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UC GIS Week
Thursday, November 20, 2025
2 PM – 3 PM
Geospatial Data, Policy, and Health Insights

Speakers:

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Maggie Tarmey, Moderator: Alright, hello everybody, and welcome to UC GIS Week.

Maggie Tarmey, Moderator: We are having this afternoon session on geospatial data, policy, and health insights. We have 3 8-minute lightning talks with a few different speakers.

Maggie Tarmey, Moderator: First up, I want to mention that we will take all questions at the end of the three talks. Please feel free to leave questions in the chat as they come up. Otherwise, you can also raise your hand once we get to the Q&A and be able to ask your question that way as well.

Maggie Tarmey, Moderator: First up, I want to introduce Jane and Nathaniel, who are here representing the California Geographic Information Association.

Cautions to GIS Professionals in Context of California Statutes Defining the Practice of Surveying

Speaker(s): Jane Schafer-Kramer & Nathaniel Roth - CA Geographic Information Association

Abstract:

Navigating the boundaries between land surveyors, engineers, professional geologists, and geospatial professionals is crucial for maintaining the integrity of each field. Although land surveying and geospatial work complement each other, they differ significantly in scope and focus. In California, surveyors are licensed by the California Board for Professional Engineers, Land Surveyors, and Geologists and the activities exclusively reserved for Professional Land Surveyors are defined by the Professional Land Surveyors' Act as codified in Section 8700 - 8805 of the California Business and Professions Code, specifically Section 8726 (a). GIS practitioners are at risk of being fined if their mapping work strays into the Surveyors' domain.

The California Geographic Information Association (CGIA) and the California Chapter of the Geospatial Professional Network (CalGPN) have launched an effort to inform GIS Professionals of this risk, to engage with the Surveying Community, and to advocate for clearer regulations. The speakers will focus on the recommendations document that was published in April 2025, and the current status of the work of the joint ad hoc committee led by CGIA and CalGPN.

Transcript: Video Timestamp: 00:00:44.040

Jane Schafer-Kramer: Alright, if I could get my screen share to work...

Nathaniel Roth | Ca. DOC | he/him: Sorry.

Jane Schafer-Kramer: Okay.

Jane Schafer-Kramer: Sorry.

Jane Schafer-Kramer: Try that again.

Nathaniel Roth | Ca. DOC | he/him: I think we were good, Jane.

Jane Schafer-Kramer: We were good? Yeah, but I couldn't see my...

Nathaniel Roth | Ca. DOC | he/him: notes, I'm sorry. So, I'll just have to wing it.

Jane Schafer-Kramer: Let's try it again here.

Jane Schafer-Kramer: Okay.

Jane Schafer-Kramer: All right, so you can see this now. All right, so thank you. I, thanks for inviting us. I am Jane Schaefer-Kramer. I am a Geographic data specialist with the California Department of Water Resources. And, Nate, I'll let you introduce yourself.

Nathaniel Roth | Ca. DOC | he/him: Yeah, hi, I'm Nate Roth. I am a Science and Data Advisor for the California Department of Conservation, and a proud UC Davis alumni.

Jane Schafer-Kramer: Right.

Jane Schafer-Kramer: And I did not attend UC Davis. I learned GIS at American River College, so... but, we are not speaking here today as representatives of our employers. We're here representing a GIS professional association, the California Geographic Information Association.

Jane Schafer-Kramer: And, let's see if I can advance... Dear.

Jane Schafer-Kramer: Okay. So, we wear different hats in our private and personal lives, and... but part of this is

Jane Schafer-Kramer: our affiliation. I'm actually a member of two organizations, the California Geographic Information Association, CGIA, and also the California chapter of an international organization called the Geospatial Professional Network, and these are both non-profits.

Jane Schafer-Kramer: They're... in California, they're somewhat complementary, and we, I've been...

Jane Schafer-Kramer: involved with the advocacy committee... advocacy committees of both of these organizations for some time.

Jane Schafer-Kramer: And we're going to talk about

Jane Schafer-Kramer: Here, our... Nate and I are both involved with a joint ad hoc committee

Jane Schafer-Kramer: on things that GIS practitioners sometimes do that could get themselves in trouble with the California Board of Professional Engineers, Land Surveyors, and Geologists, based on the California Business and Professions Code. Now, that's not really the title of the

Jane Schafer-Kramer: Ad hoc committee, but we kind of shortened it.

Jane Schafer-Kramer: a bit to Ad Hoc Committee on GIS Professionals and the practice of survey, and then we just call it the Ad Hoc Committee. And, so it... this is, was launched based on a,

Jane Schafer-Kramer: a recognition of a problem that GIS practitioners, especially those new to the profession.

Jane Schafer-Kramer: and not even the profession, just who use GIS in their work, may not realize that just because there's a tool in your GIS software that you can do, and you're gonna do something.

Jane Schafer-Kramer: that may actually be legally reserved for the practice of licensed surveyors. And in the last few years, it's come to our attention of two, particular cases where, GIS,

Jane Schafer-Kramer: practitioners were cited by the board. And so, Nate's gonna talk more about that.

Jane Schafer-Kramer: But, as a result of this, in 2024,

Jane Schafer-Kramer: our advocacy committee in CGIA decided to take this on as a topic to discuss and debate and figure out how we can make it better for GIS professionals.

Jane Schafer-Kramer: And after doing a lot of research, we, decided to start with a two-page document

Jane Schafer-Kramer: That we prepared and published earlier this year.

Jane Schafer-Kramer: And that is just a cautionary, guide. And we started out trying to make it a best practices guide, but then we realized that we can't say what best practices are, because

Jane Schafer-Kramer: The crux of the problem is that the language in the law is

Jane Schafer-Kramer: quite vague, and it's very old language. It's been there since before GIS. And so, We're just issuing cautions.

