

Child Welfare IT Managers' Webinar Series: Procurement and Contract Management

GIS for the Advancement of Child Welfare

June 25, 2014

Presenters: **Joyce Rose**, ICF International
Kathryn Kulbicki, National Resource Center
George Gabel, National Resource Center

Coordinator: Welcome everyone and thank you for standing by. At this time all participant lines are in a listen-only mode. Following the presentation, we will provide an opportunity for a question-and-answer session. At that time press star 1 on your phone to ask a question.

I would also like to remind participants that the call is being recorded. If you have any objections, you may disconnect at this time. Now I'll turn the call over to our host and our moderator for today's call, Joyce Rose. Ms. Rose, you may begin.

Joyce Rose: Thank you. Hello and welcome to today's Webinar which is a presentation by the National Resource Center for Child Welfare Data and Technology. The DSS or Division of State Systems Webinar series will resume in July with the previously postponed contract negotiation and management Webinar.

Topics in August and September will focus on system modernizations and mobile technologies. Please watch for additional information and dates. As the

operator said, I'm Joyce Rose your host and moderator for today's Webinar entitled GIS for the Advancement of Child Welfare.

Changes in funding availability and priority mean that opportunities for in-person discussions in networking among professionals working on agency child welfare IT systems are limited. As an alternative the Division of State Systems within the Children's Bureau is offering this series of Webinars supporting information sharing and discussion.

The content of the Webinars is structured so as to appeal to a wide audience participating in an agency's child welfare initiatives including new and experienced state and tribal welfare staff.

As I mentioned previously, today's Webinar is entitled GIS for the Advancement of Child Welfare which I think you will find unique and interesting as our guest presenter brings several years of experience using geographic information systems.

Attendees are encouraged to participate in our Webinar with questions and comments. Right now all of the participant lines are muted but we will open them for the Q&A session at the end of the presentation. However, please be aware that you can submit questions at any time using the go-to-Webinar chat feature and those will be addressed during the Q&A session.

Now should we run out of time we will respond to your question via e-mail and/or should you have additional questions, you may submit those to me at the e-mail address listed on the slide, joyce@kss.com or later on you will find the e-mail address of our NRC partners and Kathryn and Mr. George Gabel so you will have ample opportunity to send additional questions if you would like to.

So we are very interested in knowing who is attending this Webinar. It is our intent throughout all of the Webinars to make the content applicable and attractive for everyone participating in an agency's CWIS effort.

We ask that you self-select one of the five categories listed on the slide and my colleague Elizabeth will conduct the poll. Elizabeth?

Elizabeth: Okay, so we do have the poll up on the screen if you could go ahead and let us know who's participating today and I'll just give you a minute or so to click on the right box. We have just about 77% - ooh 80% - who have voted if the last few stragglers could just get in there and click the box for us.

And it looks like we have 18% state child welfare information system project managers, 54% state CWIS program policy or technical staff, 7% tribal child welfare project managers and 21% ACF or Children's Bureau personnel so we have a nice diverse audience this afternoon.

Joyce Rose: Yes, and I'm extremely pleased to see the large attendance of the program, policy and technical staff because I think this topic should pique their curiosity better than others.

So let's do a - thank you for responding to the poll - and let's do a real quick look at today's agenda which is we'll do the introductions followed by an approximate 60-minute presentation from our guest presenter and as always, the Webinar will close with an attendee-presenter Q&A session followed by a short wrap-up.

So I am pleased to welcome presenter. Kathryn Kulbicki and I would now like to ask George Gabel of the National Resource Center management team to introduce Kathryn. George?

George Gabel: Thank you very much and good afternoon, everybody and good morning to those that are on the West Coast and thank you ICF and the state systems staff for giving us the opportunity for being here. Being from what said, I've been fortunate enough to be a member of the management team for the CWDT for the past five years.

As you know the NRC is ending this September so on behalf of Debbie Milner the NRC Director and other CWDT staff. I would like to thank all the state systems staff and state info managers and the policy folks at the states who have supported our work and used our services.

We believe states have made so much progress with their state systems over the many past years that these past few years have really provided lots of new opportunities for states and tribes to use their systems - the information in their systems - for planning, evaluation and CQI and we've seen them on both fronts with the child welfare organizations itself as well as in conjunction with the many other state or tribal service systems.

Those systems might be education, mental health, justice, the list goes on and today's topic GIS is a great place for both of those types of work so I'm going to introduce Kathryn so with that it's fortunate that we have about 30 staff that work with geographical data in work in transportation, public health, justice and now of course we've added child welfare to the list.

CWDT was fortunate that Kathryn was available several years ago to join our CWDT team. She brought her GIS skills and expertise and has been a quick

study on our child welfare content. In fact she just participated in a thorough summary of some of the AFCARS issues for our own FPO Angelina Palmieri. Kathryn besides her 10 years of GIS experience has two masters, one in urban planning and one in geography and she currently is a PhD candidate in geography at George Mason University in Virginia and we are all expecting to see some wonderful new peer review literature from her as she gets deeper and it'll be on the topic of child welfare and geography.

So let me warn you, Kathryn is serious about geography. A bad map or a bad use of geography just gets her mad so we've asked her today not only to share to some experiences of states and how they're using child welfare and GIS but we've asked her to give you enough background about the science behind the GIS for you to take away and know what's important.

And so that you're in a position to flag for yourself that there's something that's important and something that perhaps might need some help from someone else in your department or someone else in terms of building the capacity within your state so we look forward to your comments and questions after her presentation.

Her presentation includes things that she's learned from her work on the NRC and from literature so we know there might be some things that your states perhaps it's currently participating in and we would love to hear about it during the Q&A period.

So let me end with a line I've used before but I think it's so important as we continue to hear more about Children's Bureau's focus on capacity-building so let me end with a familiar button slogan from one of the vendors who says give a man a fish and he'll eat for a day. Give him a GIS and he'll map his favorite fishing hole so Kathryn, the floor is yours.

