Transcript: Mobile Apps and Sensors in Surveys workshop keynote: The Promise of Activity Space Approaches

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Florian Keusch: My name is Florian Keusch from the University of Mannheim, and I'm one of the co-organisers of the fourth MASS workshop that has been happening for the past two days here in Manchester. And it's my great pleasure to introduce to you today's keynote speaker, Kathleen Cagney. This keynote is sponsored by the National Centre for Research Methods. Let me introduce to you the keynote speaker. Professor Cagney is the Director of the University of Michigan Institute for Social Research. Apart from leading the world's largest academic social science survey and research organisation, she's also Professor of Sociology and Research Professor in the Survey Research Centre and Population Study Centre at the University of Michigan. Professor Cagney researched her PhD degree in health policy and management from Johns Hopkins University. Before joining the University of Michigan, she held positions at the Department of Health Studies and the Department of Sociology at University of Chicago, where she led the Population Research Centre as Director for several years. In her research she examines social inequality and its relationship to health, with a focus on neighbourhood, race and aging and the life course. The methods she uses to study these substantive research questions are highly relevant to us here at the MASS workshop. In particular, she is using smartphones to collect geolocation and activity data from respondents and she implements brief ecological momentary assessments to examine the social and spatial environments that older adults inhabit in their activity spaces, and she's going to talk more about these activity spaces today. Recently, she has done research funded by NSF and NIA to study everyday life experiences of older adults in both urban areas, such as New York City and Chicago, and rural areas, the Great Smoky Mountains, and she'll tell us more about this exciting research in her keynote. Kate, we're very happy to have you here and we're very much looking forward to your keynote.

K. Cagney: Thank you, Florian. Thank you so much. Thank you for organising this meeting along with Alex and Bella and Peter and Jana. I'm really having such a good time at this meeting, and I know that's not the point and I'm supposed to be here to talk about research, but I've really enjoyed the lively exchanges and the kinds of questions that people are asking. And I also really like the notion that you are sharing what works and also what doesn't work. And I think that's so important in our social science, in our engagement, in our collaborations to think about sort of low walls pursuits to the way we do this work, particularly work that's really emerging right now. And I actually will close our conversation today by sharing with you an initiative we have with the University of Chicago and Duke University to actually gather people together with tastes just like your own. So, with that teaser I will begin and talk about some of the work that we're doing jointly, and I want to introduce to all of you, although you may have met him, Liang Cai. Yan, raise your hand. He'll be presenting later in the day some of our joint work but has really been essential to all of what I'm presenting today, and so I am thankful both for his collaboration and for his willingness to join us at this meeting.

So, I'm going to talk about the premise of activity space approaches, and I do want to elaborate on the potential for urban and rural comparisons and to really think broadly about context. And I thought it was interesting yesterday Helen talking about what context means and embeddedness and I really liked the language that she used related to that and how that influenced notions of consent. So, with this, so I thought why are we here? So, what's the aim of our gathering? So,

it's really exploring innovation to enhance our ability to characterise the social world, develop work in concert with social surveys, and I want to spend some time talking about that and how these kinds of things really, you know, work together so effectively and are not meant to replace or supplant, and then really track social facts in a more nimble fashion. Are there ways in which the kinds of data collection that you're envisioning allow us to be more responsive from a social and policy perspective potentially?

So, what am I going to share with you? What are the aims of my comments? So, it's really to attempt to address when we need to ask questions and when we prefer to sense, and this was motivation from Florian when we had a drink in Ann Arbor, and he was saying, "Why don't you spend some time talking about that? When does it make sense to still ask questions, to get perceptions, to engage our respondents in that way, and when does it make sense to potentially passively, right, collecting it's one way we characterise it, information from our respondents?" I want to lay out a theoretically informed approach that suggested why these new methods matter and why they're actually responsive to the theory and that make certain that the method is not in search of the question. That's motivated from Mick and my conversation... email conversation I had with him about really thinking about what questions are we asking, what informs those questions, how do inventive new methods respond? And then actually sharing some details of a talk with a friend of mine at Michigan who is an aerospace engineer, and so he said, oh, you know, he said, "You're just asking is it mission pull or technology push. That's what we say at NASA". So, I thought I'm going to use that. In like it. Is it mission pull or technology push? So, that's a key motivation for this discussion.