Jane Schafer-Kramer: And,

Jane Schafer-Kramer: So this, this, document is now available on the CGIA website. I will put the links in the chat later. And...

Jane Schafer-Kramer: Our mission here, we're here, we're grateful to be here because we want more students and young professionals to know about these issues.

Jane Schafer-Kramer: So, I'm going to turn it over to Nate now.

Nathaniel Roth | Ca. DOC | he/him: Yeah, thank you, Jane. So the reality is that Business and Professions Code, Sections 8700 through 8805, that's where... that was passed into law as the Professional Land Surveyors Act.

Nathaniel Roth | Ca. DOC | he/him: Most of our challenges as GIS professionals originate from Section 8726, which defines land surveying. And I've highlighted here a couple of the particularly problematic

Nathaniel Roth | Ca. DOC | he/him: portions of that definition. The locate, relocate, establish, reestablish, retraces.

Nathaniel Roth | Ca. DOC | he/him: All of those not being terribly well-defined terms. The alignment or elevation of any fixed works embraced within the practice of civil engineering, as described in section...

Nathaniel Roth | Ca. DOC | he/him: 6731. That's the section that defines licensed engineering, like civil engineering, those you might... you might have seen as people with a professional engineer's licensure.

Nathaniel Roth | Ca. DOC | he/him: But those fixed works...

Nathaniel Roth | Ca. DOC | he/him: Include irrigation, drainage, water power, water supply, flood control, harbors, municipal improvements, railroads, highways, tunnels, airports, airways.

Nathaniel Roth | Ca. DOC | he/him: Water treatment, sewage, foundations grading, framed.

Nathaniel Roth | Ca. DOC | he/him: And homogenous structures, buildings, or bridges, which is an awful lot of constructed

Nathaniel Roth | Ca. DOC | he/him: materials. Which means, among other things, if you're working with a dataset that includes building footprints, you're probably touching on this in some way.

Nathaniel Roth | Ca. DOC | he/him: Or determines the configuration or contour of the Earth's surface.

Nathaniel Roth | Ca. DOC | he/him: or the position of fixed objects on, above, or below the surface of the Earth by applying the principles of mathematics or photogrammetry.

Nathaniel Roth | Ca. DOC | he/him: We start running into that, you start building a topographic model from drone imagery.

Nathaniel Roth | Ca. DOC | he/him: You're probably trading into this particular area, or if you're doing slope and aspect calculations from a digital terrain model, chances are pretty good that you should be aware of this.

Nathaniel Roth | Ca. DOC | he/him: Not necessarily as an absolute don't do it, but that if... you gotta... you gotta be aware that there are other, considerations that might be...

Nathaniel Roth | Ca. DOC | he/him: might apply. Similarly to the fixed works, there's the locate, relocate, establish

Nathaniel Roth | Ca. DOC | he/him: retraces property lines or boundaries of any parcel of land, right-of-way or easement. So if you start dealing with property ownerships, you could be starting to find yourself in this... in this area.

Nathaniel Roth | Ca. DOC | he/him: And then there's a couple that I find particularly problematic beyond that. Determine the information shown or to be shown on any map or document, prepared or furnished in connection with the above.

Nathaniel Roth | Ca. DOC | he/him: Or, creates, prepares, or modifies electronic or computerized data relative to those.

Nathaniel Roth | Ca. DOC | he/him: And then the last one to wrap out on it is rendering a statement regarding the accuracy of maps or measured survey data. So I suspect most of you that have been involved in GIS can see why some of these could be potentially problematic.

Nathaniel Roth | Ca. DOC | he/him: In California's case, there are a few exceptions for pieces of this related to people with licensure as a civil engineer or a professional geologist.

Nathaniel Roth | Ca. DOC | he/him: Or, in some cases, for those that are an architect for other purposes. Like, there are a few exceptions, but none of them at present

Nathaniel Roth | Ca. DOC | he/him: apply to those of us that are trained in GIS, use GIS, even if we have some form of GIS certification. If we could move on to the next one, Jane.

Jane Schafer-Kramer: That's...

Nathaniel Roth | Ca. DOC | he/him: Next slide.

Jane Schafer-Kramer: I'm trying.

Nathaniel Roth | Ca. DOC | he/him: Okay, so... oop, one too many.

Jane Schafer-Kramer: Oh, no.

Nathaniel Roth | Ca. DOC | he/him: so, the question is, okay, how prevalent is this?

Nathaniel Roth | Ca. DOC | he/him: Working on a Public Records Act request to the... to BPLG, the Board of Public... The Board of Professional Land Surveyors, Engineers, and Geologists.

Nathaniel Roth | Ca. DOC | he/him: That covered a period of about 5 years. There were, 62 citations for practicing surveying without a licensing. Of those, 38 were not GIS-related, really, at all.

Nathaniel Roth | Ca. DOC | he/him: 24 were, and then the remaining sets of them are from within those 24, so it's frequent that if people got cited, they got cited for multiple violations.

Nathaniel Roth | Ca. DOC | he/him: By far the most common were folks doing things that fall under what we've started calling a sitemap category. It's starting to relate property boundaries to fixed works of various kinds. One of those was dismissed, because it really did no harm.

Nathaniel Roth | Ca. DOC | he/him: But the majority of them were citations that the person, cited has eventually had to either pay up or follow a... some form of cease and desist type of order.

Nathaniel Roth | Ca. DOC | he/him: A couple of them for locations or elevations of fixed works. Frequently, those were utility-related.

