# Method-1: Quantitative Methods

## (1a.) Define the Method

Community-based quantitative methods that better equip community scientists with the necessary tools to address research questions and hypotheses that go beyond the individual level of analysis in include multi-level (MLM), hierarchical linear (HLM), and cross-level modeling, mixed-effects modeling, geographic information systems (GIS) methods and analysis, social network analysis (SNA), and structural equation modeling (SEM). The latter method, SEM, is a particularly versatile methodological tool for community-based research, as the models and corresponding algorithms possible in SEM analysis can be applied in combination with additional quantitative methods, such as GIS, SNA, and HLM. Further, SEM involves the specification of a model representing a set of hypotheses regarding how each parameter included in the model relates, or does not relate, to other model parameters (Kline, 2015). Once an appropriately specified model is identified, it is then fitted to a set of quantitative data, which is usually comprised of data that are continuous in form, but dichotomous variables can also be modeled using logistic regression techniques. The model is evaluated in terms of how well it fits the data, rather than the other way around. That is, compared to more traditional regression models, in which the variables of interest are modeled, in the simplest form, as *Outcome = Modeled Variance + Un-modeled Variance* (i.e., measurement error and random “noise”), error variance in SEM is usually explicitly specified as a modeled parameter. Hierarchical linear modeling, in general, parses the variance of predictor variables at one level by specifying a second level model, or set of models depending on the number of predictors in the level-1 model, wherein each level-1 predictor is specified as varying as a function of a level-2 predictor. As such the full model’s predictors are specified to account for their own interdependencies.

## (1b.) Discuss an Example Application of the Method from the Minor Comps Reading List

Luke (2005) provides the example of a multi-level analysis of voting patterns among U.S. Congressional representatives regarding tobacco-related policies. Luke’s example illustrates how a single-level regression model that only considers the individual behaviors of Congress members (i.e., how each member votes on tobacco-related policies) does not allow the researcher to evaluate more in-depth and complex questions about factors influencing whether a policy is voted into law or not. Research questions and hypotheses that examine the contextual, multi-level, are potentially far more informative with greater potential for more robust and (relatively) immediate applications, and allow for greater variability in the possible *alternative explanations* for the phenomenon of interest. In Luke (2005)’s example, a hierarchical linear model is specified in juxtaposition with the previously described single-level regression model. This juxtaposition demonstrates how contextualizing quantitative methods such as hierarchical linear modeling provide more sensitivity to the analysis in terms of it’s the capacity of a given model to simultaneously specify, and then evaluate, the effects of settings-level and individual-level variables on the target phenomenon.

In Luke (2005)’s example, the level-1 predictors included the political party and the amount of money donated to each representative’s campaign by tobacco-related PACs, while the level-2 predictor was the number of acres of tobacco-growing land in each representative’s home state (a proxy for the economic dependence on tobacco-related policies of a given representative’s statewide constituency). This multi-level modeling procedure allowed for a more contextualized understanding of the individual voting behaviors among U.S. congressional representatives. Had the analysis remained at the individual level, it would not be possible to simultaneously evaluate the influence of the economic impacts of representatives’ voting decisions regarding tobacco-related policies, and the resulting conclusions from the research may have led to implementing an intervention designed without regard for those economic impacts.

## (2) Review an application of the method to your own research area.

***My substantive area of research:*** *Intimate partner and sexual violence intervention and prevention, with a particular focus on interventions and prevention approaches inclusive of, appropriate, and relevant among sexual minority women (SMW) and other systematically marginalized populations.*