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So, I thought, okay, since I was focusing first on asking questions, I went back to some of Norman Bradburn's work, and how many of you know Norman? Many of you probable do. He's been pretty influential in the survey world. There may be a generational element. I know Norman really well and I'm admitting it, so Norman was a long-time psychologist at the University of Chicago, also Provost, but really wrote this key book, great to help us think about how craft questions in social service. So, I thought, okay, I'm just going to write to Norman and say, you know, "I'm giving this lecture and I'm just interested in your thoughts and how you think about the intersection of perceptions with the ways that we might sense and monitor our respondents". And then Norman wrote me this long note back and he just said, "Oh, you know, somebody at NRC made me wear this watch for a week and I hated it and it was really irritating and itched and I took it off after three days," and so he told me all about what he didn't like about these wearables in some sense. And he said, "Otherwise, I don't really have that much to share other than I didn't like the wearable". And I like, okay, that's interesting. But I thought, you know, it's a data point from somebody who thinks a lot about data collection and whether or not and how we introduce these sorts of elements into people's lives, so it was a thoughtful response.

So, one of the things I want to talk about, and this comes from our drink in Ann Arbor, was thinking again about when we might ask questions and when they might not be quite as effective. And this comes from joint work with Chris Browning at Ohio State University. This was a pilot with adolescents in Columbus, Ohio. And this was the traditional recall when we talked with the kids about whether they were... you know, where were they during the course of the day, so essentially kind of a time diary element. So, one kid reported, "I was home, then I went to a museum and then I was home again". But this is what the GPS suggested. He was home, he was then travelling, he went to the museum. He was at the museum actually longer than he remembered. He's travelling, then he went home. Then he went to the Y and a friend's house, then home. And so I think this is a nice heuristic, right? It's kind of telling us, okay, there's a benefit in even using these as props, right, to help people recall where they were, the spaces they were inhabiting. And again, I like to think about these things as being used in concert. We're still, right, securing

people's perceptions. We don't know how he felt about all of these different stops. Maybe the why wasn't as significant to him. Maybe he goes to a friend's house every day so it seemed part of routine. That's where some qualitative elements might be useful, right, to engage in, and I'm going to speak to that a bit later when I talk about our rural work.

So, what are current challenges to asking questions? And this is a room who knows this sort of information well but just to set it up, all the things we know, declining response rates, increasing field costs, limitations related to in-person data collection. So, one of the things that was nice about the project that I'll describe is that we were actually able to engage in three waves data collection during the COVID period because we were able to send out phones, we were able to talk with our respondents over the phone, and so I like thinking that these sorts of innovations are also important as we think about the future of social surveys. I also think there are, and this I will close with, but sometimes there are disincentives to innovate. I think that's why I'm really enjoying this meeting because I feel like there's a lot of innovation and people are actually, right, again sharing what's working and what's not working. That's really critical. And, you know, some side bars while I've been at the meeting are that it's hard to alter large-scale and long-term studies and there can be a tendency to sort of keep one's trade secrets and so I really like this notion that we're opening things up and sharing that information.

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So, what are the next steps? And this is where I'm going to start moving into our examples. So, to link to the methodology, we really want to develop these new methods of asking questions or in some ways securing information. What are the ways we can capture space and time more accurately, allow for remote data collection? So, I'm going to focus on activity space GPS methods and ecological momentary assessment. So, many of you I know we've even talked about at the meeting are familiar with EMA. Much of the motivation theoretically comes from the work of Csikszentmihalyi, who was at actually the University of Chicago when he developed these methods, but that critical feature of getting information in the moment rather than retrospective assessments. And again, many of you in the room know these methods well, but it's also important for me to remember that these in-the-moment assessments are critical for things like, I don't know, hospital stays, right, where people don't want to recall it, measures like pain where, you know, it's much more effective and potentially more accurate to get that in the moment rather than a retrospective assessment. So, I'll motivate other reasons why we found EMA appealing in this context. But I also want to spend a lot of time substantively, and I know that isn't sort of the general focus of this meeting, but substance has come up a lot in many of the presentations. And we really want, again, the theory to be what is the pull here, right, and that scaffolding and the suggestion of the theory that we really attempt new methods. And I'm going to do that through focusing on these urban/rural comparisons.