Kathryn Kulbicki: Thank you George. I'd also like to thank Joyce and Elizabeth for allowing me to speak today or asking me to speak today. Today I'm going to talk about how GIS can be used in child welfare operations and research.

I'll be going over quickly what GIS and why I understand geography like George said and then as well as a few state examples within states I've been very fortunate to work with during my time with the NRC so the next slide.

So for those of you on the call who don't know what GIS is, I'm going to start out with some basic slides to help get everybody up to speed and for those who already have a GIS background just bear with me for these first few slides. So GIS stands for geographic information systems.

This slide says believing industry definition of GIS which means allows us to display, manage, analyze geographically-referenced data and information. This is done by storing the data in multiple layers that can be turned on and off. Next slide.

What I'd like you to think about when you think about GIS is that these multiple things it allows to do. It allows us to visually see data. Hopefully this brings a new meaning and understanding to the data when we are able to see geographic patterns. This will also allow us to ask new meaningful questions and allow us for new interpretation of the data.

GIS is really wonderful especially with using big data or social media data. It allows us to see new data with new perspective which really makes it a powerful tool to use. Next slide.

This is just an illustration of what GIS basically is and what it looks like if you're looking at it via a computer system so it allows us to see multiple layers that can be turned on or turned off depending on what you're trying to displaying your map.

These data layers create a visual hierarchy of data that's allowing us to see what is important in your particular map and highlighting what you need to show and disseminate. Next slide.

So those were the first few intro slides that I had of what GIS is so hopefully everybody has a basic understanding of what GIS stands for and now I'll be going into what GIS and child welfare can do together so one of the first questions that we get is why should child welfare care about GIS?

GIS can now allow managers and case workers to improve their decision-making. By visually seeing the data on the map, it allows us to better see relationships and interactions with our communities and our families and most importantly our children. Next slide.

What I think that GIS can have a huge impact on when dealing with child welfare is especially with the placement of children. The home addresses of children and the placement of children and where potential foster cares are located. GIS can be used as a great tool for us to better plot and understand our data as well as the QC process with our data that we already collect.

We can also use GIS to calculate distance and determine proximity to our family members and use it for location base recruitment which allows us to make informed data-driven decisions about where potentially foster or adoptive parents might live and how to better find them and associated them and get them the information that they need.

We can map qualitative data such as doctors' offices, hospitals as well as your child welfare agency offices and we can also use to help improve our understanding of where maltreatment might be occurring. Next slide.

So why GIS and why now? GIS has been around since the 1970s but it's really gained popularity in the past few years and around 2000 the Clinton administration demilitarized a bunch of satellites and they were now used for commercial use so this made commercial and civil use of GPS worldwide without the restrictions with the military satellites.

When we think about it today, so many people have become dependent on GPS and geographically-referenced data and because it's so readily available on our phones. How many people on today's WebEx are thinking about what you did already today look up any type of geographically-referenced data or use a GPS to drive to work or to drive to an office today?

We have become more and more dependent on geographically-referenced data so the next slide, well, I'm sorry, to continue on this slide we and now can think about how data is geo-referenced, geo-collected and geo-enabled. The next three slides will go over some examples of how this data is constantly being used today. Next slide.

So I think this is a fun map that gets people thinking. I show this map for a two-fold purpose today. First is to get your attention. I bet right now you're not even paying attention to what I'm saying. I bet you're looking at what your state is most popular Google search term is doing.

This map can show how information is being collected and then being disseminated on a geographic platform so this is just our information that is

daily collected through Google Trends to determine which words and terms were being searched by states and again this is not a scientific poll. This is just an app just to get you thinking about how data can be geographically displayed.

And again I just think this is a fun map to think about how data can be displayed in a very different way than we used to be seeing it before and of course I'm in Maryland and Maryland's Number 1 search term is apparently David Hasselhoff.

So for all of you who are going through what your state is looking at, it gives you something interesting to think about so yes our data is being geo-referenced even when we're not sure that it's being geo-referenced and geo-watched. Next slide.

Next our data is being geo-collected. Data.gov is a great research platform and a great place to gather data on the federal government's scale. Data.gov has over 1000 HHS datasets with civil in it such as community health service indicators to combat abuse-state heart disease and cancer, Medicaid provider charge data.

Not all of this information is geo-referenced but wouldn't it be great if it all was? This is just a great place to start gathering different geo-spatial data layers that might be useful for your state or for your agency to start to use.

One thing to think about when using this is that it's not heavy on child welfare data. Obviously a lot of our data is confidential and cannot be displayed on a platform like this but many data like our hospitals and some of our centers can be displayed on a data layer like this that can be displayed. Next slide.

Next I want to talk about how our apps are geo-enabled. This is just a screenshot of top 3 mapping apps out there and again this is just to think about how GIS is driven by so much of our work that we're doing today or so much of our lives today not even our work that we don't even consider it that these maps have a GIS working behind it as well as GPS.

So it's just something to think about that GIS is not a foreign topic for people out there. It's something that's real and a part of our everyday lives. Next I'm going to be speaking about how we need to learn from others so next slide so child welfare doesn't need to recreate the wheel. We can learn from others.

Geographic research has been well-established in public health and in justice research especially and it's important that we learn from what the other fields are doing and incorporate it and adjust it for child welfare because so much research is already being completed in our other neighboring disciplines.

So the next few slides will go over some examples of how GIS is being used in other areas. The next slide shows the screenshot from the Dartmouth Atlas. The Dartmouth Atlas is one of the leading public health dissemination platforms out there for looking at geographically-enabled public health data.

The Dartmouth Atlas gets their funding from the Robert Wood Johnson Foundation as well as the United Health Foundation which is a great place for us to start looking at our data so if you have some questions about how geographic information could be used on a public health platform, this is one of the leading resources.

The map on the left shows the number of children under the age of 18 in this study population among hospital service areas. The map on the right shows the general pediatrics per 100,000 children among hospital service areas so

again this just shows some comparative information that may be useful out there for our child welfare agencies. Next slide.

