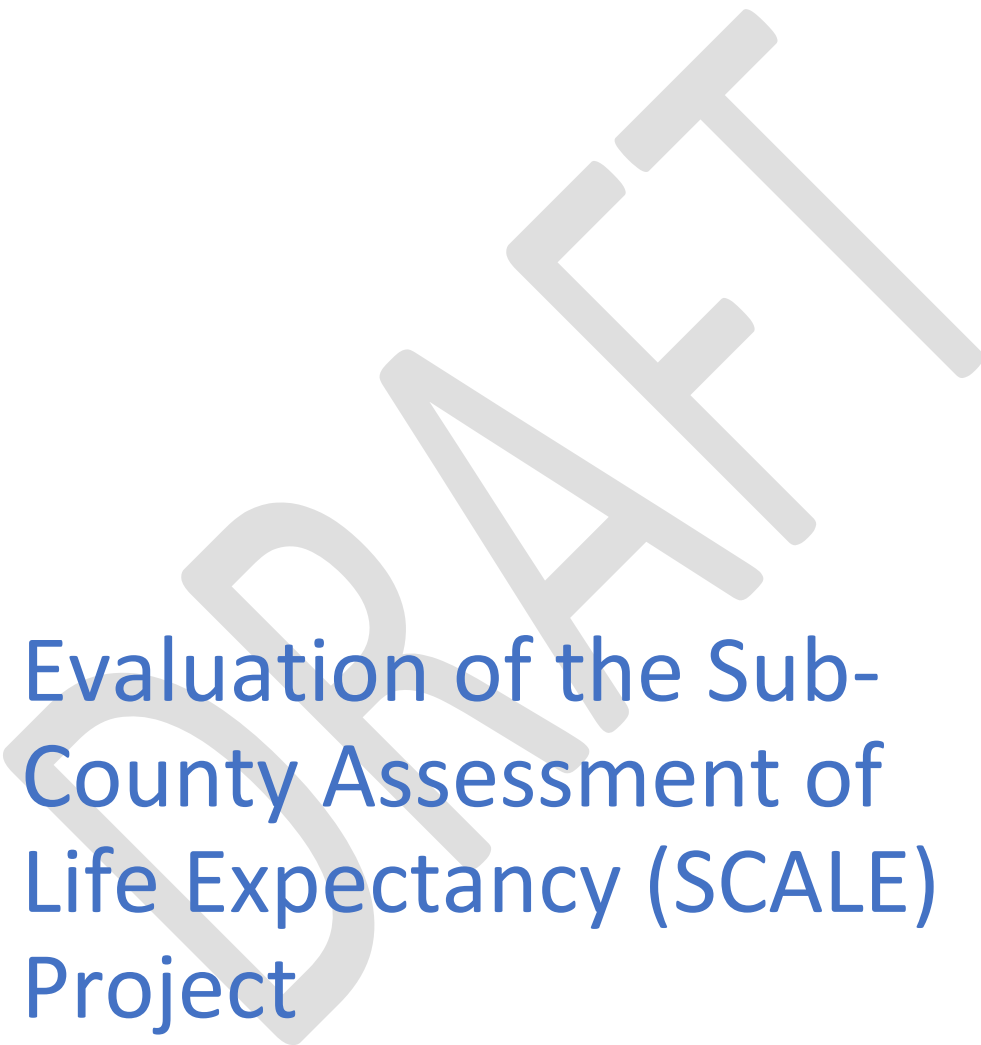




Evaluation of the Sub-County Assessment of Life Expectancy (SCALE) Project

SUMMARY OF DATA COLLECTION AND ANALYSIS ACTIVITIES,
JULY 2, 2018

FIERRO CONSULTING, INC.

Introduction

As of February 1, 2018, the Council of State and Territorial Epidemiologists (CSTE) contracted with Fierro Consulting, Inc. to perform an evaluation of the Sub-County Assessment of Life Expectancy (SCALE) Project supported by the Centers for Disease Control and Prevention (CDC). Several data collection efforts were implemented in order to provide formative feedback that could be useful for planning future SCALE-related efforts as well as to respond to the following question - *“What is the potential public health utility of small-area life expectancy estimates?”* In this document, we provide an update on the data collected since February 1, 2018 and summarize analyses from a sub-set of this data that may have implications for SCALE Guide revisions or other educational and procedural activities performed under SCALE.

