli AR, & Brent DA (2011). Suicidality and depression disparities between sexual minority and heterosexual youth: A meta-analytic review. *Journal of Adolescent Health*, 49, 115–123. 10.1016/j.jadohealth.2011.02.005 [PubMed: 21783042]
- Marx RA, & Kettrey HH (2016). Gay-Straight Alliances are associated with lower levels of school-based victimization of LGBTQ+ youth: A systematic review and meta-analysis. *Journal of Youth and Adolescence*, 45, 1269–1282. 10.1007/s10964-016-0501-7 [PubMed: 27221632]
- McConnell EA, Birkett M, & Mustanski B (2016). Families matter: Social support and mental health trajectories among lesbian, gay, bisexual, and transgender youth. *Journal of Adolescent Health*, 59, 674–680. 10.1016/j.jadohealth.2016.07.026 [PubMed: 27707515]
- McLeroy K, Bibeau D, Steckler A, & Glanz K (1988). An ecological perspective on health promotion programs. *Health Education and Behavior*, 15, 351–377.
- Meyer IH (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological Bulletin*, 129, 674–697. 10.1037/0033-2909.129.5.674 [PubMed: 12956539]
- Olson KR, Durwood L, DeMeules M, & McLaughlin KA (2016). Mental health of transgender children who are supported in their identities. *Pediatrics*, 137, e20153223–e20153223. 10.1542/peds.2015-3223 [PubMed: 26921285]
- Oswald RF, Cuthbertson C, Lazarevic V, & Goldberg AE (2010). New developments in the field: Measuring community climate. *Journal of GLBT Family Studies*, 6, 214–228. 10.1080/15504281003709230
- Porta CM, Corliss HL, Wolowic JM, Johnson AZ, Fogel KF, Gower AL, Saewyc EM, & Eisenberg ME (2017). Go-along interviewing with LGBTQ youth in Canada and the United States. *Journal of LGBT Youth*, 14, 1–15. 10.1080/19361653.2016.1256245 [PubMed: 28943992]

- Probst JC, Laditka SB, Wang JY, & Johnson AO (2007). Effects of residence and race on burden of travel for care: Cross sectional analysis of the 2001 US National Household Travel Survey. *BMC Health Services Research*, 7, 1–13. 10.1186/1472-6963-7-40
- Rosario M, Reisner SL, Corliss HL, Wypij D, Calzo J, & Austin SB (2014a). Sexual-orientation disparities in substance use in emerging adults: A function of stress and attachment paradigms. *Psychology of Addictive Behaviors*, 28, 790–804. 10.1037/a0035499 [PubMed: 25134050]
- Rosario M, Reisner SL, Corliss HL, Wypij D, Frazier AL, & Austin SB (2014b). Disparities in depressive distress by sexual orientation in emerging adults: The roles of attachment and stress paradigms. *Archives of Sexual Behavior*, 43, 901–916. 10.1007/s10508-013-0129-6 [PubMed: 23780518]
- Russell ST (2011). Challenging homophobia in schools: Policies and programs for safe school climates. *Educator em Revista*, 39, 123–138.
- Russell ST, & Fish JN (2016). Mental health in lesbian, gay, bisexual, and transgender (LGBT) youth. *Annual Review of Clinical Psychology*, 12, 465–487. 10.1146/annurev-clinpsy-021815-093153
- Saewyc E, Konishi C, Rose H, & Homma Y (2014). School-based strategies to reduce suicidal ideation, suicide attempts, and discrimination among sexual minority and heterosexual adolescents in western Canada. *International Journal of Child, Youth and Family Studies*, 5, 89–112.
- Saewyc EM, Homma Y, Skay CL, Bearinger LH, Resnick MD, & Reis E, 2009 Protective factors in the lives of bisexual adolescents in North America. *American Journal of Public Health*, 99, 110–117. 10.2105/AJPH.2007.123109 [PubMed: 19008523]
- Toomey RB, Ryan C, Diaz RM, & Russell ST, 2011 High school gay-straight alliances (GSAs) and young adult well-being: an examination of GSA presence, participation, and perceived effectiveness. *Applied Developmental Science*, 15, 175–185. 10.1080/10888691.2011.607378 [PubMed: 22102782]
- Veale JF, Watson RJ, Peter T, & Saewyc EM (2017). Mental health disparities among Canadian transgender youth. *Journal of Adolescent Health*, 60, 44–49. 10.1016/j.jadohealth.2016.09.014 [PubMed: 28007056]
- Watson RJ, Barnett MA, & Russell ST (2016). Parent support matters for the educational success of sexual minorities. *Journal of GLBT Family Studies*, 12, 188–202. 10.1080/1550428X.2015.1028694
- Woodford MR, Pacey MS, Kulick A, & Hong JS (2015). The LGBQ social climate matters: Policies, protests, and placards and psychological well-being among LGBQ emerging adults. *Journal of Gay & Lesbian Social Services*, 27, 116–141. 10.1080/10538720.2015.990334

