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Defining, Tracking, and Displaying Regional Equity Conditions: Two Approaches from the Portland-Vancouver Metropolitan Region

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Introduction

In 2003, the Coalition for a Livable Future (CLF), in partnership with the Institute of Portland Metropolitan Studies (IMS) and the Population Research Center (PRC) at Portland State University (PSU), launched the nation's first regional equity atlas endeavor that pushed the notion of equity to the forefront of regional discourse. Defined primarily in terms of access to opportunities, especially in spatial terms, the atlas took advantage of the analytical capabilities and graphic power of mapping and maps to convey its findings. Published in 2007, the *Regional Equity Atlas* provided a snapshot of social equity conditions primarily at the sub-municipal, or neighborhood level, that included maps of key demographic distributions, and analyses of the geographic implications of the access to affordable housing, quality education, transportation, healthful food and physical activity, and parks and nature for the region. Because of the costs of such an endeavor and the challenges of acquiring high quality data at neighborhood-level geographies, CLF had to forgo many of the topics that it would have liked to have examined but envisioned updates to track progress toward regional equity that would be more comprehensive.

With the release of the 2010 Census, CLF began to explore new approaches for the 2.0 version of its Equity Atlas. This was, in part, because it believed that flat maps and tables couldn't provide users with the power and flexibility to explore the data and the spatial ramifications of the data in depth. Furthermore, the rapid adoption of online mapping tools to display data, generally, reinforced CLF's desire to enter the interactive, online mapping world with its atlas update. A subsequent partnership with the Data Resource Center (DRC) at Metro (the Portland area's regional government) brought this desire to fruition. The Regional Equity Atlas 2.0 Mapping Tool is nearly complete and is scheduled for release in May, 2013.

Concurrent with the Atlas 2.0 effort, Metro and IMS began to discuss the desirability of a regional scorecard that would allow a wide range of stakeholders to easily track the region's progress toward broadly agreed upon outcomes. The Greater Portland-Vancouver Indicators Project (now known as Greater Portland Pulse (GPP), or "the Pulse") grew out of these early discussions and would eventually involve a host of primarily governmental, university, and other nonprofit entities.

Recognizing that the indicators should be driven by the desired outcomes rather than the attractiveness of individual indicators, the project, staffed by IMS and Metro, recruited and engaged a wide-ranging group of stakeholders (including CLF) in a process to identify key outcomes for the region across nine sectors: economic opportunity; education; healthy people; safe people arts and culture; civic engagement; healthy natural environment; housing and

communities; and access and mobility. Rather than seeing equity as separate indicator, GPP's advisory board decided that an agreed upon notion of equity would inform all of the indicators. A year and a half after its inception, the Greater Portland Pulse website was launched in June of 2011. Housed at IMS, GPP staff offer trainings in the use of the website and the Open Source data visualization interface (Weave) to governmental staff, community organizations, faculty and students, as well as individuals throughout the region.

On the surface, these projects appear to be duplicative. They share key partners: Metro, IMS, and CLF were involved in all three. They both address the 4-county Portland-Vancouver metropolitan area. And while one (the Regional Equity Atlas) frames the entire project in terms of social equity, the other (Greater Portland Pulse), in a less visible fashion, immerses social equity concerns into all of its indicators. Furthermore, they both used extensive stakeholder processes to come to consensus about desired outcomes and to identify possible indicators. However, their similarities end there. The projects developed independently of each other taking very different approaches to achieving better understandings of progress toward a more equitable region.

To a large degree, these projects demonstrate some of the ramifications of the costs and trade-offs that are integral to understanding and tracking social equity conditions. This paper explores the strengths and weaknesses of the approaches that the Regional Equity Atlas 2.0 and the Greater Portland Pulse projects took to assessing, tracking, and displaying social equity conditions at a regional scale. Specifically, it explores the impacts of the motivations and agendas of the projects' respective champions on the projects' framing, their indicator selection processes, the geographic scales of the indicators, the data visualization platforms and the impacts of these choices on these projects' potential to measure equity and inspire action in the policy arena.