The next slide shows a screen grab again from the U.S. Department of Housing and Urban Development HUD. HUD is a great example of starting to use their maps and starting to put them out there onto the Internet for people to use.

I Googled - I used the HUD geocoding location service that was free for the public - to look up our office here in Rockville, Maryland so that's what the red dot shows on the map. That's where Westat is located. These mapping apps are all geo-enabled and geo-driven.

They have internal ones out there for their HUD employees only and external mapping apps that are out there for the general public to use to see if you're in a HUD zone or designated area to receive special funding. Again this is just to show that mapping apps are out there and they are common to use among other agencies.

The next slide shows an example of how we can also receive public health information from our other neighboring disciplines so this is a screen grab from the geography and public safety bulleting that's put out about yearly from the National Institute of Justice.

This issue specifically looks at public health and criminal justice issues and perspectives that can be mapped. These issues feature successful research stories, describes how policy initiatives and presents technical tips for the use of GIS and highlight recent news events in the areas of justice and geography and public safety.

Again all of these areas are neighboring disciplines to child welfare and GIS and it's important that we look at what others are doing in our other fields and learn from them and see what's working and what isn't working.

So the next few slides that I'm going to show you today are talking about understanding geography and as George stated earlier in his introduction, bad geography does make me mad but I understand not everybody loves looking at maps and not everybody majors in geography and gets that strange look of what, you're majoring in geography? Don't we know where everything is?

But it's more than that so I'd like to start off this section by just thinking about the first law of geography. I'm not going to get deep into this so you don't need to start to zone out into why geography is important but the first law of geography is everything is related to everything else but near things are more related than distant things.

And this may seem like common sense to many of you but it's something to think about when we're looking at geographic data and how it might impact our child welfare offices and our research so bear with me as I go through some key geographic data principles.

So on the next slide we talk about what geography works best and we want to think about what level of geography do you want to know? Is country good enough? Is that scale good enough for me to see what information I need if I'm looking at the State of Maryland?

Maybe I need to go on further and look at the county, the blue state right there in Maryland with the red highlighted Montgomery County again where I'm currently located today and then we zoom-in a little bit further to the Zip Code.

So you have to determine what information do you need to scale to see the scale of your problem to best share your information. When you jump from scale to scale, this is known as a modifiable aerial unit problem in geography and this plagues geographers because data doesn't transcend from one scale to the next scale so it's something to be considerate of when you're doing your information.

You also want to be concerned of what level of geography when you're sharing information that could be confidential and I'll talk about that information a little bit later on in a few slides so next slide I'm going to talk about geographic data.

This is a key slide that I think many people get wrong when they're looking at geographic data. A lot of the times people will just plot the total population versus looking at the population density. This map is one of the D.C. metropolitan area. On the right of the map shows the total population by Census tract.

And on the left side or on the left side it says total population and on the right side is the population density. When working with geographic data, people need to put the correct way to display data and again there's different scaling and different other techniques that can be done that can be used to diffuse the data.

So if we look at the upper left-hand corner of the map we see a really dark purple area and so those of you familiar with the D.C. metropolitan area, I'm talking about the lower left side of Montgomery County on the upper left side of the map.

We see some dark purple areas but as soon as we switch it to population density, we realize that we don't have a heavy population out there. We just have some large Census tracts because we don't have a rich population area so again it's knowing and understanding your geographic data.

There are some great books out there such as *How To Lie With Maps* by Mark Monmonier and there are other books out there that are also how to lie with statistics so again it's just important to understand what geographic data means and what it means to you when you're sharing this.

So this slide might be important for child welfare agencies when they're thinking about where to place a new office and they want to maximize where their population is. Is it just something as simple as this? You wouldn't want to use total population because you'd have your office sitting maybe in an area that doesn't need an office or where it's not much population can access.

So on the next slide I'm going to talk about geocoding so geocoding is placing an address on a map. Basically it's assigning it a latitude and longitude coordinate. Geocoding is not limited to the street address.

You can geocode data to a Census tract, a Zip Code, a county or a state and geocoding could be a great verification process for all of you who are using your addresses out there who may get bad data addresses.

It's important to create this in a QC process to allow you to better understand where your families are. Geocoding will help you correct bad addresses and help you make sure that you have an area where you actually have homes and that you understand where the people are living.

So geocoding for example it could be something like my name Kathryn. Kathryn has many multiple spellings and many - Kathryn just in general - has many multiple spellings. So you could have an address at 123 Kathryn Street spelled the way I spell it but it could be entered-in with a C-A-T-H-E-R-I-N-E and you might be getting the mail coming back to you.

It might not be finding it. You might not have the right children's address. Geocoding will help you verify well we only have one Catherine Street in all of wherever your city is. Why don't we try mapping it to this one so geocoding can be used as a great QC process and the next slide.

Next you want to think about data calculations. When thinking about how we calculate our distance, there are two ways to think about it. We have Euclidean or non-Euclidean which is often network or Manhattan distance. Two ways to think about this is how the crow flies versus how the fish swims.

A crow can fly in a straight line which is the green line on my map. A crow can fly from one point to the next without worrying about street intersections or about buildings in its way or any physical landmarks whereas as the fish swims has to follow a network of water or in our case roads.

So we want to think that the purple line is as the fish swims so these are different ways that we need to calculate distance and that we need to be cognitive of especially when we are placing children and we want to make sure that they're maybe close to family members or close to siblings.

When we think about this also when we just draw a buffer of 10 miles around a particular home, that's using a straight line or Euclidean distance. That might not take into account a mountain that could be in the way or a river that there's only one road to cross.

So when we think about how to get from point to point, we never want to just draw a straight line and assume that we'll understand or we'll capture all the travel patterns or all the ways - all the people - that live in a particular area. We always want to look at the network or Manhattan distance. Next slide.

So I do not want to spend a lot of time on this slide but I just want to point out that geography has a lot of modelings to it and there is more than just looking at a map and more than just knowing where a city is or more than just looking at points on a map.