Data Collection

Our team has implemented three main data collection efforts to date: (1) Observation and follow up document reviews for key presentations at the annual SCALE meeting in March 2018, (2) Interviews with SCALE “strongholds,” and (3) Survey of SCALE participants that joined under Phase Two. Each data collection effort is described briefly below.

March 2018 SCALE Meeting. In March 2018, CSTE convened 22 individuals to discuss respective project efforts that focus on calculating sub-county life expectancy (LE) in the U.S. (i.e., USALEEP, projects performed by Virginia Commonwealth University, projects performed by Public Health England, and SCALE). Presentations during this meeting highlighted the history of several sub-county LE efforts as well as the influence these estimates had in the broader community. The evaluator took detailed notes during these presentations to document any early indicators of the traction that sub-county LE estimates can have which may lead to subsequent public health action and improvement. Subsequently, the evaluator has examined documents and other leads shared in the presentations by Public Health Seattle King County, Virginia Commonwealth University, and Public Health England to further elucidate the factors that may increase the likelihood that sub-county LE estimates will be used by target audiences as well as what public health actions may arise from sharing such estimates. The insights gained from these data collection efforts will be shared in the final evaluation report as mini-cases (assuming approval is given from points of contacts at each site).

SCALE “Stronghold” Interviews. We extended invitations to 11 individuals from 10 jurisdictions (4 local health departments, 6 state health departments) to participate in a 30-minute telephone interview. All invitees participated in interviews (100% response rate). Jurisdictions eligible for participation were those that started to engage in SCALE during Phase I or Phase II of the project and maintained consistent participation through regular teleconferences, in person meetings, conferences, and trainings. We tailored the interviews to each jurisdiction, however, as part of these interviews, we consistently asked interviewees about: (1) Their dissemination efforts (including the status of disseminating sub-county LE estimates and procedures for dissemination more generally in their jurisdiction), (2) How decisions are made about what to analyze within their program/jurisdiction, (3) Thoughts on priority analyses in their jurisdiction that might facilitate greater use of sub-county LE estimates for public health, and (4) Next steps for the SCALE effort.

Phase Two Update Survey. Several jurisdictions, beyond those recognized as the “strongholds” above, have participated in SCALE since its inception. In an effort to better understand the extent to which these participants were able to progress along the pathway to dissemination and (potentially) use – we invited 21 jurisdictions that engaged in a limited capacity (e.g., joined one or only a few phone calls) with the SCALE project to complete a brief survey via email. A few of these jurisdictions did participate substantially initially and then dropped off at a later date. Of these invitations, two bounced back due to undeliverable emails and ten responded (53% response rate). We requested information about whether they were able to obtain relevant data to calculate sub-county LE, the extent to which they were able to engage in calculating LE (unable to start, started but didn’t complete, completed), and if they were able to disseminate the estimates (internally or externally). We also requested information about challenges they faced during each of these stages. The full survey is provided in Appendix A.

Preliminary Findings of Potential Import to SCALE Processes and Products

For the current document, we reviewed the Phase Two Update Survey responses and the responses to a subset of questions posed during the SCALE “Stronghold” Interviews. Given that the SCALE project sunsets in 2018, the purpose of this summary is two-fold: (1) provide information about topics that might be helpful to account for when making edits to the current Guide and (2) provide some thoughts that participants who have been deeply engaged in the SCALE effort had regarding potential next steps for the SCALE project should it continue. The intended audience for this summary is CSTE, the current CDC Technical Monitor (Vickie Boothe), the future lead of SCALE (should it continue), and Amy Laurent who has taken several leadership roles on this project including updates to the Guide.

A “snapshot” of the pathway to dissemination. As we described in a recent publication¹ one of the intentions of the SCALE project was to “identify appropriate methods for calculating actionable sub-county LE and develop easy-to-use resources designed to assist other health departments” (p. 2). Our initial evaluation findings indicated that Phase One jurisdictions were able to calculate sub-county life expectancy². We wondered about the extent to which participants were able to take the next step – sharing the sub-county LE estimates to inform public health actions. An upcoming evaluation report focuses exclusively on the potential utility of sub-county LE estimates for informing public health action; in this summary we provide some initial insights into the extent to which jurisdictions were able to move towards *dissemination* of the estimates to audiences residing inside and outside of their public health departments.