The Influence of Project Champions: Motivations

Key to understanding the approaches that each project took to assess and measure progress toward social equity is understanding the motivations that lie behind them. In this case, one project was initiated, overseen, and funded by a nonprofit coalition of community-based organizations with an advocacy agenda, while the other was initiated by a regional governmental agency which built a mostly public sector group of stakeholders to support the developmental stages of the project. While seeking similar social equity goals, the differences in the requirements and demands of these key champions fundamentally shaped the approaches that the projects took.

The Regional Equity Atlas

The Coalition for a Livable Future is currently made up of more than 100 community-based organizations representing a wide variety of interests including affordable housing, transportation, environment, health, faith, and urban design. The Coalition was formed in 1994

with the recognition that interest groups could be more effective in influencing policy if they worked together. As a result of this approach, in December, 1994, Metro adopted the majority of the Coalition's positions into its 2040 Growth Concept Plan. In the aftermath of this success (and, by then, 60 member organizations strong), CLF revisited its mission and formally incorporated as a 501c3 nonprofit organization in 2000. The result was a focus on the notion of sustainability, commonly understood at the time, as the 3-E's of sustainability: environment, economy, and equity.

Wanting to make a significant contribution to regional policy discussions, CLF decided to focus on the least understood of the three: equity. Until this point (early 2000s), equity had been largely absent from local and regional policy discourse. CLF's formative period had been highly influenced by Myron Orfield's metropolitics work that emphasized the importance of regional analyses as well as the use geographic information systems (GIS) technology to analyze, display, and understand regional patterns and conditions – specifically, the interdependence of cities and suburbs. As a result, CLF decided to use GIS to examine “the geography of opportunity” in the Portland-Vancouver region and to deliver its findings in the form of a *regional equity atlas*.

The Atlas' findings would be used (and, in fact, were used) to promote regional dialogue focused on the issue of equity and to build the Coalition's Equity Action Plan. Future updates of the Atlas would assess equity conditions and progress toward an equitable region over time. Even prior to the publication of the Atlas in 2007, CLF launched a public engagement campaign, using the maps from the Atlas, to engage key stakeholders in the Atlas' findings.

Since that time, this effort and others, including the Kirwan Institute's Opportunity Mapping studies, have led several local governmental agencies, particularly housing agencies, to become interested in using mapping to better understand and communicate the spatial implications of the access to opportunities (especially for populations of color and for those in poverty) and the linkages to social equity.

As CLF began to gear up for its second iteration of the Atlas (with the release of the 2010 Census data) it became increasingly aware not only of a growing number of social equity initiatives in governmental agencies in the region but also the need to do something as innovative as their last effort had been, to maintain CLF's leadership position in the equity discussion, regionally and nationally. The Coalition envisioned version 2.0 of the Atlas as the go-to tool for equity assessment and analyses at the neighborhood level for a broad audience including city and county agencies, the region's nonprofits, equity activists, and community members that, given the costs of the necessary data preparation and the development and refinement of the tool, would be updated on a 5-10 year cycle.

As a nonprofit organization, funding for both the Equity Atlas projects came primarily from foundations. The major funders for version 2.0 come, interestingly, from health sector foundations that are increasingly interested in better understanding the social determinants of

health. They include the Robert Wood Johnson Foundation, Kaiser Permanente Community Fund, and the NW Health Foundation. Minor funders, that funded CLF more generally including the Atlas project, include the Meyer Memorial Trust and the Bullitt Foundation. Metro made a major in-kind contribution through the modifications and use of its Context Tool mapping engine that supports the Atlas' web-based tool.

Greater Portland Pulse

Perhaps Metro's most important role is to oversee the Portland metropolitan area's state-mandated Urban Growth Boundary (UGB). In this capacity, it developed the Metro Growth Management Functional Plan (Functional Plan) in which it recognized the importance of accountability to the public and to the State, by establishing eight performance measures for monitoring the implementation of the policies contained in the Plan:

Performance measures provide Metro policy makers, regional stakeholders, and the citizens of the region with the quantitative data needed to assess the implementation of the 2040 Plan and the degree that policies are achieving the 2040 Growth Concept goals. If necessary, the results of performance measures can lead to the Metro Council taking corrective actions to revise existing policies or develop new policies to better achieve desired results. (Metro, 2004 Performance Measures Report: Preface)

Additionally, Oregon State Law (ORS 197.301) requires Metro to compile and submit to Oregon's Department of Land Conservation and Development nine performance measures at least every two years (Metro, 2004 Performance Measures Report). Metro's initial 2003 performance measures report was updated in 2004 with revisions and consolidation of some of the measures.