Okay, so I'm walking into activity space example. Alright, I know I asked about Normal Bradburn and there wasn't a lot of acknowledgement, but who knows who this is? Anybody? Yeah? It's Jane Jacobs. That I'm so happy about. So, Jane wrote Death and Life of Great American Cities. Anybody? Yes, great. So, why I bring her here, Jane Jacobs is a person... she was an architectural critic actually, but she was main organiser who sort of saved the West Village in New York City and really pushed against the kind of physical infrastructure that was being imposed on the city at the time, with super-highways and the like. She really pointed out that street activity was essential to an engaged urban existence, and she pointed out that having commercial space on the ground floor and residential space on top floors meant that we had this animated arrangement so that all through the course of the day there would be activity. And what does that activity mean? It means that people are happier, they're less lonely, they feel safer, those are the kinds of things that she hypothesised in her work. It turns out that work has been very important to sociologists because she really had great insights about what brought social

cohesion and informal social control. She has this notion of eyes on the street. Is that familiar to anyone? Have you kind of heart this idea of eyes on the street? And what she depicts in the book are older adults who would kind of peer out of the second floor of their walk-up and kind of watch the street, and they would acknowledge if somebody looked like they were up to no good. That was her language in the book. This was written in '64 or something so we have to cut her a little slack, but it's this interesting idea of people also at all stages of life, of course, you know I'm very interested in aging, having this kind of role in community and a role in which they're building a cohesive space. So, you'll see how we've synthesised and brought in Jane's work into our theorising.

So, my example is going to be a sociological approach to understanding the impact of place and really saying, you know, people in across place in real time but there are limitations to that characterisation, so we really want to get at this kind of idea of a circumference of turf, what's the exposure space that people engage in and really understand the microenvironment. And so asking can new methods provide insight into what it is, how it's perceived, how it matters for health? And actually, you know, James and I were talking about this earlier, right before I began about whether lives constrict as we age. And so that was one of the fundamental questions of this project, although we don't have a very long time periods to watch individuals age, but it's kind of something we believe, right, that our circumference of turf shrinks. But actually there aren't data. We have not been able to find data that actually underscore that point, and so that was one of the other things we wanted to delve into as well.

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Great, so we make the argument that theoretical approaches largely neglect actual spatial exposure, so in the work that Liang is going to present in an hour or so, he's really focused on segregation, and that's one piece that he'll speak about briefly, and the extent to which whether our lives during the day are segregated as the spaces where sleep at night. And so so much of neighbourhood-based research has been contingent on residential location as the key driver for what we are exposed to all through the course of a day, but if one thinks about one's own day, there are lots of different kinds of spaces that one inhabits. But we have not allowed that influence to be incorporated into the way we try to understand outcomes like health status. So, our aim is to integrate social disorganisation theory with the social ecological approach. I kind of foreshadowed that in my picture of Jane Jacobs. And then want to incorporate that into thinking about activity space, and again our population is older, really want to emphasise agent aging, and, you know, another notion too, are neighbourhoods more important as people get older? And, I don't know, do you think neighbourhoods are more important as people get older? Yeah, I mean again, that's something we kind of believe, but it would be interesting to see. And I have some data that does suggest that.

Okay, so I'm going to show you just heuristic and a set of three slides, we're really focusing... we're invoking old Chicago School theory, Sean McKay Burgess and other investigators who are looking at neighbourhood structure, how it affected outcomes through particular kinds of mechanisms. We want to understand processes that link poverty, for instance, to certain kinds of outcomes as a structural feature. We also draw on the work of Kasarda on networks, Sampson on collective efficacy, I'll draw on that in a broader way, but in short that's ability of the community to come together for the common good. It includes measures of social cohesion and informal social control. I mentioned those earlier when I was invoking Jane Jacobs. Thinking about issues of disorder, Skogan, and drawing on Wilson on institutions, and I'll get back to that too when I think about socially isolated individuals and socially isolated neighbourhoods. We're really thinking about the mechanistic piece, particularly because there really was a turn in late 20th Century sociological scholarship that focused on these processes, again, the social glue that's linking structured outcomes.

So, methodologically, we've done a lot of work on this adjacency issue, so you have a focal neighbourhood and you want to understand how the neighbourhoods around it spill over. People like Lou Ganslin and others have helped us think about that statistically, but then we don't really know what to do with this neighbourhood. And I had... this is just kind of a fun aside, but I had a graduate student from Chicago, Liz Gomer, who did some qualitative work in Queens and had people draw their house and then draw their neighbourhood, and about half the people put their house in the centre and then drew the neighbourhood around it, right, like a circle, and another 25% put their house in one corner of that circle. And then fully another 25% put their house here and their neighbourhood over here, so the house wasn't embedded in the neighbourhood at all. I think that's interesting, right? So, what it is about, again, the space we inhabit and how connected is it, again, to where we have real estate or where we sleep at night?