Figure 1:
Multilevel influences on health and risk behaviors

Table 1.**Characteristics of LGBTQ Youth-Serving Organizations**

Type	Description
Convenience	
Visibility	Google maps street view of organization's location shows some indication of LGBTQ inclusiveness (words, icons, rainbow)
Weekend Hours	Any activities on Saturday or Sunday
Social Media	Any presence on Facebook, Instagram, Twitter, or Tumblr
On Transit	Within 500m (approximately 5 minute walk) of a public transit stop
Services	
Social Activities	Regular activities for LGBTQ youth where primary purpose is social
Special Events	Hosts, co-hosts, or provides transport to LGBTQ special event (e.g., Pride, Queer Prom, Queer Halloween)
Sub-population Specific	Offers groups or activities specifically for subgroups of LGBTQ youth, such as trans youth, LGBTQ youth of color
Confidential Services	Specifies confidentiality on website
Mental Health	Licensed mental health professional providing services (e.g., counselling, leading youth group)

Table 2.**Types of Community Resources**

Type	Description, examples
Adolescent health services	Clinic working exclusively with adolescent/young adult patients
Advocacy	Organizations whose mission includes improving the health, wellbeing, safety, etc. of LGBTQ people
Anonymous meetings	Alcoholics Anonymous, Al-Anon, Narcotics Anonymous, etc.
Arts	Activities, groups, centers, or events focused on LGBTQ populations or themes in music, film, theater, art, dance
Domestic violence/sexual assault services	Primary focus involves providing services to people who have experienced domestic violence or sexual assault.
Food service/retail	Bars, coffee shops, restaurants, bookstore
General health care providers or clinics	Clinic and/or provider providing services to any age group
Housing	Services specifically for people experiencing homelessness or housing insufficiency (includes shelters and resources)
Libraries	Libraries with specific LGBTQ content (e.g., social group, special collection)
Mental health provider	Counsellor, therapist, psychologist, etc.
Place of worship	Place of worship/faith community, any type
Social	Informal social resources such as meetups, drop-in, or organizations whose primary focus is providing social activities for LGBTQ people
Travel	Bed and breakfasts, travel agencies, etc.
Other	Other resources not included in these categories, e.g., gyms, sports leagues, clothing/tailoring, general community centers

Table 3.

Measures of the Socioeconomic and Political Environment and Data Sources

Measure	British Columbia	Massachusetts and Minnesota
Population		
Population Number of people	2011 Canadian Census	ACS 2010–2014 5 year estimate
Population Density (excluding water)	2011 Canadian Census	2010 Census
Population of Youth	Aged 12–17 2011 Canadian Census	Aged 10–17 ACS 2010–2014 5 year estimate
Economic Indicators		
Unemployment Rate	Age 15+ 2011 Canadian Census	Age 16+ ACS 2010–2014 5 year estimate
Poverty	Low-income measure (LIM) ^a 2010 Natl Household Survey	Ratio of Income: Poverty ACS 2010–2014 5 year estimate
GINI coefficient (income inequality)	2013 T1FF tax form ^a	ACS 2010–2014 5 year estimate ^b
Demographic Characteristics		
Racial/Ethnic Diversity	Not applicable	% of 6 race/ethnic groups
Number of same-sex households	2013 T1FF tax form ^a	ACS 2010–2014 5 year estimate
Election Data		
% voting for LGBTQ-inclusive major party	% voting New Democratic Party; 2013 Provincial General Election; Elections BC	% voting for Obama/Biden 2012 Presidential Election; MN Sec. of State
% voting “no” to restrict marriage to one man/one woman	Not available	MN only; 2012 Constitutional Amendment MN Secretary of State
Alcohol Data		
Alcohol Sales	2016 Environics HouseholdSpend	2016 Esri Retail MarketPlace

Note. ACS: American Community Survey

^aData available at the level of census subdivision (BC) in which the school was located.^bData available at the level of the census tract (MA, MN) in which the school was located using NHGIS (2018) to access.

Table 4.

Search Terms

Search Terms
[City name] LGBTQ youth *
[City name] LGBTQ youth
[City name] GLBTQ youth
[City name] queer youth *
[City name] lesbian youth *
[City name] gay youth
[City name] bisexual youth *
[City name] transgender youth *
[City name] LGBTQ resource *
[City name] queer resource *
[City name] LGBTQ teens
[City name] queer teens *
[City name] gay health *
[City name] transgender health *
[City name] gay friendly *
[City name] LGBTQ friendly *
[City name] queer friendly *
[City name] LGBTQ resource list
[City name] queer resource list

* Indicates a search term on the shortened list for cities with smaller populations.