Nathaniel Roth | Ca. DOC | he/him: A couple for doing contour of the Earth's surface, including one that was fairly specifically drone photogrammetry related, a couple about statements about MAC accuracy, and one person who really probably should have known better, who tried to prepare a map subdivision, a subdivision map.

Nathaniel Roth | Ca. DOC | he/him: For submission under the Subdivision Map Act, which

Nathaniel Roth | Ca. DOC | he/him: Got cited for a great many things.

Nathaniel Roth | Ca. DOC | he/him: Okay, moving... moving on, please, Jane.

Nathaniel Roth | Ca. DOC | he/him: So, what does that really mean? And it's hard to really provide coherent guidance, because there's a lot of uncertainty, and those that have been cited have really only been cited

Nathaniel Roth | Ca. DOC | he/him: After somebody, generally a licensed surveyor, engineer, or geologist has referred the case to the board.

Nathaniel Roth | Ca. DOC | he/him: And then the board has decided there's sufficient evidence to worth... be worth, pushing forward with... with a citation.

Nathaniel Roth | Ca. DOC | he/him: So if it doesn't get reported.

Nathaniel Roth | Ca. DOC | he/him: it's not... it's essentially not being enforced, and it leaves a great deal of uncertainty. So, what are the higher risk activities? Doing site plans where you're identifying dimensions, so distance from a property boundary to a structure.

Nathaniel Roth | Ca. DOC | he/him: Doing utility mapping, particularly if it may have any type of public safety relationship. Modifying property boundaries.

Nathaniel Roth | Ca. DOC | he/him: Creating, sort of, the original topographic data.

Nathaniel Roth | Ca. DOC | he/him: And then making quantitative accuracies, quantitative statements about map accuracy.

Nathaniel Roth | Ca. DOC | he/him: Others that we think of as lower but non-risk, so...

Nathaniel Roth | Ca. DOC | he/him: resource mapping-based topographic, topographic data processing of various kinds. So, okay, what's the slope? Do we have a little bit of a landslide risk here, or a lot of one? Larger regional land use planning type of activities.

Nathaniel Roth | Ca. DOC | he/him: the use or the contributions to crowdsource data. We know of nobody that's been

Nathaniel Roth | Ca. DOC | he/him: or groups that have been cited in California for it, but there are definitely some overlaps to the, to the definition of public land surveying.

Nathaniel Roth | Ca. DOC | he/him: Non-dimension site planning, so things that don't have directly attached dimensioning, particularly if they don't appear to be

Nathaniel Roth | Ca. DOC | he/him: Don't give the impression that they are survey-quality data.

Nathaniel Roth | Ca. DOC | he/him: And really anything that shows the relationship between property boundaries and fixed works without dimensioning it.

Nathaniel Roth | Ca. DOC | he/him: Okay, Jane, let's... let's move on. So, from our do's and don'ts document with CGIA, really the crux of it is don't do things that look like they're stepping into the realm of professional, surveying.

Nathaniel Roth | Ca. DOC | he/him: As defined in Section 8726. We do have a set of...

Nathaniel Roth | Ca. DOC | he/him: Sort of dues, so things that we can do to... as geospatial professionals, that we can do to reduce that potential friction.

Nathaniel Roth | Ca. DOC | he/him: Next, please, Jane.

Nathaniel Roth | Ca. DOC | he/him: So, don't...

Nathaniel Roth | Ca. DOC | he/him: Don't do documents that have dimensions from fixed works or boundary lines. That's one of the... particularly don't do those for any type of commercial sale.

Nathaniel Roth | Ca. DOC | he/him: Be careful using GNS or GPS.

Nathaniel Roth | Ca. DOC | he/him: To... to identify the position of service or subservice fixed works, including utilities, particularly if there might be a safety element, like some form of setback from a power line relative to individual safety.

Nathaniel Roth | Ca. DOC | he/him: Don't build your own,

Nathaniel Roth | Ca. DOC | he/him: Digital elevation models, and then distribute them

Nathaniel Roth | Ca. DOC | he/him: Out, out to the... to the public.

Nathaniel Roth | Ca. DOC | he/him: Or at least be really cautious about it.

Nathaniel Roth | Ca. DOC | he/him: Don't go and make changes or corrections to parcel boundaries. Avoid making a quantitative statement about the accuracy of maps.

Nathaniel Roth | Ca. DOC | he/him: And one of the ones that...

Nathaniel Roth | Ca. DOC | he/him: People, non-GIS folks have gotten in trouble for.

Nathaniel Roth | Ca. DOC | he/him: that overlaps is offered to procure surveying services for somebody. There are fairly specific rules about who can procure surveying services. It has to be either a surveyor themselves.

Nathaniel Roth | Ca. DOC | he/him: or an engineer in some cases, that can say, hey, I'm gonna go and get somebody to survey this for you.

Nathaniel Roth | Ca. DOC | he/him: Next, please, Jane. So do, please do be familiar with Business and Professions Code Section 8726. It does actually matter. When you're producing maps.

Nathaniel Roth | Ca. DOC | he/him: Or other data products, please do include a disclaimer of some kind that states fairly clearly that this is not a survey product, and make sure that any acceptable use statements that you make are consistent with that.

Nathaniel Roth | Ca. DOC | he/him: Provide the metadata, always good practice. Work with surveyors when you need to, and advocate for the clear regulations and collaboration between the groups. Next one, please, Jane.

Nathaniel Roth | Ca. DOC | he/him: So, back to you.

Jane Schafer-Kramer: Yeah, so I'll put these links in the chat. What else you can do is get informed, download a copy of that document and read it and keep it handy, share it.

Jane Schafer-Kramer: If you want to get more involved with the GIS community of practice throughout the state, join the CGIA email list. You do not have to be a member to join that email list.