Okay, so this is the synthetic model where, again, we're thinking about how structural features like segregation, poverty, residential and stability, heterogeneity link to the quality and dispersion of amenities and thinking about whether activity space itself is in some part driven by what the offering are around community, how that leads to the use of local amenities, thinking about spatially, temporally distributed street activity overlapping routines, this gets us back to Jane's notion of eyes on the street, but also this idea of something she's less known for but has mentioned in the work this web of public trust, which is, you know, it's kind of an adjacent term to this idea of social capital or collective efficacy. So, again, what creates that connectedness in community? How might all of that matter for something like health status? So, that's the general model.

So, that model informed our project, activity space, social interaction and health trajectories later in life. This is our research team, as you can see, from many different places but NORC was our data collection partner. We had a great advisory board, and I will get back to Charlie Catlett, who is from Argonne National Labs, who helped us with a project called Array of Things. Rob Sampson, I've mentioned his conceptual work, but he actually helped us think about the notion of collective efficacy on the fly in some way, like how one picks up a vibe in community and how one might report that through ecological momentary assessment.

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Okay, these are the specific aims. We collected primary multi-wave data from 450 residents. We did in-person interviewing to obtain baseline measures, self-reported objective health. We also took, you know, we did dried blood spots, I'll talk about that if we have more time. We used a smartphone app over week-long periods to identify lat and long, distance travelled, to describe activity spaces, those real-time reports with EMA to identify day-to-day fluctuations. And then we're leveraging external information through our array of things project to identify neighbourhood environmental demographic determinates. So, those are the key components of our project.

We also had an extension I mentioned that we did some data collection during the COVID period. That was supported by NSF. I won't present those data today but am happy to talk with anyone about the implementation and some preliminary results if anyone is interested. So, this is sort of the structure of our project. So, we're thinking about these overlapping spaces and one's activity space in the neighbourhood. These were the items in our in-person questionnaire, neighbourhood context, household, social network, social, you know, our network roster. This reminds me of Yannick's work from yesterday, right, thinking... there you are, thinking about how we sort of assess social networks and the embeddedness we get actually from the EMA itself, so thinking about your work. But we sort of have these pieces coming together whether either bio measures, health questions, social environment, behavioural and in these three waves.

So, I know many of you have spent time in Chicago because you mentioned it to me, and I think I mentioned this to many of you, but I just moved to Michigan about a year and a half ago but was for 20 years at the University of Chicago. That's one reason we studied Chicago. We could have a different conversation about whether Chicago is the most over-studied city in the world, and my colleague Mario Small, now at Columbia, has actually written a paper about that. People need to stop studying Chicago was really what he meant to say. And just, you know, one of the things, like these generalised social processes again, social disorganisation theory came from the study of Chicago neighbourhoods. Many people have adhered to that, right, that the kind of disintegration of community in some ways comes from the either dilapidated conditions or other kinds of matter that are structural in neighbourhoods. But I agree that some enhancement, and that's one thing we hope we're doing is necessary. And also it's probably one reason why I'm very interested in taking some of these concepts and methods to rural areas, which I will get to in a moment. But these are our ten neighbourhoods, I hope you can kind of see them, dispersed throughout the city. Probably known to many in this room was one who really helped us design this project where we chose our neighbourhood, our priority, and then pulled sample within them because we needed variation by race and by class, and for those of you not familiar with the city of Chicago, it is quite segregated by race and class, and it also turns out age. And so those were things we had to be attentive to when we were thinking about the structure of our sample.

I wanted to show you what our EMA... we had many, many screens of the EMA. I think yesterday at lunch I was explaining this to some of our colleagues here that, you know, it was very hard to design this. And this was... you know, we're doing this 2016, 2017, some years ago, the initial stages, at least, and trying to figure out how we develop the pathways. Are people inside or outside? Are they with others, are they alone? We try to follow the model of Csikszentmihalyi by asking where are you? Who are you with? What are you doing? Those are kind of key tenets of, you know, the ecological momentary assessment approach, we wanted symptoms of stress, mood, perceived safety, and then social and physical characteristics as people walk through. And this is the thing I alluded to earlier, we wanted this idea, you know, can you kind of tell me about the cohesion in a community just by walking through it? And we think, you know, again, we sort of have this sense that there is some level of vibe one picks up on, and probably particularly for communities you pass through on a regular basis, you get to know them in a different way than your residential location, but you know them.