Geography can have some pretty advance statistical modeling capabilities with it so there are several types of distance following theories here so just central space, location allocation modeling which will help you find the optimal routing locations, distance-decay effect which will allow us to see how distance declines between space.

So these are just some things to think about when we're looking at geography and modeling and again this is not to bore you about all these different types of geography processes but just to get you out there thinking that there are different ways to calculate distance and there are different ways to distance place of properties.

So next I want to think about the statistical modeling.

A lot of people will look at a map and start to deduce their conclusions about where a cluster is, where a hot spot or cold spot could be located and they don't really understand the other statistical modeling effects that you go into this and what you actually need to use to determine clusters and hot spots.

This can also be done through spatial auto-correlation and again this is just making sure that you understand good geography and just as I said a few slides ago with the population density versus the total population, you just don't want to just throw data on a map without testing for statistical significance.

So the next slide is an example of a hot spot and cold spot, talks about hot spots and cold spots so it's pretty easy to look at a map and say I can see a hot spot. I can see a grouping of one particular area and one corner of the map.

Well geo-statistics are statistics that are specifically used for geography to determine where hot spots are and the map in the corner just shows the map where cardiovascular disease hot spots is in Massachusetts.

And some of you - I'm sorry a minute - some of you might be thinking why would I need this technique to better understand for child welfare? Well, we might want to - I'm sorry, hold on a second.

George Gabel: No we have a little computer problem.

Kathryn Kulbicki: The computer just timed-off here in the conference room.

George Gabel: Great.

Kathryn Kulbicki: So we might want to look at this and determine if we can actually see if there are hot spots or cold spots where cardiovascular disease is happening in Massachusetts so for child welfare we may want to think of this as where areas of maltreatment are occurring.

Do we see specific trends? Do we see specific patterns with our families so this could be done through hot spot analysis. So one of the statistics that is used and again I'm not going to spend time on this specifically because I don't need to bore everybody here with the statistics behind this but just to spin through, but this is done with GIS more deep statistics.

Again just something to think about when you're doing future mapping. During the next slide I wanted to show an example and this came from Lee Ganslon's presentations before on looking at testing for clusters so can you see on this map which one's random and which one's clustered?

Again by using statistical testing for our maps and actually testing to see if we have random or cluster data and again the data is of the same scale. It's just one thing to think about that do we see random or do we see clustered if we apply the spatial weights and spatial necessities to this data, do our results vary?

The map on the left is random. The map on the right shows cluster data and we can tell this by looking at our statistics through our map and so the map on the right we can see the dark red spot in the middle. That's clearly where the cluster is when you understand geographic data patterns.

The map on the left we might think we see some clusters of some dark red areas or dark brown areas depending on how the color shows-up on your screen but these areas are not considered clusters so again this is just something to think about without getting too much into the science behind it.

But there are reasons to test and there are reasons to know more about geography than just looking at a map. Next slide. When looking at a map, we can take away a lot of data and a lot can be shared.

We can think about a lot of things out there that can be shared that could be sensitive information so I think it was summed up best when I heard someone say nobody goes home and says to their family or friends that they saw a great bar map or a great bar graph or a great regression analysis.

Maybe a few statisticians possibly on the line do go home and they say that but very few people think about how their data is, think of data patterns like that and really take it home to them but as soon as it comes to looking at a map, data becomes personable.

Just thinking about this state map where I showed the Google Trends earlier in this presentation, we made that map. I'm sure people looked exactly where they're from, whatever state they're currently in or where they've traveled to or where they have family from.

They looked at those states first. As soon as data goes on a map, it becomes personable. People can automatically start to see how it impacts them, how it's related to them, what's possibly in their backyard, what's around them, what their neighbors are like.

The data becomes personable as soon as it becomes in a map. Even if it's not of your area, you start to relate it to what does this mean and people will start to look at data very differently.

So when you're showing data, you want to make sure that you keep it confidential especially when we're dealing with protected populations such as our children and child welfare systems.

We want to make sure that we're protecting our clients and in the next slide we'll go over some particular areas about masking for data confidentiality but again you want to make sure that you're following whatever guidelines, whatever HIPAA rules are out there to make sure that you do not disclose any personal information by sharing especially point-level data on a map with some streets that can be easily discernible to the public.

So thinking about the different tools that are out there for protecting our data, the next slide goes over masking our geo-coordinates and there are several techniques that are out there such as transformation, random permutation, aggregation and random record swapping. These are all different typings that can be used to protect our data especially if we have to show point-level data on a map.

One of the most common though that people use to share their data is aggregation so this is using maybe the most common way that people aggregate their data is taking point-level data and then summing it up to a particular area such as Zip Codes or Census tracts, even maybe even county-level data.

Again, you want to make sure that the client is not identifiable when you're showing them on the map so these are just different techniques that are out there, something to think about when you're sharing data. You never want to just put point-level data on the map, which streets and all sorts of information that can easily identify kids.

And it's important just to keep whatever information is being geo-coordinated for internal private meetings that that is meant to be private data because maps again become very personable and you want to make sure that people don't get the wrong information in their hands so next slide.

The next few slides I have are several state examples. Through the work at the NRC CWDT, we just did a GIS peer-to-peer learning group which was a really great example that we had a group of core states and we were able to share what they were doing and what successes they were having.

So I have a couple highlights from a couple of the states that were on the phone calls to share what work they're doing and some examples of some great GIS and geography applications out there and again like George said at the end of the phone call we'd love to hear from any states that we might not have reached out to on our GIS peer-to-peer phone call that we might not have been able to get a hold of.

So this is another example of the Connecticut geocoding workflow and again this slide is not to overwhelm you and to think wow, this is some complex model. This model that Connecticut has built helps understand their geocoding workflow and their geocoding process for their internal staff and for their internal capabilities.