In general, community-based research related to intimate partner violence intervention and prevention has tended to fall within a pattern similar to that described and lamented by Luke (2005) in which the research, although community-based, typically relies on more traditional quantitative approaches (e.g., descriptive statistics, ANOVA, single-level regression and correlation, etc.). However, in the four years I have spent as an applied community psychology graduate student, I have had the opportunity to be involved in the design, implementation, data analysis, and report development and application of a national survey of the standards and monitoring bodies (SMBs) tasked with implementing each of the 46 states (including Washington D.C.) with written standards for IPV perpetrator intervention programs (PIPs[[1]](#footnote-1)). For this national survey project, telephone interviews were conducted with at least one representative from 44 of the 46 states with PIP standards. Interview questions were structured to elicit a range of continuous numeric (e.g., counts of the number of members in the SMB. dates, in years, of various milestones or major events, etc.), discrete (i.e., “yes/no”, frequencies of activities, etc.), and open-ended (i.e., qualitative) responses. I will be focusing in this section on the analysis of variables based on questions eliciting discrete or numeric responses. As we neared the completion of data collection for the study, we began formalizing data analytic protocols for the discrete data, one of which included conducting exploratory cluster analyses in order to address one of our research questions regarding whether and how practices and policies among SMBs vary moreso according to clusters, rather than at the individual state level. The cluster analysis procedures performed thus far indicate that the practices and policies across the interviewed states can be divided into around three to five distinct clusters. Having conducted the initial cluster analyses, it has become more readily apparent that the data likely vary according to a multi- or cross-level structure wherein individual states’ practices may be dependent both other related policies and structures in the state (e.g., policies related to the allocation of state funds to SMBs and/or PIPs, the political climate in the state, the prevalence of IPV in the state, etc.), while also varying as a function of group membership (e.g., geographically-designated groupings). Conclusions regarding the likelihood that these data are varied across multiple levels are based on analysis of the “fuzziness” in the groupings resulting from the cluster analysis. For instance, when the data are divided in three, versus five, clusters, there is considerably greater levels of intersection among the clusters, yet when the data are divided according to the five groups identified by the cluster analysis algorithm, the levels of intersection among clusters are somewhat similar in terms of overall magnitude of total overlap among clusters, but the actual overlappings are quite different in terms of how the clusters partially map onto one another.

## (3.) Analyze the strengths and limitations of the method for use in community psychology research

Quantitative methods in community psychology provide an array of tools for describing and analyzing the relations among individuals and various settings at multiple levels of analysis. Importantly, because community psychology aims to examine social phenomena through lenses that go beyond the individual, the quantitative methods employed by community scientists should accommodate contextual analysis of a given phenomenon of interest at multiple levels of analysis. While more traditional methods such as analysis of variance (ANOVA), regression, and bivariate or multivariate correlation are sufficient for addressing research questions and hypotheses specific to a single level of analysis (e.g., individuals’ behavior as a function of individuals’ attitudes), these methods are less equipped to address questions related to more contextualized variables (e.g., cross-level analysis of relations between, for example, geographic location and congressional voting patterns; Luke 2005; Shinn & Rapkin, 2000).

A key component of SEM specifically relevant to community psychology lies in the model development and specification phase of the process. In this phase, it is important to consider *alternative models* that could, theoretically, be as true as the researcher’s specified model. Thus, the goal is not necessarily to advocate the researcher’s ‘favorite’ model, but rather to truly get at the answer to the researcher’s question(s). This is particularly important given that much, if not most, of community-based research is intended to be either immediately applied in real settings, or will be applied in the very near future following the completion of a given research project. Thus, the implications of community-based research are not confined to whether the research is accepted for publication in a scholarly journal, which *may* lead to its application in real settings. Rather, the application of many community-based research endeavors is often *a part of* the overall research design. Consideration of alternative models or explanations for various possible outcomes in the beginning stages of the research process (e.g., during the model development and specification phase of SEM; Kline, 2015). The practice and importance of developing alternative models can also be applied in quantitative approaches other than SEM. For example, hierarchical linear models can be incorporated and tested for model-data fit within an SEM framework, in addition to the single-outcome approach described by Luke (2005).

Importantly, the quantitative methods discussed here are bound by the limits of the data they are equipped to handle or require for meaningful use. Specifically, SEM and HLM techniques typically require substantially large sample sizes, depending on the number of parameters estimated in a given model. This limitation of these techniques means that community scientists working in, for example, rural settings with a very low likelihood of ever having enough individual cases in a given sample to conduct a meaningful and accurate SEM analysis regarding a given phenomenon and/or community intervention are forced to consider alternative possibilities in their data analytic approaches. The alternative approaches, however, have often manifested as resorting to the more traditional quantitative techniques mentioned earlier, a historical pattern within the field of Community Psychology documented by Luke (2005) and several authors contributing to the recently published *Handbook of Methodological Approaches to Community-Based Research* (Leonard et al, 2016). This pattern indicates a need for more innovation in our developing community-based research methodologies that can better adapt to the various settings in which our research is conducted.