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But we also wanted to turn to some kinds of questions, people smiling, nodding and saying hello. We have a few things that pick up on what might be generative in communities, which might be more prosocial. A gain, I think some of the kind of social disorganisation frame by virtue of its name, right, leads people to look at what are decrements in community rather than enhancements, and so we wanted to think about ways to round out those measures. It also reminds me some of, you know, Norman's key work where he was actually looking at many aspects of what is positive of affect and so in some sense we're looking at what's positive of affect at the community level.

So, I should say too, we pinged people five times a day. We had two-hour windows. Probably for our group, five was two too many, I might say. We collected data, as I said earlier, over a week-long period. And I'll just share too that, you know, about 70% of our respondents agreed to participate in the EMA. Once they agreed, most of them stuck with it. We did a quick... so for the folks in this room might be interested in this, we did a quick experiment should we pay them by EMA or pay them at threshold. If you do three you get 35 bucks or we'll pay you five in EMA. And at least in our relatively small sample it was a wash; it didn't seem like either one.

So, I was of course it's going to be pay them by EMA. I don't know what that reveals about me, but I was like, yes, like every small amount of money I get I would be enthusiastic about. But yeah, it didn't seem... it seemed like the threshold worked too. It was just kind of interesting to learn. I don't go into these data in detail, but this is a slide crafted by Aaron York Cornwell at Cornell, one of our collaborators, and this just shows you where we were picking up EMAs in the city throughout the course of the week. And one of the things I like to think about is just where we see sort of concentration and where we see dispersion. Some of these neighbourhoods, this is a Latino neighbourhood, African American neighbourhood up here, but it's revealing in a way that I'll show you in a moment when I share some GPS data on where people move. And I think it's nice to look at, yeah, so I like Aaron's slide.

Okay, and this is actually comes from... so this is back on Yannick's work, this comes from actually the network ties that came from the face-to-face interview, but these are from the EMA and whether people are with someone else, at home, away from home, and then we have a by-race group and that was sort of proposed in our study, and then by educational attainment. And I guess the one I really want to draw your attention to is this one when you're with somebody else at home and the educational gradient, this is less than high school, high school, some college and college, and then this is white, African American and Hispanic. So, we're really seeing some interesting... these are predictive probabilities so a model that's incorporating other demographic characteristics, but it was striking to us and also thinking about all network ties primarily rely on face-to-face interaction, this is pre-pandemic, but also that are very similar gradient.

So, these are our ten neighbourhoods, and so for those of you who aren't familiar, I'm just going to quickly orient on a couple. This is Westridge, which is primarily white and middle upper income. And this is Anglewood, it's just primarily lower income, mostly African American. And again we were... what you'll note here is again sort of the concentration. These squares, this is the home community area where the respondents are from, where that sample was pulled. And one of the things I just think is striking about this, so for those of you who might be familiar with this section of the United States, these folks are kind of... they're in the north of the city and they're going up into Wisconsin. What we see here, we see in East Side but we also see it in Anglewood, going south, right, into Indiana, going into the southern suburbs. And so there is still this kind of idea that these lives are not intersecting in ways that one might anticipate in a city that's actually relatively racially diverse, although, as I noted, segregated by race and by income. So, this is again just a heuristic kind of telling us what these data are suggesting.

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I'm now going to move to... so this is... so I wanted to show you what the EMA looked like, some examples from the GPS. I'm now going to move to just a quick example from our Array of Things project and then I'm going to move to the rural piece and then I should be, you know, done in time for more conversation. But this is the project where we put up about 200 sensors throughout the city. That device was developed by my colleague, Charlie Catlett, at Argonne National Labs and he made it in a basement with some friends from the School of the Art Institute. And it is actually really interesting-looking and you can slide things in and out, and it picks up environmental, air quality, headlight, other kinds of sensors. One of the things I had said in an initial meeting that I was interested in street activity, and then I didn't even know they were going to pursue this, but they ended up figuring out a way for a camera to sweep the streets and then essentially analyse what it was seeing in situ and then send back the information, so not send the image but say like tall, short, car, bike. So, those data are being gathered right now.