This goes into the more in-depth geocoding process that I talked about briefly earlier on the slide so again it's more than just taking our address. They have a whole system to verify and to QC their data and to make sure that they have the appropriate address for their homes of their children so again this is just a great way to start to understand how geocoding and how things work behind the scenes.

The next slide is from Arizona. This is an example of how Arizona was able to use the floating catchment area method which is a method for combining a number of related types of information into the single immediately-

meaningful index that allows comparisons to be made across different locations.

And again this is able to help Arizona use and maximize where their resources were located by developing the floating catchment, they were able to determine how they can better serve their kids in Arizona.

The next slide is of Illinois and Illinois developed a program and Illinois was one of the first earlier states to adopt GIS in the '90s as part of their child welfare system and Illinois through Richard Fultz has developed a program called School Minder.

Now this is a mapping application that doesn't necessarily use a map for the case workers to use to enter. It's all GIS-driven in the background. This is a geography application that helps the case workers place the children in the same school district.

That way it creates more stability for the families and makes better access to the case workers and saves time and again this isn't a typical map that's looking at GIS in the forefront but it's looking at it from behind the scenes so we can see how geography impacts these families. Without necessarily looking at a map, we can make geographically sound decisions.

The next slide and this example came from Oregon and they weren't doing a lot of child welfare mapping but they were doing other type of mapping that they wanted to share on the peer-to-peer call.

This map examines the poverty levels in the State of Oregon and shows the spatial association between areas of high poverty and high obesity rates in Oregon. This has great implications for public health, nutrition and anti-

poverty policies and this project is used to locate services to attempt policy interventions.

This again even though it's not a specific example about child welfare, the same data and the same data methods that are used in this project could be used by just swapping-out some of this data and placing our child welfare homes or our children or our foster parents on a map like this and see how it can impact maybe these other areas of concern such as nutrition and public health so next slide discusses market segmentation.

For some of the market segmentation in GIS work, we partnered with the National Center for Diligent Recruitment and Adoptive Kids and we did as several joint theory Webinars about GIS and market segmentation together for the states in our peer-to-peer learning grids.

So market segmentation and GIS allows child welfare agencies to better understand and visualize the spatial distribution of consumer-driven data in maps. This is the compass by utilizing GIS spatial methods within a GIS and established marketing techniques.

Market segmentation to determine the characteristics of a community can be a powerful tool for agencies to use when recruiting foster parents because it has been shown that prospective foster parents and adoptive parents within a community are likely to share values, character and interests.

Again when you're thinking about market segmentation, some things to be considered. This is the same technique that a lot of fast food, Starbucks and other consumer-based things are using the same techniques to find people that they can target that will use their products.

So we're thinking about it as using market segmentation and collecting geographic information and finding similarities of people who may be likely to become foster or adoptive parents which is a great way for this data to be used.

And again this data is not meant to exclude anybody. It's meant to focus-in your recruitment efforts where you can maximize your efforts and get the most bang for your buck when finding your families.

The next slide shows some work that was done in New Jersey specifically with market segmentation. This example they're using esri data to determine what type of families are throughout the state. Now granted the legend is very small here is some of the different things mentioned on the legend are different categories of consumers out there.

These could be consumers such as heartland communities, city strivers , city lights, city commons, aspiring young families. There are different areas that you might want to target your particular need for your foster parents.

So this data is sent through esri tapestry maps and if you Google that layer on time, you can look and see - you can type-in your street address - and you can see where you fall in their tapestry data which is interesting to look at.

I come in at coffee and city dweller, when I live in Bethesda, Maryland and it shows that I'm more likely to drive a Prius and drink coffee and go to yoga so again these are just generalizations. They may or may not apply to you when you're looking at this data but it's just a way to better understand certain community predictors out there. They may or may not be true.

When we last looked at some market segmentation for a state, we had everybody look around in the room and they looked at their particular things. Some of it applied, most of it applied to people but not all of it so it's just some things to consider that market segmentation is out there to better identify your families and to better understand your communities out there.

The next slide will summarize how GIS is being utilized so again I think that GIS is a great tool for data quality. We can geocode and verify our addresses. I know so many of you out there have bad addresses and by geocoding our addresses this is a great way to make sure that we have our correct addresses for our kids, correct addresses for our foster families and our adoptive parents.

Geocoding is built through databases typically known as geodatabases and these can easily be linked-up to other databases. We would encourage you to help hopefully link-up your databases in your different state systems and use geocoding and GIS as a data quality process to better understand your addresses and to have better, clean data.

GIS again is great for understanding our communities. The maps that I showed especially of Oregon and New Jersey showed how we can better understand our community if we're looking at areas of poverty or if we're looking at where to target our specific consumer needs for market segmentation.

We can also map things such as areas of maltreatment which is I think is very important in that many states are probably already doing but I just don't have an example of. They do have these areas mapped out and start to apply a different maybe meanings or methods to all of this.

We can start to understand maybe where we can do some preventative measures. We can also look to see where placements are being made and where our kids are being removed from and again these are just areas that we might want to focus on and spend some time thinking about.

Do we actually understand? So much of this data is anecdotal in people's heads and once and that may or may not be an accurate portrayal of what's happening in your communities. As soon as you're able to put it on a map, you're able to see what's actually happening and what you thought was happening which may or may not be correct, which may or may not line up.

So again actually verifying our data and not making some assumptions about where things are happening, we have a very powerful tool when helping the kids in your system and this can also be a great tool for looking at potential foster parents and not being foster home resources and availability.

This could be something as looking at how many beds are available in a particular home, how many resources are close if the child has special needs. Can they be accessible? Will they be accessible to potential foster parents? Urban and rural areas have many different problems and many different issues to conquer. In rural areas you have to travel further.

In urban areas you might be able to travel closer and again GIS can be used to help better make decisions and especially help determine what's needed in what particular area because every state has their urban areas and every state has rural areas that they have to understand and make special considerations for.

The next slide continues on how GIS is being utilized and again this is summarized through some of our other slides in our states but again the location of resources and education stability.