According to SCALE project files, 32 jurisdictions have engaged in the project. We have been able to reach 21 (66%) of these jurisdictions to date through our interview or survey efforts. Five of these jurisdictions disseminated sub-county LE estimates prior to the SCALE project and were engaged in the project with respect to helping define and refine methodology; these jurisdictions typically using the resources developed by SCALE to update their estimates. Two jurisdictions we reached did not provide a status update as they either did not attend any of the SCALE calls ($n=1$) or they did not continue participating due to increase workloads ($n=1$). Of the 14

¹ Boothe, V.L., Fierro, L.A., Laurent, A., & Shih, M. (2018). Sub-county life expectancy: A tool to improve community health and advance health equity. *Preventing Chronic Disease*, 15 (E11).

² Boothe, V.L., Fierro, L.A., Laurent, A., & Shih, M. (2018). Sub-county life expectancy: A tool to improve community health and advance health equity. *Preventing Chronic Disease*, 15 (E11).

jurisdictions that remain, 11 (78.5%) reported disseminating their results to audiences internal to their health department ($n=10$) or external to the health department ($n=7$)³.

As part of the survey, we asked jurisdictions about the challenges they faced along the journey to dissemination (data acquisition, calculations, dissemination). Respondents were encouraged to provide responses about these challenges whether they were able to successfully complete that step or not. We provide the de-identified responses in Table 1.

The most frequent comments related to acquiring data concern the ability to obtain data at the census tract level or to the (perhaps unanticipated) high-level of engagement required to gain buy in or understanding to access the appropriate data. When respondents indicated challenges with respect to calculating estimates, the main challenge related to small numbers – including what constitutes a reliable estimate and when to flag or suppress estimates. Few survey respondents provided information regarding challenges they faced with respect to dissemination. Those that published only internally (and provided a response regarding challenges) indicated the internal audience did not see the results as actionable or faced challenges with respect to the reliability of the estimates and upholding the confidentiality given small population sizes. In the latter case, the respondent also raises the potential issue of stigmatizing certain census tracts.

Table 1. Survey responses regarding challenges experienced by stage

<i>Data Acquisition</i>
• Because the project was done in a unit with the [state] Office of Vital Statistics, it was easy to obtain relevant data. (state) • Able to obtain mortality data and analyze by zip code tabulation area but lacked capacity to map addresses to analyze by census tract. (state) • [We were] unable to get data at the census tract level because the mortality data is not geocoded. However, we did have the zip code level and were able to use that. (state) • ...most of the time has been spent in just trying to get the correct data that we need, in the format that we need it. And, and that has actually been difficult, because our state vital records don't do any geocoding of the mortality data. So we've had to reach out to some contacts in the, in the different counties that actually receive the vital records data and then geocode it, and try to get it from them. (state) • We were able to get subcounty life expectancies at the Census tract level for the county, which was helpful, though tracts can be so large it is difficult to get the full picture at that level. (county) • We decided to go with ZIP Code Tabulation Area (ZCTA) geographic groupings because [our state] is a small state and we often have issues looking at small areas such as census tract. US Census bureau collects data by ZCTA every 10 years, so we were limited going with the 2010 data. Additionally, we discovered some time ago that our Vital Statistics Office was coding death certificates using outdated census tract groupings (from 1980s, etc.) and [our state] has grown tremendously, particularly in rural areas since then. This also influenced our decision to go with ZCTA instead of census tract. Otherwise, we were able to get all the necessarily data very easily. (state) • Time available to request and collect data; Analytical capabilities; Availability of data at scale desired (multiple jurisdictions) • We were ultimately able to obtain all the data we requested, but it took almost 2 years to get everything. The state limited access and controlled everything, and it was difficult to get buy-in from them. (County) • None (County)

³ One additional jurisdiction disseminated a subset of the sub-county LE estimates in a publication but did so with the intention of describing methodological approaches to displaying results. Since this was a limited set of sub-county LE estimates, we did not count this jurisdiction as disseminating externally.

Calculating sub-county LE

- Challenge to know what cut offs to use for reliable estimates. (State)
- Some tracts had few cases which affected calculations. (County)
- There were no challenges calculating the life expectancy estimates. I think the hardest part is realizing when you need to suppress certain data based on your understanding of certain geographies. So simple suppression rules such as SE > 2 years are helpful in informing some of these decisions. We decided not to temporally aggregate beyond five years, as we did not have a reliable denominator (other than for 2010). We found that these exaggerated some of the values compared to the five-year estimates. Additionally, we made the decision not to spatially aggregate, as some of the geographic groupings which we would have created seemed inorganic. (State)
- The main challenge in [state] was dealing with small numbers. While the included spreadsheet made it easy to do calculations, we needed to edit things due to [state's] small population. (State)
- None. We did have some jurisdictions that had few or no people, and we weren't entirely sure how to exclude them from analysis. We also wanted to disaggregate the data by race/ethnicity, but didn't have large enough numbers to complete the calculations. (County)
- Very minor—forgot to multiply single year population counts by number of years at risk. Reached out for help from the SCALE group and was quickly corrected. Flowchart that was developed later on helped clarify methods and analysis steps. (County)
- Biggest challenge was that we were unable to get data at the census tract level because the mortality data is not geocoded. However, we did have the zip code level and were able to use that. Using zip code and the geographic aggregation tool (GAT), we were able to calculate life expectancy for the state. (State)