But one of the things we did with our NORC colleagues was to look at variation in our neighbourhoods in terms of exposure, and I'm just going to point out ozone here and the levels of ozone that essentially really high levels of ozone are overlapping many of our neighbourhoods

of the study. But I also brought this in because of a conversation with Bella last night that, look, this paper, right, thank you for editing it, came out in the special issue on using mobile apps and sensors in surveys. So, I liked it that there was this kind of connection already with our chart project with the Array of Things effort. And I'll say too that one of the things that was really nice about this project and just speaks broadly to collaboration, is that when Charlie learnt that our project was funded by NIA, he agreed to put sensors in all the neighbourhoods where we were drawing sample, so it was a nice story about having conversation at a party and being able to figure out, you know, how can we be bring these studies together in some way so that actually the sensing can be in a spot which would be meaningful for this project, so I'm forever thankful to him for that.

Okay, so with that I do want to move to rural life, and you may wonder why, why I find this compelling. So, there are a number of different reasons. One of the things that has, in some sense, I've been curious about or maybe even troubled by over the last 20 years of studying urban context is that much of the theory that comes from social disorganisation theory I'm not so convinced is about density. I'm not so convinced it's about urban life. When we start to kind of narrate ideas of social cohesion and formal social control, social and physical disorder, I can come up with comparative measures in a rural context, and that's something I've been wanting to do for some time and I'm going to be engaging in that through the study I'll describe in a moment. And I feel like I should come clean on this, I also grew up on a farm. I have two brothers who are full-time farmers in Michigan between Kalamazoo and Battle Creek, and so it's probably, yeah, also influenced by my early years of thinking through what these kinds of concepts might mean.

Okay, so with that, back on social networks, wanting to think about how concepts of networks and social capital broadly, and I think of collective efficacy as an adjacent kind of term that captures that, have they been employed in rural areas? And you can see there's not a lot of work, but more around environmental policy, reminding me about all this work earlier today, you know, how do people react to things like windfarms and other kinds of interventions in rural space, so there's been some work there. You know, some discussion of differences in networks and isolation between rural and urban areas. Not as much about how they compare. Dan Lichter at Cornell University has really sort of led some of this work in thinking about rural space and rural life, but really limited survey work. Actually Jim House and I with colleagues submitted a grant to NSF last week to try to collect data in rural areas of the United States and be more, I guess, purposeful about collecting data in many other rural communities because, as we know from our large-scale surveys, even with some oversampling very few cases do anything that's comparative. So, yeah, a little work on social capital, but again too much of it I think relies on things like Hillbilly Elegy, I don't know if anyone has read that, but I think that's not sort of the potentially of social science relevance and the way we'd like to think about it, and we need more work.

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Okay, so this is a new study focused on rural context, funded by NIA. It's with Bill Copeland at Vermont and Joe Hotz at Duke. I'm going to mention other work with Joe in a moment. We will collect measures of mental, physical and behavioural health and our new objective is really this idea of despair, and I'm going to say more about that in a moment and this idea of deaths of despair and thinking what's predictive of substance abuse and other dimensions of health, and I'll tell you why this is a particular opportunities. We're also really interested in the gig economy, this notion has actually sort of been ever-present in rural communities for many, many years, the idea that people are working many jobs and working informally. We want to try to track that. Joe is leading this effort but using some EMA-like approaches to, you know, over six-month periods trying to capture seasonality in work, for instance, so continuing to ping people to ask them what

they're doing, how much they're making, if they're adhered to the labour market. And then we want to also, of course, incorporate measures from other studies.

So, this is our location in North Carolina, so it's near Ashville. But what's really important is that it incorporates a significant sample from the Cherokee reservation. So, the study... what's essential here is the study began in 1993 with a sample of 1400 kids, including that sub-set from the Cherokee Indian tribe. And what's interesting is that now these kids are about at-health age, so they're like early 40s and their 50s now, somewhere kind of in that range, so we think that gives us a really interesting moment to think about this deaths of despair notion. So, I don't know if any of you are familiar with this book. Anybody read it? Anne Case and Angus Deaton. And it's really focused on this idea of why are our middle-aged white men in the United States in rural areas right now not doing as well as the generation before them? Dying at earlier ages, much higher rates of suicidality and depressive symptomatology, and so it's really trying to understand, trying to unpack what that's about. So, there's been a lot of discussion about this, about whether this is a group that feels left behind socially and politically, a lot of discussion about this in the intersection of the notion of, I guess, embracing, if you will, Trump and other kinds of political manifestations that speak to a certain form of isolation, so those are some kinds of questions that are embedded in this idea of deaths of despair. But, as you can see, this Appalachian deaths of despair, overdoses are quite high. The blue bars are in Appalachia, so certainly higher in terms of overdose. And this is for the GSMS participants. As I said, there are about 1400. You know, now they're kind of out here in their 40s, but you can kind of see this uptick, right, in use of non-heroin opioids.