Jane Schafer-Kramer: Engage with GIS professionals and surveyors. If you are going to be doing any of this kind of work that Nate talked about.

Jane Schafer-Kramer: It's good to get to know a surveyor or two, and add them to your professional network, and consider joining a professional association, and most of them do have a student dues component.

Jane Schafer-Kramer: So, thank you for your attention, and stay cautious.

Maggie Tarmey, Moderator: Alright, thank you so much, Jane and Nate. Just a reminder, we will take questions at the end, but feel free to leave them in the chat as they come up. Next up, I'm going to welcome Debbie O. of UC San Francisco, who actually has two talks to present us with today.

Rural Atlas highlights differences in cancer incidence, proportion late stage, and survival using two different definitions of rurality

Speaker: Debby Oh - UC San Francisco

Abstract:

Background: Use of different measures of rurality has made it challenging to identify differences in cancer patterns and direct cancer control efforts toward rural regions. The UCSF Rural Atlas allows users to dynamically visualize differences in cancer epidemiology across the rural-urban dichotomy, specifically within the UCSF Helen Diller Family Comprehensive Cancer Center (HDFCCC) catchment area.

Methods: Percent rural and Rural Urban Commuting Area (RUCA) codes were selected to explore cancer rates within the catchment area for the five most common cancer sites (female breast, prostate, lung, colorectal, and melanoma). Relevant area-level demographic and cancer risk factor data were sourced from the American Community Survey (ACS) 2015-2019 and CDC Places (2023 release). California Cancer Registry 2018-2022 data were used to generate incidence rates, percent late stage, and 5-year overall survival.

Results: The Rural Atlas (<https://cancerregistry.ucsf.edu/rural-atlas>) allows users to select measure of rurality, sex, and cancer site and explore the corresponding maps, tables, and figures. Using the Rural Atlas, we observed some regional differences between rural and urban areas. Prostate cancer incidence is lower in rural areas compared to urban areas in the Central Coast using the RUCA definition but higher using the percent rural definition. Male and female melanoma incidence was higher in rural areas using the percent rural definition, but using the RUCA definitions, lower rates of melanoma in rural areas of the Central Coast were

observed. Proportion of late-stage prostate cancer was higher in rural areas of the San Francisco Bay Area, especially when using the percent rural definition. Male lung cancer survival was higher in rural areas using the percent rural definition, but lower using the RUCA definition, especially in the Central Coast.

Conclusion: The Rural Atlas is a flexible tool for highlighting disparities in cancer patterns by rurality across regions and informing cancer control efforts.

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Debby Oh: Alright.

Debby Oh: Thank you all, I have to figure out which one's first. Okay.

Debby Oh: So, let me...

Debby Oh: Is this the right window?

Maggie Tarmey, Moderator: This is your, presenter view.

Debby Oh: Okay.

Debby Oh: Better?

Maggie Tarmey, Moderator: Yes.

Debby Oh: Okay, maybe I should have just unplugged my second screen, but at this point, it's too late. Thank you all for this opportunity to share. Thank you for attending on... in an afternoon session. I know that, the afternoon session people seem to have dropped off a little bit more, so I appreciate your time.

Debby Oh: I had submitted two different projects, so one is for this Rural Atlas, or Rural Cancer Atlas, as a lightning talk, and then I had submitted for our Health Atlas, as a workshop. So, just so you know, the first talk is a little bit shorter, maybe it'll be 5-10 minutes.

Debby Oh: And the second one, will probably be, like, 10-15 minutes, and for those of you who want to do a little bit more hands-on or ask more interactive questions, maybe we can do that toward the end.

Debby Oh: Okay, so, first project, the Rural Cancer Outlast. Let me introduce myself first. My name is Debbie Oh, my,

Debby Oh: background is in epidemiology, so I was, trained as an epidemiologist at UCLA.

Debby Oh: But I wear a lot of hats, and

Debby Oh: I also have some background in graphic design, which is kind of like the way I paid my way through grad school, and so data visualization is sort of the sweet spot in between those two areas.

Debby Oh: I... at UCSF, we manage the cancer registry, and, so we work a lot with cancer registry data. So, that's kind of how I got here, and let me...

Debby Oh: Start talking you through our project, or the why of our project.

Debby Oh: So,

Debby Oh: We work a lot with cancer data, especially in cancer disparities, and we know that rural populations have different cancer patterns. So, for cancer incidence, there's lower incidence in... for breast and prostate cancer in rural areas, and this is likely

Debby Oh: Due to, you know, lower screening rates, higher incidence for lung and colorectal cancers, and, you know, some... some risk factors may be higher in rural areas, such as smoking, or,

Debby Oh: Obesity, it's also, been reported that there's higher mortality for lung and colorectal cancers in rural areas, and that might be related to, healthcare access.

Debby Oh: So, when you're trying to do research, with rurality, on rurality, it's...

Debby Oh: There's a whole world of different measures that you can choose from, and different agencies have come up with different definitions. Single agencies have come up with multiple definitions themselves.

Debby Oh: There's different kind of binary, you know, urban versus rural, but there's also multi-level ones where you can, see different steps. Some of them are

not necessarily ordered categorical. You also have to consider if you're looking at the county level, zip code, or ZCTA level, census tract.

Debby Oh: So for this project, we had looked at a bunch of different commonly used definitions of rurality. So there's urban areas, which is used by the census, there's RUCC rural-urban continuum codes.

Debby Oh: Usda has 3 of them, so Urban Influence Codes, Frontier and remote zones... oh, actually, 4. And then Rural Urban Community Areas, RUCA.