Because of this every two-year requirement Metro staff are acutely aware of the importance of developing consensus around performance measures but also the time and expenditures involved in the processes of revisiting and calculating the measures. In early 2010, as Metro was gearing up to review its performance measures, discussions developed, between Metro and the Institute of Portland Metropolitan Studies about the desirability of developing the capacity, outside of Metro, to identify, analyze, and track indicators that would not just satisfy Metro's mandate but also measure progress toward a shared vision of the region for a variety of stakeholders.

IMS is charged with providing data, analysis, and information for the 6-county Portland region (Metro's three counties – Clackamas, Multnomah, and Washington – and Columbia, and Yamhill counties in Oregon, as well as Clark County in Washington) and a neutral forum in which regional issues can be aired. The Institute had become a member of the National Neighborhood Indicators Partnership (NNIP) and was looking for ways to enhance its ability to promote its mission, to build on other indicator work it had done (including a regional food

systems analysis completed in 2008), and the notion of data-driven decision-making into the future. This appeared to be a real opportunity for the Institute to enhance its mission.

Metro and IMS engaged key decision-makers from city and county governments, the Port of Portland, higher education, the nonprofit and (to a limited extent) business sectors in discussions to assess their support for this vision. The result developed into a collaborative effort, launched in January 2010, and led by a 20-member advisory team, co-chaired by Portland State University president, Wim Wiewel, and Hispanic Metropolitan Chamber president, Gale Castillo, and staffed by Metro and IMS, to create a scorecard for the region and to promote collaborative decision-making.

Like the Regional Equity Atlas 2.0, the vision for Greater Portland Pulse (tag lined, “measuring results, inspiring action”) included an interactive web-based data visualization tool by which governmental agencies and others could easily “check the region’s pulse” to assess the region’s progress toward the shared outcomes. In addition, the website would provide transparency with regard to the project’s processes, desired outcomes, and the indicators themselves. Most importantly, GPP was envisioned to be a resource that would have an ongoing life and would provide users with the most current data possible.

Funding for the Greater Portland Pulse project has thus far come primarily from Metro and the Institute for Social Sustainability at Portland State University. Additional support has come from the cities of Portland, Beaverton, and Vancouver, Washington. Washington State, Vancouver, has also support the Pulse as well as United Way and the NW Health Foundation.

Underlying Values: Objectivity (Neutrality) versus Advocacy?

On the surface, the projects’ champions and even their namings (the Pulse has quantitative, objective connotations, while Regional Equity has more aspirational connotations) suggest that the indicators themselves are objective (or neutral), in the case of Greater Portland Pulse, or political, as in the case of the Regional Equity Atlas. With regard to both the processes undertaken to create these projects and their respective champions’ expectations for the uses of their tools, this would be a misunderstanding.

While Cobb (2000) has suggested that to be useful, indicator projects must have a political purpose, and while Coalition members would certainly agree with this, CLF, as an advocacy organization took the position that the most persuasive argument in the policymaking arena is one that is supported by *objective* data and analyses. They assumed that objective data and analytical approaches would support the anecdotal evidence of inequities in the region and that the objective data and analyses would make the case for them. This was the approach that worked in the Coalition’s early days in influencing the direction of Metro’s 2040 Plan. And, this is why, in spite of having access to GIS expertise within its membership organizations, it turned to the university, specifically IMS, whose mission requires neutrality, for the data preparation and analyses for both of its Equity Atlas projects. The desired indicators were those that together

could provide the most finely honed tool for analyzing the state of equity in the region and not necessarily those that could, in and of themselves, shout most loudly.