Dissemination of estimates

- Audience did not find data gleaned to be actionable. *{disseminated internally only}*
 - No challenges to date. *{disseminated both internally and externally}*
 - We were concerned about privacy and confidentiality, as well as possible stigma for some of our census tracts. We were also concerned about the reliability of the estimates, given our small population sizes and skewed mortality patterns. *{disseminated internally only}*
 - Minor visualization challenges in choosing appropriate classification schemes on maps, choosing which message you're trying to communicate, how to balance highlighting severe disparities vs. illustrating the distribution of LE across an entire jurisdiction vs. who's higher or lower than the overall county rate vs. who's improved/declined in more recent years. *{disseminated both internally and externally}*
 - Have not yet been able to publish our sub-county data on our public portal. This is because of competing priorities. We do hope to be able to do that later in 2018. *{disseminated both internally and externally}*
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During our interviews with states and localities that had participated regularly in the SCALE project we garnered additional feedback about challenges that arise with respect to disseminating sub-county LE estimates. Additional insights regarding these conversations will be shared in the final evaluation report, however, *preliminary analyses* of these interviews indicate one factor that may play an important role in dissemination—organizational culture, which can manifest at different levels of an organization (e.g., health department overall, departments, programs). In at least one instance, the interviewee suggested that learning from SCALE peers about their dissemination philosophies may help to shift perspectives within their organization about when it is appropriate to disseminate (and the potential benefits of or rationales for sharing estimates) earlier in the process than they otherwise would have. In other words, this organizational culture may be malleable through sharing lessons learned from other jurisdictions.

In the narratives shared, respondents often noted that after the sub-county LE estimates are produced there is a conversation internally about the *why* behind disparities in LE between geographic areas. It seems that organizations range in their comfort level related to how certain they need to be about the drivers of LE in their jurisdiction prior to sharing the estimates. Some

indicated that decision makers within their jurisdiction were hesitant to disseminate the LE estimates (in part) without indicators of factors that might help to interpret the LE estimates. Another jurisdiction indicated that internally they felt a need to really understand causal associations, including the potential effects of population migration, on the estimates prior to sharing them. Narratives from other jurisdictions indicated a different norm within their organization. These jurisdictions tend to move forward without answering all of the potential “*whys*” up front. In some of these cases there were indications that it was important to release the estimates so external audiences could be knowledgeable about the disparities at hand and/or to help stimulate conversations with a broader audience.

Next Steps for SCALE. During interviews with “stronghold” participants, we asked what analyses they might like to pursue within their jurisdictions to help people further understand/interpret the sub-county LE estimates (with the intention of driving public health action). Although these comments were intended to elucidate what the respondent saw as a fruitful next step for their specific jurisdiction, the areas of common interest that emerged in responses provide potentially helpful insights about future directions for SCALE. Comments about the general directions they would like to pursue fell into three categories, each described briefly below.

1. *Analyses that help to further elucidate the “why” behind sub-county LE disparities.* Respondents suggested delving into analyses or calculating indicators that provide more information about what is behind the sub-county LE disparities. This arose from a few different directions. The first was decomposing sub-county LE to see what leading causes of death are driving the LE. A second theme under this category included examining what is causing mortality by age category and sub-county area. The former (age group analyses) were mentioned most frequently by respondents. Finally, respondents were frequently interested in examining upstream determinants that may affect sub-county LE (generally). More specific insights around this included combining all areas with low sub-county LE and higher sub-county LE and looking for cause-specific drivers within each group (so as to increase numbers). Another suggestion was to examine potential gains in LE by taking out certain causes of death and re-running LE estimates without them.
2. *Calculating LE with different referent age.* Several respondents suggested calculating sub-county LE for another referent age other than birth. Respondents indicated using a referent of middle age could help to provide insights regarding the effects of the current opioid epidemic on declining LE. Others suggested that using a referent in an older age range (e.g., 55 or 65 years) would be helpful to provide insights about disparities that may exist in older populations. This could be particularly useful for states and counties that have a large older-adult population.
3. *Produce other indicators (specific).* There was also a consistent interest across respondents to develop methods for calculating other summary measures of health at a sub-county level. Suggestions included healthy LE and years of life lost. One suggested examining changes over time – such as looking at sub-county LE in 1995 compared to 2000. One upstream determinant was suggested as well – the economic hardship index.