Mapping our school districts can be difficult at times. School district boundaries aren't stable and they can sometimes change and shift and so they can be difficult to map.

Just spending the time and determining maybe where your school district boundaries exactly begin or end, there as it changes through elementary or through secondary education, it's important to see where these boundaries end and putting a little time up front that could make a big impact later.

And I'm sure many people in your offices are already using GIS in some capacity maybe just even looking-up online driving directions or mobile apps to get to different clients' houses so GIS shouldn't be a hard thing for people to use.

It should be a part of your everyday - I'm sure it's part of everybody's everyday life - but it's just something to think about in the future that GIS is out there and GIS is being used by many states already and with a little bit more help I think we can see GIS really making a big impact on the children's lives.

So to help to close I'm going to share some of the literature that's out there looking at GIS and child welfare. Less than 1% of the literature published in social science takes a geospatial or a spatial perspective so this is a very, very small percentage of the literature and it's really a shame that the social sciences aren't looking at the data more geographically.

The next three slides list a bunch of references on who is using GIS and yes, this is a pretty conclusive list of GIS and child welfare specifically articles. This is not a list of the CIS in general or geography in general, solely on GIS and child welfare so I can sum it all up in three slides which is a short lit review of what is actually out there and what's being done in GIS and child welfare.

Which I think we can do better and hopefully we can do better on in the future and through the GIS peer-net working group, we were able to talk to several of these authors through - they were kind enough to come on - and talk to the states and talk about their research they've been doing.

We were lucky enough to have Dr. Catherine Batsche, Dr. Amy Hillier and Dr. Dana Weiner come on and their articles are shown in the next three slides so if we can just take a minute to go through these slides just to have everybody take a look at what's out there, I think this would be just a great way to think about the literature's limited and there definitely needs to be more.

GIS can certainly make a huge impact if you looked at GIS and public health, we would see many more articles. If you looked at GIS and justice, we would have seen many more articles out there and again child welfare falls right in the middle and has the same concerns as those articles out there but nobody's looking at how they can actually impact child welfare.

So I'm not going to read through what all these slides are. I know that the slides will be available later but the next two slides also list some other articles out there and some of these articles that are listed are a little touchy even they're child welfare or more child health literature.

So again we're just talking about limited literature that's out there and available for people to look at. I mean, most of us could read all these articles in a day and understand fully what's happening in GIS and child welfare.

So hopefully those will serve as a great resource for people who are hopefully thinking about doing this again more in the states or are already doing it. The next slide that I have listed is some of the resources that we've developed through the NRC.

These can be found on our Website I believe until the end of September and then on the Children's Bureau Website after that so we've taken some time to write some quick, brief articles that can also be used to summarize how GIS can be used in child welfare so we've done a tips, tools, and trends which is four pages.

It's a special edition to tips, tools, and trends and it talks about specifically how GIS and some of the things that I have highlighted today. We've done another tips, tools, and trends in conjunction with the National Research Center for Diligent Recruitment on GIS and market segmentation.

And we've done a research roundup on geography and child welfare summarizing some of the literature in case you don't want to read the literature already out there and we'll have an additional research roundup on geography and child welfare that will be coming out shortly that will also be added to this list.

And again these are just research that's out there for people to use and to think about how they can start to use GIS within their child welfare systems so that's all I have for today.

So the next slide has my contact information as well as George Gabel's contact information and I will be certainly happy to open it up to discussion and I hope everybody enjoyed what I had to say today.

Joyce Rose: Yes, this is Joyce and Kathryn I want to thank you. Fascinating information and I'm hoping that it has created other curiosity so that we can get some really great questions from our audience so can we please open the phone lines and the chat feature to our Webinar attendees for this question-and-answer session with our presenter?

Coordinator: Yes, ma'am. If you have a question...

Joyce Rose: Go ahead.

Coordinator: ...if you have a question just remember to press star 1 on your phone and record your name clearly when prompted.

Joyce Rose: Great, so while our audience is pulling your questions together, let me stir the pot a little bit and start with a question to Kathryn and it's based upon your experience, what are the most important child welfare questions that GIS can answer or at least help to clarify?

Kathryn Kulbicki: I think that the most important things that we can answer and clarify together is just where our children are. I think that we don't have clear addresses and clear association of where the children are and what their needs are based on where their addresses are but I think that the most important thing that GIS can do is just locate our children.

There are several issues just in I know locating with some of the states that I have and getting clean addresses and getting valid addresses and geocoding is

not the most exciting thing to do in GIS but it's probably one of the most important things to do especially when we're dealing with child welfare and it can just especially save so much time if some effort's put up front in cleaning and verifying data.

Elizabeth: Kathryn we have a related question to that that came in online which is, are there GIS tools that can validate addresses?

Kathryn Kulbicki: There are some address verification softwares what can be used up front and then there are geocoding services that are available either through open source or through different vendors that can be used in the background.

Elizabeth: Perfect, thank you.

Joyce Rose: So this is Joyce and I have another question and that is what is the approximate cost of a child welfare GIS system for placement and recruiting purposes?

Kathryn Kulbicki: Well, the cost would vary from state to state depending on - are you talking about how much staffing capabilities or how much software costs - or how much effort?

Joyce Rose: Yes, yes, all of the above.

Kathryn Kulbicki: Okay, just it depends on how much the state is willing to put into the GIS. A lot of the GIS software systems that are out there - the proprietary ones at least - a lot of them do work with states and come up with a state license that can be used from state agency to stage agencies.

I know that some states use that and some states have their own private licenses per different agency and again this is just depending on all of that. I don't have the exact cost because I know that it does vary from state to state but I know that vendors are very willing to work with them.

I know that there is all-state data that's available through open source platforms. This data is a little bit more tricky to work with and again is often stored in the cloud which can be tricky for people who need to make sure that the data remains confidential.

We personally don't at Westat that we don't use cloud-based services because they can be tricky for confidentiality purposes and making sure data is secure but this is something to think about that depending on if you use an open source platform which could be free but you might have limitations.

