LETTER

Complexity in 4-H youth enrollment: A response to Davy et al. (2020)

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In "Traditional market-animal projects positively influence 4-H enrollment", Davy et al. (April-June 2020) use a general linear model to explore the influence on 4-H enrollment of several variables: year, region, population density, and whether the young person enrolled in a beef, sheep or swine project. Their core finding is a statistically significant relationship between swine, sheep and cattle project and 4-H community club enrollment.

My critique of the paper is not with the finding that animal projects have a relationship with 4-H enrollment (previous analyses also show they do; Lewis et al. 2015), but rather that the authors do not build on the extensive literature and oversimplify the complex human dynamics involved in 4-H enrollment. These flaws have important consequences, as I detail here.

First, the research findings are not generalizable to 4-H enrollment processes (that is, they do not have "ecological validity"; see Wegener and Blankenship 2007). The authors ignore (or omit) a variety of important factors known to be involved with youth participation in 4-H, including individual psychological factors (of the youth and their parents), 4-H programmatic factors, as well as social and cultural influences. They also did not include in their analysis other common 4-H projects (e.g., foods, arts and crafts, rabbits, poultry or environmental education) that also positively correlate with enrollment. By not attending to these dynamics, their core finding — that animal projects correlate with enrollment — is not, on its own, actionable by 4-H professionals who wish to increase enrollment.

A second issue is potential adverse consequences given the context of 4-H in California today. The Davy et al. (2020) paper comes at a crucial moment. Due to UC ANR's new funding formula for 4-H staff positions — in which funding for county-based community educators depends partially on that county's 4-H enrollment — as well as concerns about resuming in-person programming during the COVID-19 pandemic, pressure to increase enrollment is high. A possible negative consequence of Davy et al. is that our colleagues may urge a shift away from non-livestock subject matter, even when other subject areas would be more meaningful and relevant to a target youth population (e.g., reaching diverse youth with culturally relevant curriculum; or in areas where raising livestock animals may be less relevant or feasible). For example, California 4-H enrollment data shows that while the number of young people undertaking animal projects has grown 42% over the past decade, youth enrollment in health projects has increased 726%, civic engagement by 168% and technology/engineering by 125% (Lewis 2018).

The literature shows that participation in 4-H is a fluctuating and dynamic process.

Before joining 4-H, youth and families must become aware of 4-H, requiring marketing and outreach. Youth join 4-H for a variety of reasons: a desire to have fun, to meet new friends, participate in projects, engage in community service, etc. (Harrington et al. 2011; Wingenbach et al. 2000).

Attention to retaining members is important in minimizing dropouts. Reasons cited for dropout include: families not understanding the 4-H program, feeling unwelcome and that they do not belong, reduced time availability, not having the financial ability to pay for activities, and not having a positive learning experience in their projects (Defore et al. 2011; Harrington et al. 2011).

Drawing on a decade of California 4-H enrollment data, Russell and Heck (2008) found that "long-term 4-Hers are the minority within the program, and that there is significant 'churning' in enrollment across all the ages" (p. 8). Lewis (2018) found the average retention rate was 62% across all members (excluding youth who "aged-out" at 19 years of age). Almost half (49%) of 4-H membership are first year members (Lewis et al. 2015). The prevalence of first year dropout is well-documented by existing literature (Hamilton et al. 2014; Harder et al. 2005; Russell and Heck 2008).

Important questions remain to be explored regarding 4-H enrollment; some include: (a) examination into the recruitment and retention of youth of color, (b) investigation into recruitment of adolescents and ensuring the program meets their developmental needs, and (c) inquiry into retention and the first-year member dropout phenomenon. While these are phrased as questions of enrollment, they really are questions of program quality, which will require 4-H professionals to make organizational, cultural and programmatic adaptations to better attract and serve youth.

The first strand of research was undertaken with the UC 4-H Latino Initiative (see Worker et al. 2019). The second strand is a high priority in the 4-H Strategic Plan 2018-2028, although no active statewide projects are underway. The third strand is being researched by 4-H academics who initiated the youth retention study, a multi-state research project to explore the first-year dropout phenomenon and the challenges new members encounter. Preliminary findings from an analysis of a decade of California 4-H enrollment data are

that youth were more likely to return a second year when they were involved in leadership roles (e.g., club officer, teen leader), involved in more than one project, or were younger, male, white or lived in a rural area or farm (Lewis et al. 2015). Additionally, project participation was tested to determine its influence on reenrollment; for example, youth enrolled in an animal project (livestock, small animal or animal-related projects such as veterinary science or embryology) were 55% more likely to reenroll another year than youth who did not undertake an animal project.

In closing, Davy et al.'s findings may lead our colleagues to believe that cattle, swine or sheep projects are a "quick fix" to increasing 4-H enrollment, when in actuality enrollment is a multifaceted phenomenon. They should have moderated their claim to acknowledge the inherent limitations in their analysis and the complexity of their subject.

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Reply to: Complexity in 4-H youth enrollment: A response to Davy et al. (2020)

The core misunderstanding of the rebuttal of the article "Traditional market-animal projects positively influence enrollment" is the notion that this paper lacks practical application.

Our paper investigated the importance of three livestock projects — beef, sheep and swine — on enrollment. The paper does not say these are the only factors influencing 4-H enrollment.

Much of the research presented in the rebuttal reports averages to survey responses with standard deviations. The author apparently would prefer to use these methods to investigate the various socioeconomic factors that influence 4-H enrollment — which is fine, but a different topic. To illustrate, Worker notes that "For example, California 4-H enrollment data shows that while the number of young people undertaking animal projects has grown 42% over the past decade, youth enrollment in health projects has increased 726%, civic engagement by 168%, and technology/engineering by 125% (Lewis 2018)." These numbers as a percent increase are relatively meaningless without some context. For example, if the number of youth interested increased from 10 to 73, the increase would be 730%, but would still be small in terms of project numbers.

It is true that other variables potentially could have been explored. We chose to examine the three market animal projects referenced above. How these projects influence enrollment was the question that we wanted answered, and our analysis offers a clear answer. The literature cited in the rebuttal does not answer this question. Most of the other topics brought forth in the rebuttal are not germane to the topic of how these market animal projects influence enrollment.

Our paper presents practical and actionable data. Although these projects are traditional, it is important to make sure they are attended to, and, because of their multiplicative effect on enrollment, to increase their numbers when possible. In short, these three market animal projects absolutely warrant attention.

Attention to these projects can easily be made in the day-to-day management of 4-H. For example, if a barrier to participating in a project exists, we can — and in many cases already do — offer solutions to these barriers. If a leader doesn't exist to assist in a project, find one. If it is difficult to be a leader or takes too much time, develop avenues to make it easier or take less time to be a leader. In one county where funding was an issue, a no-interest loan program for project steers was developed. These efforts don't have to take all our time, but a little time spent can yield results.

The 4-H program does not have a monopoly on market animal projects. Such projects can also be completed in FFA, Grange or independently. The ecological validity of this paper is that we can now quantify these livestock projects' importance to enrollment, and we ignore them at the peril of 4-H enrollment.

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