Debby Oh: then, you know, there's a whole... I don't want to walk you through all of these, but there's a lot of people who have kind of put...

Debby Oh: a lot of thought into how we define rurality. For our purposes, I...

Debby Oh: so we work with the cancer registry, but we also work with the Cancer Center at UCSF, and we are interested in serving the 25-county region, catchment area.

Debby Oh: where most of the UCSF cancer patients come from. And so, we wanted to figure out what's going on in this region, and to be as granular as possible. And for that reason, we chose to look at the census tract level, which

Debby Oh: you probably already know, is, you know, it's a unit of about 4,000 people. It can be very big or very small geographically, depending on the density of the population.

Debby Oh: So we chose these two definitions, so RUCA, which is based on commuting patterns, and percent rural, which is,

Debby Oh: So, based on percent residents who reside in census blocks that are designated as rural, and that's kind of a mouthful, the census basically defines rural as anything that is not urban, which is super helpful, but they define urban as, you know, a place that has, like, a lot of people or a lot of housing units in one place.

Debby Oh: Okay, so just so you have a sense of what RUCA looks like, you know, you can have a metropolitan area core, so that

Debby Oh: that's, like, a more urbanized area, or you can think about, you know, how people flow into these urban areas. Or there's, on the other end of the spectrum, there are rural areas, but there's also small towns, and, like, the people who commute to small towns. So there's a whole range, and it's sort of ordered, but it's not exactly ordered.

Debby Oh: So as mentioned before, we are interested in the 25 counties within the, the...

Debby Oh: the cancer... the UCSF Cancer Center catchment area. And, what we did is we divided these into four...

Debby Oh: regions based on the California census regions. And this is just so that we can have more granular insights into what is going on into each of the regions, since we know that Northern California, you know, rural areas are going to have very different issues than in the San Joaquin Valley, or in the Bay Area.

Debby Oh: Okay, so if you're interested in looking at the Rural Atlas itself, it's a Tableau dashboard, and it's [cancerregistry.ucsf.edu slash ruralatlas](https://cancerregistry.ucsf.edu/ruralatlas). This is what it looks like.

Debby Oh: And you can see straight off that, so on the left, we have the definition of... we use the definition of percent rule, so that's the census definition. And you can see it's, like, a little bit more...

Debby Oh: patchy, I guess, you can see? And then on the right, you have Ruka.

Debby Oh: In the next tab, you can kind of filter through and look at incidence rates, or you can look at, cancer... the stage of diagnosis, or survival, so that's 5-year survival.

Debby Oh: For, I think it's 5 different cancer sites, so it's breast, prostate, colorectal, melanoma,

Debby Oh: And I might be forgetting one... oh, and lung, I believe. So, you can kind of toggle through and figure out what you're interested in looking at, and I'll take you through an example.

Debby Oh: There's also these little dot plots, which, are not maps, I know this is a GIS audience, but just to give you a sense of, you know, where the differences are. You know, my eyes zoom in to, like, where the dots are not overlapping.

Debby Oh: And similarly, this is just set up in a different way.

Debby Oh: Okay, so here's an example I'm going to walk you through. Melanoma, which is skin cancer, a type of skin cancer.

Debby Oh: So if you look for male melanoma, you can see in the Bay Area, you know, rural areas have, higher rates of male melanoma. It's, in fact, 80% per... 86% higher.

Debby Oh: But if you're looking at the RUCA definition, and you're looking in the Central Coast, it is actually lower in rural areas. There's a 61% decrease.

Debby Oh: And this is kind of what the map looks like. So, so, percent rural, have higher rates of melanoma in rural areas of

Debby Oh: For the Central Coast, and for RUCA, there's lower rates of, melanoma in rural areas.

Debby Oh: So, for female melanoma, it's very similar, where it's, like, 103% increase in the Bay Area, in rural areas, but in the Central Coast, it's actually a decrease.

Debby Oh: And you kind of see that in the map. And part of that is just because the definitions are...

Debby Oh: are different. You know, one is based on...

Debby Oh: how dense the population is, and one is based on commuting patterns. And so, depending on how you're thinking about cancer risk factors, you may be thinking about access to care, in which case commuting patterns matter more, but if you're thinking about, other exposures, then maybe percent rural might make more sense.

Debby Oh: And then I just wanted to kind of show you the dots. You can see how,

Debby Oh: they... where they don't overlap. I mean, I guess in particular, the one on the very right side, you can see how, for the Bay Area, the orange dot is above, so that means in rural areas, there are higher rates of melanoma.

Debby Oh: for both definitions, but then if you go down to the Central Coast, there's just circled in orange on the right-hand side, you can see that for the percent rural definition, the rates are higher in rural areas, but the rates are lower in, using the RUCA definition.

Debby Oh: This is just showing it another way. You can see how the dots are inverted. If you look at the Central Coast column, how the orange dot on the top line, the orange dot is above, but, for RUCA, on the line below, the orange dot is below. So...

Debby Oh: What are the takeaways? So, first of all.

Debby Oh: Rural areas in California are not all the same.

Debby Oh: So it's important not just to think of morality as a monolith.

Debby Oh: for the entire state and the entire country. And the selection of your rural measure may impact your results. So, depending on what you're trying to look at, it's important to think about, you know, what that rurality measure is telling you.

Debby Oh: Okay, so that was my first little talk.

Debby Oh: And end my show.

Debby Oh: Okay... Let me stop share.

How to use Health Atlas: A Visualization Tool and Data Resource for Place-Based Drivers of Health

Speaker: Debby Oh - UC San Francisco

Abstract:

Where we live, including the physical and social environments that surround us, influences our health in both positive and negative ways. Examining factors that vary across time and space such as access to food and housing, air quality, and social support can help reveal the specific effects environments have on health and inform neighborhood-based interventions.