Or you might have to do extensive programming versus if you use one of the software vendors that are out there that already has packages developed where you can use a combination of both.

So it would really vary from your state and you'd probably just have to start asking around if your other agencies are using GIS and maybe if you could borrow a license or if you could fee back a license if you're not already using it.

And then staffing capabilities, I've seen one-man shops and I've seen shops that's, you know, 10 to 15 people and again this sometime varies if they're specifically devoted to child welfare or if they're serving multiple departments within an agency.

I think it's hard for one person to do all of this and to be well-versed in some of the statistical methods and the content methods and sometimes programming methods out there so it would really vary from state to state.

Joyce Rose: Thank you. Do we have any other questions?

Coordinator: No, ma'am, there are no questions on the phone at this time.

Elizabeth: I have a couple of questions that have come in online so the first one I have is that you think GIS looks both easy and hard. It appears that you can quickly obtain cluster data or other incidence use but do you need an advanced degree in statistics or in research and analysis to make the data work for you?

Kathryn Kulbicki: Well again I'll get down to personal - I would never just look at a map - and just think that you can draw your own conclusions. I know that there are some social work programs that are out there that are now encouraging GIS as an elective. A lot of geography programs don't look at child welfare but they look at public health and they look at justice where child welfare would fall somewhere in-between the two of them.

And so I would encourage somebody with a geography background that at least understands what patterns mean and what other things mean. Again it depends on how quickly somebody picks something up and how good they are with certain things.

A lot of the software packages have built-in statistics in them so you can start to determine your own cluster analysis and can start to check for statistical verification and statistical significance of your data but some of the formulas out there, there's formulas that are more analytic and geospatial that you use

to determine patterns and to determine how similar things are that are close to each other.

And this does statistics and knowledge of geographic data so I encourage somebody to at least understand geography and have a basic understanding of statistics so they can understand that data's relevant, statistically relevant or not. Just looking at a map without having some understanding of what the data means on it can create problems.

Elizabeth: Are there apps on the market that can do analysis for you or is it really, you know, a professional and a person that you need to do that work?

Kathryn Kulbicki: You need a person to help you work through it. There are programs that are open source and there are programs through the software packages that do allow you to help do it but you have to understand what data you're entering and that in and of itself can sometimes be tricky and where you need to set your P value and your Z score and your different statistics with it.

George Gabel: Elizabeth this is George. I would just add that a lot of the literature that Kathryn showed were from folks at universities who have partnerships with states that I'm assuming so many of the states already have data sharing and research arrangements with their universities and I'm sure they can tap into folks there either in the social work department, social work school or geography schools that would be available to help.

Kathryn Kulbicki: Right, just to piggy-back on what George said, when we had several of the authors come on to the peer-to-peer - the GIS peer-to-peer group that we hosted - a lot of times it was a social worker and a geographer that came on together.

Actually in every case it was a social worker and a geographer that came on together so the first author may have been a social worker, it may have been a geographer depending on the articles that we were looking at.

But it really varied kind of on your background and what you're looking at. If you're just looking at very superficial qualitative data, you don't need a geography background. As soon as you're starting to do quantitative data analysis, it helps to have some understanding and some meaning of what geostatistics are.

I don't think you need a big background data - you don't need to know everything - but you need to understand what different values mean and what different results mean.

Elizabeth: Sure, you know, it's interesting to you spoke a lot about using GIS data to support foster family recruitment which I think would be a wonderful use. The other place my mind automatically goes though and I'm wondering if you know of any places that have thought about doing this is maybe doing some really targeted prevention efforts.

So looking at rates where child abuse and neglect is higher and then you'd be targeting some prevention work in those areas to try to really make best use of prevention dollars to prevent children from even coming into the system in the first place.

Kathryn Kulbicki: Right. I don't know that any states are doing any prevention efforts right now. If there's anybody on the phone that is I'm not aware of, I would love to hear from you but that's what we were trying to encourage on some recent TA that we were doing that GIS can certainly be used to help target prevention.

And some of the example I had from Oregon was how they were using the nutrition data and the BMI data to help make nutrition and different public health initiatives and there are various tools that child welfare can be making the same initiatives based on some geographically looking at their geographic data.

George Gabel: This is George again related to what Kathryn said. Certainly some states are using the mapping of maltreatment data to determine where to locate resources and so in some cases that's offices but in some cases that's contract resources, you know, where should providers be? Where are the clusters of families that need the most help and I think that's related to your question.

Elizabeth: Sure, and I think your point too about as the crow flies versus as the fish swims because some of what I've read about GIS is that people sometimes just look at distance and determine that if the resources are short distance from families, you know, they stop there but you really need to look at, you know, two miles is a long way to go if there's no bus line and you've got a one-year-old.

You know, so I thought that was a really important point as well that it's not just distance but it's how people travel and how people are going to get to those resources.

Kathryn Kulbicki: Absolutely.

Elizabeth: So I do have another question that came in. Is GIS data more of a predictor or more of a way to interpret it and understand regional kinds of things that maybe have already happened so is it more of a predictor or more of an explainer?

Kathryn Kulbicki: It can be both. I think it depends on how you want to push the data and what you want to use it for. I think that it can be used for both. Again it's making careful decisions to making sure that you understand the data that you're looking at if you're trying to use it as a predictor, you know, nothing's a solid predictor for anything.

Otherwise we could prevent all sorts of bad things happening out there in the world but GIS can be used for both. I think that right now it's not used as a predictor so much in the field that I would like to see it be at least with some of the states that I've worked with.

Joyce Rose: Okay, great. Sylvia do we have any questions lined-up on the phone?

Coordinator: No, Ms. Rose, we do not have any questions at this time.

Elizabeth: Okay, I do have a few more online. I just wanted to give folks on the phone a chance to speak up and also not just questions but if you're doing any GIS work or contemplating any GIS work in your state, this is a great time to get some feedback from an expert so please press star 1 if anyone's got any questions or comments.