So, one of the reasons we're anchoring on despair, so these are measures again, since they were around, you know, 9 and 11 years old, and these are the kinds of measures that one could say conceptually tap this idea of despair, hopelessness, feeling unloved, worthless, self-pity, worries and helplessness, this line is any despair, loneliness, and this pretty, you know, at least visually it looks like an important uptick over the life course, where in other sorts of data, as I understand these data, and just embedding in this project one might see an uptick around here, right, but then a levelling off, so we want to try to unpack that.

This is our data overview, so these are data that are already collected. One of the things I'm hoping is that someone might be interested in these data or our project extension. Now, as I said, this has been a project that was focused on adolescence and midlife for many periods. Now we've talked NIA into including it in its suite of studies, but we have over 12,000 assessments, it's community representative, very low attrition. We have the same interviewers since the beginning of the project in large part, so they've kept people connected, also have DNA. And this is what we will, a structured interview, health, health risks. We're very interested in cognitive assessments, interested in the group's reaction. We're trying to think about whether we'll use things like key strokes from the EMAs to tell us something about delay and whether that's an early signal of cognitive impairment. We're also thinking of using things like, you know, the eye trackers and whether or not those could be used in some way to suggest preferences. My colleague, Seth Sanders, is actually exploring this where he was using this in an experiment to see whether, when you ask somebody, this question always seems a little uncomfortable but I will share it, but when you ask somebody to look at a list of family members and then to say who do you think will take care of you if you get sick, and then seeing how long somebody lingers on a name, because they might want to say... not say which sibling, right, which neighbour, which kid, but they might reveal it in that way, so Seth has been leading that work. But we also want to continue with all of the other kinds of measures along with trying to do GPS tracking and neighbourhood surveys, like collective efficacy. So, what we're trying to do is use the methods that I've described in the chart study and see if they work in rural context.

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So, how do we do that? So, we engaged in this work over the period of the pandemic and we used a small sample, 162 from a related study that Rich Hoyle ran called research on adaptive interest, skills and environments. So, in day one to seven we had them complete brief surveys via EMA and morning, afternoon and evening, and then they participated in an end-of-study survey and, you know, this was our very low level of compensation, and we focused on accuracy, validity. But again we were trying to draw on the sociological concepts and methods we had motivated from the earlier project.

So, I'm sorry about the font size here but I'm just going to tell you two things about why I'm sharing this. These are summary statistics for the GPS quality metrics. One of the things I want you to notice, so both for the time gap and the distance gap, very confident that it worked well in both rural and non-rural areas, and I'm happy to share this later for those of you who are in the back of the room. One of the things I just wanted to quickly share is that we pushed out an app in this case, we didn't give people a phone, and things worked much better with iOS than Android, so I felt like that was something in this group in particular you might appreciate knowing.

This is the other one that I want to show you, this is for a paper we have under review, this is comparison between EMA-reported location, GPS-derived location and I'll just quickly say here, you know, we're trying to kind of alter what do we consider at home? And at lunch yesterday we were having this conversation about what it means to be home. And it turns out it's taken us months. Liang, would you say that's dramatic? But I think it's actually true, to try to understand what we think home is. And one of the things that's hard for us, of course, in the urban context, we have latitude and longitude, but we don't, right, we don't know where they are in the building. And if you're in a high rise you could be visiting someone else on the 16th floor and I think you're home, right? So, we're not able to get an elevation. But also there are these... if you think about rural and urban kinds of comparisons, if someone is on a farm like my own, they would certainly consider it home being many, many acres away. So, how we conceive that ends up being an important theoretically and also sort of as our measures respond to it.