We designed and developed Health Atlas (healthatlas.ucsf.edu) to help users explore place-based factors that might influence health. Health Atlas is a curated public repository of data aggregated at different geographic units (e.g., census tracts, zip codes, counties) and across a wide variety of domains (i.e., demographic; socioeconomic; built, social, and structural environments; environmental exposures; health behaviors; healthcare access and use; and health outcomes). Most data are available across all 50 states in the U.S., plus D.C. and Puerto Rico. Health Atlas provides user-friendly tools for mapping and visualization, and a data download feature to support use of the data by researchers, community organizations, government entities, and public health professionals.

We propose a virtual workshop to teach potential users of Health Atlas how to use the tool for their work. We will include content on:

- Health Atlas 200+ variables
- Selecting variables
- Visualizing data
- Selecting custom areas
- Downloading data
- Tips and tricks on how to explore data

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Debby Oh: And take you to the next one.

Debby Oh: Wait, it's this one.

Debby Oh: Okay.

Debby Oh: Am I sharing the correct screen?

Maggie Tarmey, Moderator: That is your presenter view.

Debby Oh: Again, okay.

Debby Oh: How's that?

Maggie Tarmey, Moderator: That's better.

Debby Oh: Okay.

Debby Oh: Alright, so I've already introduced myself, WO,

Debby Oh: I'm gonna... oh, actually, let's stop... pause here for a second. I'm gonna talk to you about the UCSF Health Atlas. I've actually presented on this project before at UC GIS Week, but I'm sure there's new folks in the audience. I was hoping today to do a little bit more of, like a walkthrough, so that, people can maybe try on their own.

Debby Oh: And give you Some tips and tricks, some...

Debby Oh: not quite Easter eggs, but there's, like, some features that, that we built in that are not...

Debby Oh: well-known, I guess, but I think are super handy, so I thought I would walk you through those as well.

Debby Oh: Okay, so the Health Atlas is a project that, we've been working on since 2019, and it has taken a lot of folks,

Debby Oh: for many years to put this project together. It started out as a California-only project, and just last year, we expanded it nationwide, so there's data for all 50 states, and Puerto Rico and the District of Columbia.

Debby Oh: So, why did we put together this map, when it comes to health?

Debby Oh: Place matters. Where we live, including the physical and social environments that surround us, influences our health in both positive and negative ways.

Debby Oh: So...

Debby Oh: We thought it would be important to put together a website where people can access, data, place-based data, from many different places, kind of like a curated collection of place-based data, and just put it all in one place.

Debby Oh: So, it includes, actually now we're over 200 variables, but there's maps at the census tract, zip code more specifically.

Debby Oh: Zikta, congressional districts, county, CBSA, PUMA, and state-level maps. This is at the 2020 and 2010 level geographies, and you can do a bunch of different things, which I'll walk you through.

Debby Oh: We organize the data kind of loosely based on a social determinants of health framework, and so there's these different categories, including socioeconomic, neighborhood, environment, health and healthcare, and I'll show you those data,

Debby Oh: the... the... what data is behind the curtain in a second. This is...

Debby Oh: where the data is from, so there's over 20 different sources. We kind of hand-curate all this data. I have to say that earlier this year, it was a little bit of a scramble. We just wanted to make sure we had our data locked down before some stuff started

Debby Oh: But we hope to just be a stable place for people to find the data that they need for their work.

Debby Oh: Okay, so this is what the map looks like.

Debby Oh: Again, you can find data for all 50 states. This is a map of 2020 census tracts, extremely low income versus disability. This is actually what you see as, like, a default when you open up the page.

Debby Oh: I know a lot of you live in California, so you can filter down to California if you want, and see data specifically for this region.

Debby Oh: If you're interested in congressional districts or any other geography, just through the drop-down, you can change that.

Debby Oh: And then you can select a different variable, so say you're not interested

Debby Oh: in, oops. I think it was extremely low income as the default. If you want to do a different measure of socioeconomic status, or poverty, or, there's different measures of,

Debby Oh: Of, health outcomes, or there's some climate variables.

Debby Oh: you can kind of type in the search bar, and it'll populate with some of the options. We are working on getting a AI feature where you can type in, and it'll be a little bit more loose. You know, say you're interested in

Debby Oh: food, but you type in the word nutrition, and then we're hoping that that... the AI search will help people find the variables that they want. Especially since the database is growing.

Debby Oh: So you select a second variable, so the second variable will show up in yellow, and so areas that have,

Debby Oh: High proportion of both will show up as green.

Debby Oh: You can also select an area, and so, again, I mentioned, the...

Debby Oh: UCSF Cancer Center catchment area is this 25-county region, and so here I've selected those 25 counties, and you can see on the left that, there are estimates, or population-weighted estimates that show up, like, as an orange dot in the scatter plot.

Debby Oh: There's also, like, an orange

Debby Oh: upright bar in the histograms, and then, there's the estimate in orange as well. So 31.4, 75.6,

Debby Oh: So you can do that by drawing a shape, or you can do that by selecting,

Debby Oh: the counties or geographies one by one. And again, I'll walk you through that later.

Debby Oh: If you want to select multiple states, you can do that.

Debby Oh: This is looking at Louisiana, Mississippi, Alabama. One thing that I thought might be interesting to look at is colorectal cancer screening and annual checkup.

Debby Oh: You know, so where is it that there's a lot of people getting their annual checkup, but for whatever reason are not, you know, there's low rates of colorectal cancer screening? And so, you know, perhaps these might be places where some efforts could be made to increase colorectal cancer screening when people do their annual checkup.