## (4.) Discuss How Values and Ethics in Community Psychology Influence the Utilization of the Methodology

Research conducted by community scientists is typically done so with the intention of immediate or very soon application of the research findings and implications in real-world settings. This means that researchers should employ rigorous quantitative methods that capitalize, for lack of a better word, on the strengths of this category of data and research methods. Specifically, quantitative techniques, such as those discussed above, have the benefit of being able to provide generalizable insights on a range of variables spanning levels of analysis. However, community scientists should also be careful to not rely solely on the generalizability strength of quantitative methods, as this can lead to generalizations that may be either wholly inaccurate to a particular sub-group of a target population or do not account for variations in a particular phenomenon across different levels of analysis and settings.

# Method-2: Qualitative & Mixed Methods

## (1a.) Define the Method

Qualitative research methods are those that facilitate the collection and analysis of non-discrete data. Such data can take on a range of forms, including textual (written or transcribed audio) data, untranscribed (i.e., raw) audio data, pictographic data or imagery, etc. These data collectively can provide a level of depth comparable to the level of breadth that can be provided by quantitative data. Common and useful qualitative research approaches in community-based work include one-on-one interviews, focus groups, and ethnographic research methods. Each of these methods can generate data from which key, potentially otherwise overlooked, insights can be obtained and conclusions made regarding a given phenomenon, setting, intervention, or even research method.

Mixed methodological approaches, however, are inherently essential to community scientific research. These approaches seek to combine and integrate different types of data (i.e., qualitative and quantitative, although these do not necessarily always exist in such a dichotomized manner) in order to compensate for the weaknesses of and/or capitalize, for lack of a better word (again), on the strengths of each data type and data collection method. David Morgan (1993; 2015) provides an especially pragmatic approach for combining, and especially integrating, qualitative and quantitative research methods. In this approach, which I will refer to here as a *“complementary sequence”* design or approach, two decisions are made during the design phase of a research project: (1) a *priority* decision regarding which of the two overarching methodological approaches (qualitative or quantitative) is to serve as the *primary* method for a given research project and which is to serve as a *complementary* method, and (2) a *sequence* decision regarding whether the chosen primary method will precede the complementary method, or vice-versa. Other mixed-methodological approaches, such as those from a pluralistic research framework, treat both the quantitative and qualitative research paradigms equally (i.e., there is no primary versus complementary prioritization of the methods) throughout the research process (Leonard et al, 2016).

## (1b.) Discuss an Example Application of the Method from the Minor Comps Reading List

In outlining his pragmatic, “complimentary sequence”, mixed methodological approach, Morgan (1993) describes Kerth O’Brien’s (1993) exemplary application of a complementary sequence design. To inform the development of a quantitatively-focused survey measure to be distributed among gay- and bisexual-identified men in the Portland, OR area, O’Brien (1993) conducted a series of in-depth focus groups with men from the target population. Several key insights are gained from the focus groups study, such as the men’s use of the term “AIDS” in reference to either HIV or AIDs. Prior to conducting these focus groups, the researchers were unaware of this cultural habit among gay and bisexual men in Portland and may have written the survey measure using terminology that distinguished between HIV and AIDS, which could lead to misinterpretation or lack of understanding of the survey’s content among respondents.

## (2) Review an application of the method to your own research area.

***My substantive area of research:*** *Intimate partner and sexual violence intervention and prevention, with a particular focus on interventions and prevention approaches inclusive of, appropriate, and relevant among sexual minority women (SMW) and other systematically marginalized populations.*

Similar to O’Brien’s (1993) utilization of a smaller quantitative study preceding a larger quantitative research project that is informed by the prior qualitative findings, Nancy Glass (2004) has employed a program research over the past couple of decades investigating sexual minority women’s experiences with both minority stressors (e.g., experiences of discrimination) and intimate partner violence victimization and perpetration. Glass’s work in this program of research is best characterized as full-cycle mixed-methods research, as the research began with a (relatively) small qualitative interview and focus groups study aimed at informing the development of a quantitatively-focused survey measure for use in a larger quantitative study, the latter study was then followed-up with yet another qualitative study informed by the quantitative findings. Glass (2004)’s work has led to several key insights regarding the roles of minority stressors as well as other, more contextual variables, including the influence of place (geographic) and time on sexual minority women’s IPV-related experiences. Specifically, one of the first uses of the survey measure developed through this program of research was in two different geographic locations: (1) Portland, OR, and (2) Atlanta, GA. Findings from this multi-setting research provide a contextualized understanding of how sexual minority women’s individual-level attitudes, behaviors, and experiences are influenced by the settings-level variable of geographic location. The subsequent qualitative interviews and focus groups following the larger quantitative study helped to further improve the measure developed from the first qualitative study in Glass’s program of research.