But you'll see that a lot of our respondents were a home, so this is another kind of thing I want to consider, particularly for older respondents, is whether or not we need to get at something that's more attuned to the microenvironment, either sensors on the floor, actigraphy, other things that are going to tell us if people are moving round the house because we're not seeing as much movement as we might have anticipated, which is also a finding, right? And gets us back, I alluded to Wilson's work earlier, but when we're looking at lower-income individuals, socially isolated, potentially socially isolated communities, this embeddedness can be detrimental. Many years ago we wrote a paper on the 1995 Chicago heatwave and found that people were much more likely to die if they did not live near an active business district, controlling for lots of other individual and neighbourhood-level factors. And we think that active business district both drew them outside, made them feel safer, probably created street activity, back on Jacobs, that allowed people to feel embedded, safe, so that they would take a risk and go outside when they were hot.

So, the last thing I'm going to show you about these data and then I'm going to wrap up is that one of the things we wanted to look at is what is rural anyway? So, we used two different types of codes that either are based on commuting patterns for the RUCA codes, or they are based on population. So, trying to get at what is metro, non-metro, you know, really the definition of rural within the census is really the absence of being, right, in a space that is more populated but these codes themselves help us kind of sort our residents between these locations. And then we had self-reports, urban, suburban, urban, suburban, rural, suburban and rural, so we asked our respondents where do you think you live?

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So, this was what was really interesting to us, I mean as you might imagine, the RUCA and the RUCC codes pretty, you know, one's commuting, one's population density but they're pretty highly correlated, but this is what was interesting to us was the self-report. So, what we learnt is that people who lived in urban space and said they lived in urban... people who lived in urban space, I should say, defined by the RUCA codes or RUCC code pretty well aligned when they reported it. They said, "Yeah, I live in an urban area," but I think like at 0.94 or something like that. But for the rural residents, they were much less likely to say that they lived in a suburban or urban location. And so that led to a lot of questions about what rural is, and is rural cultural really and not geographic? What are we picking up from that with a correlation that is so low?

Okay, so I am closing with say, yeah, so this is reminding me of the multi-method work we learnt about earlier, but it's leading us to qualitative work, so we're going to prompt on what rural means, so we're actually going to do in-depth interviewing. When we say rural, what comes to mind? What do you think? And also these questions of... I mentioned time at home but can we even think of distance in the same way? What are the cultural cues? And then, you know, I'm interested, can we generalise this urban theory, physical and social disorder, informal social control in a rural space. You know, when I think about tractors up on blocks or barns that aren't painted and the kinds of things that would be said about the neighbours, you know, there are ways in which these... there are I think... I think we could come up with effective metrics. But also just I like this idea that we have a pluralistic science. And one of the things I've really enjoyed about all of your presentations is that I feel like we're not treating anything as a gold standard, right? We're really looking at what are all these different ways that we can get insight and that we can combine those insights, but we're not sort of necessarily privileging one over another.

I just wanted to flag Helen's important work from yesterday in thinking about in all of this how we image data protections, and then how does this all matter for innovation, social surveys, our science more broadly? You know, one of the things that does indeed keep me up at night is thinking about our large-scale social surveys at ISR that I hope many of you draw from, but I want them to survive, and will they? And I hope so. But we have to be more nimble in terms of thinking about those forms of data collection because tastes of the federal government might change and I want to be able to be responsive to that.

And then I want to invite you to a conference because you invited me. So, September 12th through 14th we are having a gathering, collaborative for innovation and data and measurement in aging. This is joint work with Joe Hotz at Duke University. We want to bring people together to engage in the sharing of new work. And so it has very much the vibe, we've had one meeting so far, it very much feels like this room. And what's nice about it, again, is that people are presenting things that don't work and we will support your sojourn to Chicago should you be interested in this meeting. And one of the reasons I really like it is it adheres to this other process we have in the project where we are engaging in rapid assessments. So, the work that I shared with you was in part supported by a rapid assessment through this centre on aging work. And what that means is that we want to... we made the claim that we would do these quick turnarounds, we would try something, we would say will activity space work in rural areas? We did the work, we wrote it up, and then we want to share it broadly. So, the work that I mentioned Seth Sanders is doing with the eye tracking, that's also supported by this effort. But we would welcome lots of innovative kinds of papers and so, yeah, please take a photo of this or send me a note and I will make sure you get the link.

And so, with that, I will close and we can have a conversation.

[End of Transcript]