Debby Oh: If you just want to take the data and run, we have a download feature where you can select the variables you want. You can also select export selected areas only, or you can just take, you know, all the data for the entire country. You can download that and append it to your own data.

Debby Oh: if you want to export a map, I mean, I usually, honestly, I just take screenshots, but if I am somewhere where, like, the screen resolution isn't very good, then this is a way you can export a map.

Debby Oh: And we also have tags, so, you know, in...

Debby Oh: in case you are looking for something that's climate-related, you can just click on the little climate, icon, and that'll take you to that data, I think.

Debby Oh: maybe where it might be more helpful is something about, like, older adults, where there's variables, but they're in multiple different categories. They're not all, like, bunched together.

Debby Oh: Okay, so I'm not going to read these all to you, but here's all the data that we have. We have different variables for age, sex, and really granular data on race and ethnicity. This is primarily taken from the American Community Survey, which is run by the census.

Debby Oh: Various socioeconomic indices, poverty and income,

Debby Oh: you know, a lot of... a lot of different types of data that we've pulled. A lot of it is actually from American Community Survey, but there's a bunch of different... other... other different sources. Language and ethnic enclaves, some of these, oops.

Debby Oh: Some of this data is,

Debby Oh: you can only find in the Health Atlas, so our team has put together an ethnic enclave,

Debby Oh: variable for Asian Americans and for Hispanics, so if you're interested in, looking at that, it's downloadable. There's housing data, there's, neighborhood data on the built environment, segregation, structural racism,

Debby Oh: environmental data, so we worked with the UC Center for Climate and Health Equity, and they helped

Debby Oh: generate climate data, so air pollution, heat data, extreme precipitation data, and so they... we only have that available for California.

Debby Oh: So it's something special just for you.

Debby Oh: There's various environmental indices.

Debby Oh: Some of which may no longer be available through the government. I would have to check that. Everything keeps changing, but, at some point, some of this data was not available.

Debby Oh: And then a lot of these health and healthcare outcomes are from the CDC Places data, which disappeared and then came back. We don't know if there'll be a new round of this data moving forward.

Debby Oh: Okay.

Debby Oh: I'm gonna take a deep breath. Here's the walkthrough. So, in case you want to try playing around on your own, you can pop open a browser, healthatlas.ucsf.edu.

Debby Oh: And then, your default will actually show two variables. It'll be extremely low income and disability, but you can, like, click on the little trash can, you can mouse over and click on the little trash can and throw out one of the variables. You'll have just one variable, extremely low income households.

Debby Oh: If you mouse over the map, so here I kind of went down to Louisiana, and I moused over a census tract that has 29.3% extremely low-income households. You can see on the left-hand side that when you mouse over that census tract.

Debby Oh: A line will show you where that census tract lies in the distribution.

Debby Oh: Or, alternatively, if you mouse over the histogram.

Debby Oh: This is divided into 5 different categories, and this is, by natural breaks. So...

Debby Oh: From 27 to 42.6 will show up in this color, this blue color, and then if you mouse over that, it'll highlight those in the map.

Debby Oh: Okay, so if you want to select another variable, so extremely low income households and disability, you know, you can kind of click add another variable and,

Debby Oh: you can type in disability, or you can look under health outcomes and find it there.

Debby Oh: And the scatter plot will appear, so these... each of these dots is a census tract. And one fun thing you could do is you can highlight that scatter plot, and the census tracts that are in the region that you highlight will also light up in the map.

Debby Oh: Which actually, I showed you guys before, but this is another example of using that. There's also, if you toggle, so it says scatterplot, or you can toggle to a summary plot, and this is...

Debby Oh: I think especially useful for something like Census Tract, so there's so many dots, if you just want to know, you know, where is the lowest...

Debby Oh: you know, amount of disability, and the lowest proportion, extremely low-income households, there's a dot, you should just click on it.

Debby Oh: in the map here on the right, I... I kind of clicked on a middle dot, so 5.9% of all census tracts have 16.8 to 27 extremely low-income households and 14.2 to 19.9% disability, and so those will light up in the map.

Debby Oh: But I think it's nice to be able to have both the scatterplot and the summary plot.

Debby Oh: Okay, so here's an example where we're gonna filter to a state. So if you go to, kind of, like, the top left corner, you can filter to a state. So I, in this case, chose California, and then, I changed it, instead of census tracts, I changed it to counties.

Debby Oh: And then, if you want to select a custom area, on the right-hand side, there's this little polygon, and you can click and draw a shape.

Debby Oh: over the area that you're interested in. So, I am... I live in the Bay Area, and so I drew a shape over the Bay Area.

Debby Oh: And then those...

Debby Oh: counties will light up. You can also select them one by one, so above this polygon, there's, like, this,

Debby Oh: This little square with an arrow, and you can kind of select or deselect,

Debby Oh: counties or regions as you like. And again, the dot will show you where that region lies in the distribution, as well as give you details, about the actual estimated proportion, and, will show you that orange line will show you where it lies in the, histogram.

Debby Oh: And then, again, if you just want to take the data and run.

Debby Oh: You can click download data, so the download button's up here in the right. You can select the variables you want. If you're interested only, in this case, in the Bay Area, or whatever area that you've selected that's highlighted in orange, you can click that.

Debby Oh: download the data, and I just wanted to show you that, when you download, so this is kind of, like, zoomed in a little bit.

Debby Oh: On the bottom, it'll... it's a lot of data, and it takes a while to process, and so... it...

Debby Oh: it'll kind of show you how long it'll take. If it's a huge dataset, it might take a long time. We have had issues where if you download too much data, it kind of, like, it takes too long. But once it's ready to download, it'll be green, it'll say ready, and you can click download.