We also asked individuals who participated in the interviews to provide us with insights about the future direction for SCALE activities specifically (beyond the items mentioned above that were intended to be jurisdiction-specific). Several suggestions came from these conversations.

1. *Clarity and transparency regarding recommended methodologies.* Many individuals felt that specific and clear decisions still needed to be made regarding recommended methodologies for calculating sub-county LE. This included providing true standardized methodology for states and localities to follow as well as clarity about flagging and suppression of unreliable estimates. Another respondent suggested SCALE create a standard approach regarding what to look at and how—such as whether it is appropriate to combine areas of low LE and look at those throughout the state or what indicators to focus on when disseminating findings.

Some respondents elaborated further that the recommended methodology developed thus far should be rooted in systematic, organized analyses to evaluate options—noting that such examination has not been conducted to date. Furthermore, one individual noted that the underlying rationale for the SCALE methodology developed to date needs to be outlined in the Guide more clearly (this was based upon discussions with a local statistician who reviewed the Guide and had several questions regarding the rationale for the team’s decisions). One respondent expressed concern with the level of attention that had been dedicated to topics that he/she felt were outside of the scope of SCALE – specifically geocoding and data collection. The respondent noted that data collection and geocoding is up to each individual jurisdiction to decide, and that “standardization” of approaches that are within the realm of CSTE occurs *after* data collection (at the analysis stage).

2. *Dissemination, drivers, and public health action.* Several comments related to further explaining the disparities in sub-county LE and thinking through how to interpret and explain disparities to help drive public health action. In alignment with the jurisdiction-specific comments above, respondents continued to highlight the importance of understanding the *why* under sub-county LE. A couple of respondents mentioned the importance of understanding how to *interpret* these disparities. One comment was specific to developing recommendations around what additional indicators are most helpful for understanding the *why* behind disparities. Another respondent mentioned that it was now time for SCALE participants to understand what constitutes a *meaningful difference* in sub-county LE estimates.

Several individuals expressed the importance of *dissemination* being a topic for future SCALE efforts. However, these suggestions varied greatly with respect to their intent and focus. One individual’s message regarding dissemination focused on disseminating methodology to other health departments for use. He/she felt that the methods have been established well enough (though recognized others participating in SCALE might disagree) and noted that the team should consider how to work with other jurisdictions to make use of the methods – for example, having a “help desk” or a peer mentoring approach. Another individual suggested that SCALE should collectively move towards publishing the sub-county LE estimates that SCALE

participants have calculated. He/she envisioned an interactive map as the ultimate culmination of the work performed on the SCALE project; noting that other projects are getting media attention from their findings but SCALE is not mentioned at all. Specifically he/she stated, *“until the data is really up on the internet and used all the time and quoted in the press I don’t think we have finished the project.”* Finally, another respondent spoke about dissemination with respect to driving public health action. This individual expressed puzzlement about why some jurisdictions such as King County and Los Angeles County had been able to get “traction” in public health programming through sub-county LE estimates but other jurisdictions had not. Thus, he/she envisioned future SCALE activities uncovering why this is the case and potentially including other experts beyond epidemiologists (e.g., communications) that could help the team to better understand how to get more traction in these areas.

3. *Geospatial analyses.* More than one respondent suggested that an emphasis on geospatial analyses would be a fruitful future activity for SCALE. One individual suggested embarking upon efforts to consider how jurisdictions might share indicators at different levels of resolution (presumably to overcome such issues as small numbers). The respondent noted that it can be important for the team to think about populations instead of geographic boundaries that are pre-defined (which can be limiting). Another respondent suggested engaging experts in SCALE who have expertise in geospatial analysis. He/she suggested that acquiring insights from these individuals may be helpful in understanding what analyses could be performed to reach a better understanding about which variations in sub-county LE are/are not meaningful/important.
4. *Clearinghouse.* A final theme that emerged from interviews related to SCALE serving as a repository or clearinghouse. Respondents shared different ideas about what this might look like. One individual suggested that SCALE create an online repository to document and share new manuscripts and media attention related to LE. The respondent noted that having this historical repository may be of increased importance given the recent declines documented in U.S. life expectancy at birth. Another individual thought SCALE could pursue sharing examples of data visualization options– he/she noted that sharing examples or case studies (even just screen shots) of different tools could provide helpful insights for others. This same individual suggested that compiling and sharing a list of indicators that the states and locales are calculating alongside sub-county LE to help with interpretation of the disparities could be helpful for other jurisdictions as well.