## (3.) Analyze the strengths and limitations of the method for use in community psychology research

Qualitative and mixed research methods research approaches provide the level of depth and nuance that is less possible in quantitative research approaches. Mixed-methodological approaches in particular can equip a researcher or research team with a wealth of systematically collected and analyzed information spanning multiple levels of analysis from a variety of perspectives on a single phenomenon or set of phenomena. Mixed methods approaches are especially useful, as evidenced in the previously discussed examples, in developing, adapting, or improving measurement tools (e.g., self-report surveys) to be used in either or both quantitatively- or qualitatively-focused research endeavors. As Rossi (2004) emphasizes, measurement is a particularly important, but often exceedingly difficult, task in community-based research. Employing mixed-methodological action research designs, especially with multiple data collection modes for each overarching methodology, is essential to developing, adapting, and improving the measurement tools used by community scientists. That is, for any given research project, community scientists should employ methods that are *most appropriate* to the focal phenomenon(a), research and/or intervention setting(s), target population(s), *and* research question(s). It is extremely difficult, if not impossible, to imagine a quantitative-only or qualitative-only method that is *most* appropriate and informative across each of these elements of a research project. Thus, community-based researchers are often drawn toward mixed-methodological approaches, as doing so brings the research close to employing the *most* appropriate method for each element of the project.

An important limitation to consider regarding mixed-methods research is the availability of time and resources. The previously described example applications of mixed-methods research both occurred over the course of at least one decade and likely depended upon the availability of grant funding. Thus, community scientists embarking on a program of research that, as is most likely, necessitates a mixed-methods are further tasked with (1) assessing the timeline and available resources within that timeline for a given project, and (2) considering other, potentially less obvious, sources of funding and other research necessities (e.g., volunteer research assistants, etc.). Interestingly, however, this limitation further illustrates why mixed methodological research approaches are essential to community-based research. Specifically, assessing the available resources for a given research endeavor and identifying potential additional or alternative resources can become a community-based research process in and of itself, as these activities will likely provide the researcher(s)’ with more information regarding the characteristics and dynamics of the research or intervention setting for a single project or program of research.

A limitation of qualitative research is that most qualitative methods are feasible with substantially smaller sample sizes than that of quantitative research methods. However, while a mixed-method approach would capitalize on the strength of quantitative research methods with regard to sample size feasibility, it is important to consider that quantitative phases of a mixed-methods research that are informed by a prior qualitative study, may have underlying or more covert limitations tied to the limits of the qualitative data upon which it is based. Thus, a full-cycle mixed methods approach is ideal, as this involves a more iterative approach to the research, which can help to reduce the carry-over, so to speak, limitations of each method employed.

## (4.) Discuss How Values and Ethics in Community Psychology Influence the Utilization of the Methodology

Several important factors must be considered regarding community-based research values and the ethics of any methodological approach. Regarding the qualitative component of mixed methods research, one particularly challenging aspect of most qualitative research is the issue of participants’ confidentiality. The nature of qualitative data is, in the simplest sense, descriptive, usually at an in-depth level. This can often result in the data generated via focus groups, one-on-one interviews, photovoice projects, etc., being embedded with potentially identifying information about the research participants. It is important for community scientists to remain vigilant about this inherent characteristic of most qualitative data, and to inform participants of the risk involved in terms of the protection of their confidentiality.

In addition, and related to the previously described limitations of mixed methods research, it is crucial that community-based researchers maintain transparency, effective, and sufficient communication with community-based partners for any given research project. That is, given, for example, the amount of resources needed for many mixed-methods research projects, it is important that the community partners involved in those projects be well informed about the extent of resources needed and feasibility of meeting all of the projects goals.

1. These programs are also commonly referred to as “batterer intervention programs” (BIPs), however, I consider this language to be especially problematic for a number of reasons, the most clear of which being that it restricts the target population and behavior to a focus on physical violence (i.e., “battering”) [↑](#footnote-ref-1)