Debby Oh: And I think that is it. I'm gonna stop share.

Debby Oh: And I think... I didn't check for questions, but I think we can open up to Q&A.

Maggie Tarmey, Moderator: Absolutely. Thank you so much, Debbie, Nate, and Jane. Let's give a big round of applause to all of our presenters in this session. I

know I'll certainly find myself, sending students to the Health Atlas for sure. Great resource. Somebody has asked for, your email in the chat, Debbie, as well.

Q&A

Maggie Tarmey, Moderator: So, I'd like to open up for questions. Do we have, any hands?

Maggie Tarmey, Moderator: Well, I know I have a question for Jane and Nate from the first talk.

Maggie Tarmey, Moderator: You know, a lot of this, issue seems to stem from this vague legal language,

Maggie Tarmey, Moderator: This unclear legal language, this outdated legal language.

Maggie Tarmey, Moderator: Are any of the organizations you're involved with or otherwise involved in, like.

Maggie Tarmey, Moderator: lobbying for some change and clarity in this legal language to make this easier for GIS professionals in California to not accidentally, break laws or codes.

Jane Schafer-Kramer: We're not lobbying yet. I think we're still in the phase of...

Jane Schafer-Kramer: defining, you know, building the case. We, we've scheduled a couple of brainstorming sessions where, you know, we're putting together based on, you know, what we've seen and based on our knowledge of what we and our colleagues do.

Jane Schafer-Kramer: what... what could possibly happen, and how does this affect GIS practitioners? So that's where we are. We're building the case, and we're engaging with surveyors.

Jane Schafer-Kramer: with the surveying community, some are sympathetic to this cause, some are not, but, we're navigating that space. And then...

Jane Schafer-Kramer: you know, as far as what the next steps are, you know, we're... we'll strategize on that next. Nate and I, working for the state, we gotta be careful about what we get involved with, you know?

Jane Schafer-Kramer: And so... but engaging the... these professional associations, they are able to do that. Nate, did you want to add anything?

Nathaniel Roth | Ca. DOC | he/him: I think you answered it quite well, from my perspective.

Nathaniel Roth | Ca. DOC | he/him: Still a lot of exploring, figuring out what possible problems are, able to enumerate how big they are, and then trying to identify what solutions make sense and build

Nathaniel Roth | Ca. DOC | he/him: a coalition around them, mutually from both the GIS practitioner and the surveying community, because,

Nathaniel Roth | Ca. DOC | he/him: To be frank, most of the surveyors also recognize that there are challenges here, and that clarity in those boundaries of professional practice benefits everybody.

Maggie Tarmey, Moderator: Awesome, thank you. And for the recording, I'll read this question that just came in the chat out loud for Debbie. Would the Health Atlas consider incorporating data regarding households without a vehicle to study healthcare accessibility?

Debby Oh: I believe that at some point we did have access to a vehicle, so let me just poke around. We might have... when we... when we change from California to the national version, we might have taken that off for whatever reason, but let me check. I feel like we...

Debby Oh: Might already have that data.

Maggie Tarmey, Moderator: Do we have other questions for our speakers?

Maggie Tarmey, Moderator: I don't want to distract you necessarily while you're looking, Debbie, but I do have sort of a broad question. You know, what's next, do you think, for the Health Atlas, in terms of either adding new variables, or outreach, or sort of what are the dreams from the Health Atlas team on, next steps?

Debby Oh: So,

Debby Oh: The first dream, which I feel like is going to happen soon, hopefully, is to incorporate AI in order to make this an easier-to-use tool. You know, we started with...

Debby Oh: You know, maybe 60 to 80 variables, and it was easy to...

Debby Oh: To start to navigate, but as the list of variables has grown, we... we've been trying to think about how to make it easier to find, the right data.

Debby Oh: And so the tags were part of that, but, you know, as AI has started to seep into every part of our lives, we thought that it might be a good way to, to help users get to where they want faster.

Debby Oh: I would love to hear other ideas. I mean, some other people have floated ideas, like, oh, we can expand, you know, beyond

Debby Oh: a national version, but I do feel like we have a lot of data that is census-based, or, you know, CDC-based, so I do feel like continuing to focus on, national data makes sense for the Health Atlas.

Debby Oh: I do want to share, one second, we do have no automobile access, so...

Debby Oh: So no automobile access, let's just go to California, just to make it easier. So this data is taken from the American Community Survey.

Debby Oh: And, it goes...

Debby Oh: Down to the census tract level. So, depending on where you want to look at the data, that is there.

Debby Oh: I believe that was what the question asked, if I'm...

Maggie Tarmey, Moderator: Households without a vehicle. So, vehicle access, yeah.

Debby Oh: Yeah, percentage of households that do not have a vehicle. Yep.

Debby Oh: It's there.

Maggie Tarmey, Moderator: Awesome. Do we have other questions for our speakers?

Maggie Tarmey, Moderator: Otherwise, I do know all of our speakers have given us some contact information, so if you have questions that come to you.

Maggie Tarmey, Moderator: you know, a minute after the Zoom closes, as so often is the case, please don't hesitate to reach out to them. I want to invite folks to our last two sessions that we have today to conclude UCGIS Week. At 3pm, we will have a GIS Tools showcase.

Debby Oh: And at 4pm, we will have 3 presentations and a session on international geographies. So I hope to see some of you there.

Maggie Tarmey, Moderator: And otherwise, let's do one big round of applause for our presenters again. I know I certainly learned a lot from these talks today, and have a great rest of your afternoon, and we hope to see you again soon.

Jane Schafer-Kramer: Thank you. Bye.