Closing thoughts

Clear progress has been made among jurisdictions who have participated in SCALE with respect to calculating and disseminating sub-county LE estimates. Given that several jurisdictions that have disseminated estimates at least internally have not continued involvement on SCALE calls, the actual prevalence of dissemination is higher than previously thought. Future evaluation efforts might be well-served by reaching to non-“stronghold” jurisdictions who have disseminated estimates to learn more about what facilitated these distribution efforts.

Representatives from jurisdictions that have engaged in SCALE consistently suggested several future directions. It seems that the most immediate action concerns ensuring that the team is collectively comfortable with the process that has been used to develop the recommended methodology and that additional sensitivity analyses are not warranted. Should additional analyses be warranted, the SCALE team should consider performing these systematic calculations during the early stages of future phases. Additionally, discussions with the group about what additional information may be needed in the Guide to thoroughly articulate the rationale behind the team's current proposed approach is an area warranting attention in the near-term.

Appendix A. Phase Two Update Survey

Thank you for participating in the SCALE effort and for agreeing to complete this brief survey. We anticipate the survey taking no longer than 15 minutes to complete. Depending upon the steps taken within your jurisdiction to date to calculate and share sub-county life expectancy estimates you will be asked to complete between three and ten questions. We anticipate presenting results from this survey in aggregate form in the final evaluation report for the SCALE project. If you have any questions about the survey please do not hesitate to reach out to me at: Leslie@FierroConsulting.com.

Section A. Data Acquisition

1. Which of the following best characterizes the extent to which your jurisdiction was able to **acquire the data** needed to calculate sub-county life expectancy estimates?

☐	We were unable to obtain any of the relevant data
☐	We obtained some, but not all, relevant data
☐	We obtained all relevant data

2. In the space below, please describe any challenges you faced in obtaining the relevant data. Please note we are interested in your feedback on this irrespective of the response option you selected in Question 1 above.

If you were able to obtain some or all relevant data, please proceed to Section B on the next page. If you were unable to obtain any relevant data, please skip to Question 7.

Section B. Calculating sub-county life expectancy

3. Which of the following best characterizes the extent to which your jurisdiction was able to **perform calculations** of sub-county life expectancy?

☐	We were unable to start calculations
☐	We started, but did not complete calculations
☐	We were able to complete calculations

4. In the space below, please describe any challenges you faced in calculating sub-county life expectancy estimates for your jurisdiction. Please note we are interested in your feedback on this irrespective of the response option you selected in Question 3 above.

If you were able to complete the calculations of sub-county life expectancy, please proceed to Section C on the next page. If you were unable to complete these calculations, please skip to Question 7.

Section C. Dissemination of estimates

5. Which of the following best characterizes the extent to which your jurisdiction was able to share/disseminate the sub-county life expectancy estimates you calculated?

☐	We have not shared/disseminated these estimates internally or externally to the health department (<i>please skip to question 6</i>)
☐	We have shared/disseminated these estimates either internally or externally to the health department

- a. You indicated that you shared/disseminated the estimates. With whom have you shared the estimates?

☐	Individuals working within the health department
☐	Individuals or organizations external to the health department

- b. In the space below, please describe your dissemination efforts to date. We are specifically interested in who you have shared the estimates with and how (e.g., online data portal, in person meetings). Any insights you have on how the estimates were received by these audiences would also be helpful.

- c. Would you be open to having a brief telephone conversation to discuss these dissemination efforts further?

☐	Yes
☐	No

6. In the space below please describe any challenges you faced in sharing/disseminating the sub-county life expectancy estimates.

Section D. Final Thoughts

- 7. In the space below, please feel free to share any additional thoughts you have with us regarding the SCALE project or the efforts your jurisdiction has undertaken with respect to sub-county life expectancy.**

Thank you for sharing a status update with us regarding your work on sub-county life expectancy. As noted earlier, we anticipate presenting results from this survey in aggregate form in the final evaluation report for the SCALE project. If you have any questions about the survey or the larger evaluation, feel free to reach out to:

Leslie@FierroConsulting.com.