Next question, do states or local agencies have to build their own GIS databases or are there good public sources of data?

Kathryn Kulbicki: There are great public sources of data. The slide that I showed earlier from data.gov I think is a great resource to start grabbing your data. States often have their own GIS clearinghouses out there so it may be just typing-in GIS and your state name.

I know that D.C. which is in our backyard here D.C. for an example has a great GIS clearinghouse. It's called OCTO, is Office of some community technology. GIS is and they've got a wonderful GIS system. (Note: OCTO is the Office of the Chief Technology Officer)

You can get all the point data and all the geographic data down to where the street cameras are located and where different fire hydrants are located in D.C. as well as hospitals and community footprints. D.C.'s very small but it's usually broken down either at the county or the state level.

Most states will have some sort of clearinghouse. All states will have some clearinghouse of their geographic data and their might be additional data at the county level. It's just looking at information within your state and if anybody has particular questions, they can certainly e-mail me and I can help them find their state information.

In the previous presentation before through the peer-to-peer group, I highlighted all the state clearinghouses for any state that was on the phone call so there is data out there that you can start to do and then it's just building your own address database with your particular home addresses that you would have to internally build.

But again that's just pulling any kind of Access database or it can even be an Excel file and just starting to all of that can easily be imported into a GIS system and start to be mapped.

Elizabeth: Excellent.

Kathryn Kulbicki: Just making sure that you export out what you've learned and putting it back into the other database.

Elizabeth: The D.C. database sounds fascinating. I particularly would like to know where the red-light cameras are and the speed cameras so I'll e-mail you offline because I'd like to get that information.

Kathryn Kulbicki: Yes, I can send you the link to it and it's an easy one - that one's - a really easy one to grab. That one's a very rich data source. I don't know every state off the top of my head but I know that Maryland has a great active on GIS state Website, you know, I know some of the states that I've worked with but I don't know every state off the top of my head.

Elizabeth: Excellent, yes, that's not entirely for child welfare purposes, but that would be good to know in the future.

(Laughter)

Kathryn Kulbicki: But it's out there, the data's out there available.

George Gabel: This is George. I just want to repeat one of the gaps that Kathryn just mentioned which is that a number of the states that we've heard from take out the addresses from their state system and create a geo database, make the correction, do the research, make the correction there but don't have the resources or haven't given it a priority of finding a way to put the corrections back into the state systems.

So they'll be more useful in the future for other types of work so it's sort of a - I know that's one of Kathryn's - plea I've heard her make several times to folks that you got to find a way to put it back once you've done all the hard work fixing the addresses or finding the address.

Elizabeth: Sure. I do have another question that's come in. One long-time issue is data sharing, any type of data sharing is the reluctance of agencies to come to the table and commit to share their data. Is this psychological or political barrier however you want to classify it is it as pronounced in the area of GIS-type data sharing or do you see less of that?

Kathryn Kulbicki: You see less of it in GIS. Obviously there's confidential data that will not be shared between agency and that is an agency-to-agency agreement that would have to be worked out and the public use data is out there and especially all of our row network data, when we think about it GIS is driven and this is a side note, note related to child welfare but 911 phone calls, our streets, and our street centerlines which is how they calculate the middle of the street are calculated and those how 911 responders and first ambulances get to our houses in case of an emergency. All of that is geographically referenced and a lot of money's put into that and all of that's put back out there.

Geographic data all has metadata behind it that's captured between the different agencies but if it's got federal money, it has to have metadata behind it so it makes it really easy to move it from one system to another system so you can just read the data requirements and what was in it but I don't think that there's as much restriction out there.

You just have to be careful of the confidential data and the data that cannot be shared. Obviously with agency and agency you wouldn't want to release obviously where your kids are going or where they came from. That's obviously information that wouldn't be shared but most of the other hospital locations, offices, all of that's fairly well shared between the GIS community.

And I think that one other important note that especially with the last TA event, if you are interested in GIS most states have a GIS public agency forum where you can go and learn just from other GIS people in your community.

They won't be child welfare people because that's obviously a very limited field but there will be people out there in the state and every state will have somebody that is doing something.

Elizabeth: Excellent.

George Gabel: And this is George well let me I just had another reference on our recent NRC data managers call. We had a speaker a Dennis Culhayne who's at the University of Pennsylvania and I'm going to get his acronym wrong and I apologize in advance to Dennis but it's the Actionable Intelligence for Social Planning.

So this is a big project that he's been working on for years and they have on the Website a number of resources about how to build these data-sharing agreements where he's done a lot of the basic work on how to build these agreements and even and other references to help you do that.

So we can get the reference for that but I think I might have just butchered the acronym but it's Dennis Culhayne at the University of Pennsylvania.

Elizabeth: Okay, perfect, Sophia do we have any other questions on the line?

Coordinator: No ma'am, there are no questions at this time.

Elizabeth: Okay Joyce I'm going to turn it back over to you. I don't know if you have other questions or if you want to go ahead and wind us up.

Joyce Rose: I think we'll move to the next slide and the conclusion. First of all I certainly want to extend a huge thank you to Kathryn and to George and just to do a bit of recap of what we've accomplished today, we certainly have explored how the use of GIS can be deployed for the advancement of child welfare and actually gauging from the discussion during the Q&A session, I suspect your interest has been piqued quite extensively.

So we also hope that all of you who have attended this Webinar have found the information to be both informative and valuable as you move forward with your GWIS initiatives.

If you have any questions or would like more information, please do not hesitate to contact Kathryn, George or myself and again you will get a copy of this PowerPoint so you do have all of the e-mail addresses and all of the literature information that you can do your own research.

So again this Webinar has been recorded and will be made available online. When it is complete and posted, we will send a message via the SACWIS manager's list serve with the link. Again thank you so very much for attending and please watch for information for the next Children's Bureau sponsored Webinar event. With that I want to thank you and goodbye.

Coordinator: This concludes today's conference. Participants may disconnect at this time.

END