The key champions of the Greater Portland Pulse, as a governmental agency and an institute in a public university with a mission of neutrality, saw the project as needing to be distinctly apolitical. GPP was conceived as a scorecard, a tool for gaining “a common understanding of the state of the region and the steps that should be taken to move our region in the desired direction” (Martin and Morehead, 2013). Importantly, its neutrality was seen as essential to its ability to act as a vehicle through which a new coalition of leaders could emerge rather than maintaining the status quo (Martin and Morehead, 2013). While it could be argued that this aspiration of GPP is political in a sense, it is fair to say that both projects, while striving for objectivity, have assumed that they could and would be used for political purposes – and, that it is the appearance of neutrality that makes them valuable in the political arena.

Identification of Outcomes and Indicators

Useful indicators must be quantifiable and objectively verifiable (Bell and Morse, 2003). While these fundamentals are typically endorsed by experts, it is widely acknowledged that top-down driven processes to identify indicators generally lack broad-based constituency buy-in or trust. Fraser et al. (2006) suggest that the identification and collection of environmental indicators, for example, through participatory processes not only provide valuable databases but also provide opportunities for empowerment that conventional, expert-driven methods have failed to do.

Given the goal of reaching a broad audience that both projects understood to be essential to building the credibility and long-term support that they hoped to achieve, some level of stakeholder involvement in setting the desired outcomes that the indicators would measure, and identifying the indicators themselves were seen by both of the projects’ champions as essential. The methods chosen and the degree to which participation occurred differ, however, and affected their outcomes.

Regional Equity Atlas 2.0

CLF as a coalition is a relatively flat organization. The values of collaboration and consensus building are core to its history, mission, and practices. The emergence of equity as a key area of focus for the organization came from its membership. And, for the first equity atlas effort, it engaged its members and other stakeholders in a year-long discussion focused on how equity would be defined for the project as well as extensive follow-up engagement to determine a wish-list of indicators. These were then vetted by the university partners to determine the feasibility of the indicators in terms of relevancy, data quality, currency, replicability, objectivity, cost, and map-ability. In other words, a funnel approach was used starting with a comprehensive wish-list that was winnowed down initially through stakeholder engagement and finally by experts to a relatively small number of indicators. Several of the most desired indicators were left out

because of the lack or cost of the desired data at the neighborhood scale for the 4-county, bi-state region.

The second iteration of the Atlas followed a similar but much more ambitious path. Again, through a participatory process, the definition of an equitable region was re-examined and refined: *An equitable region is one in which:*

- All people have access to the resources necessary for meeting their basic needs and advancing their health and well-being.
- All people have the power to shape the future of their communities through public decision-making processes that are transparent, inclusive, and engage the community as full partners.
- All communities experience the benefits and share the costs of growth and change.
- All people are able and have the opportunity to achieve their full potential and realize their vision for success. (CLF, 2013)

For version 2.0, CLF hired a private consultant, who had designed and helped to execute the outreach strategy for the first edition of the Atlas and had a keen understanding of CLF's goals for 2.0, to oversee all aspects of the project and coordinate the work of its partners.

Once the definition of equity was established, the indicator identification could proceed. The Coalition put no constraints on the potential list of indicators. And, while CLF understood that there were costs associated with too many indicators – potentially adding complexity to the atlas tool and its use, data acquisition and processing costs – the Coalition believed, in part because of the feedback from version 1.0, that indicators that were too generalized both in terms of topic and geography, would lack the precision necessary for exploring and understanding equity conditions well enough to be able to sufficiently inform local policies.

The list of indicators was initially developed through a survey that CLF delivered to its member organizations and other stakeholders and was further informed by: the lessons learned from the first atlas particularly ways to address its gaps; input from key stakeholder organizations, including the Coalition of Communities of Color, to align the Atlas' indicators with these organizations' recent work on equity issues; additional stakeholder engagement that included 19 focus groups, dozens of interviews, presentations to other coalitions and networks, and written input from 195 individuals – a total of 350 individuals participated in these activities; a literature review; phone and one-on-one interviews with local and national experts (including those involved with the Greater Portland Pulse); and an 18-member Advisory Committee to provide input into the final selection and prioritization of the indicators (Smock, 2012).

The final indicator selection was made after an extensive search by both CLF's project lead and IMS for the best sources of data that met the suitability test for reliability, currency, demographic

disaggregation (race, ethnicity, income, and age), and geographic specificity as well as acquisition and processing costs. Although replicability (an essential attribute of indicators) was a concern for CLF, it wanted the 2.0 version of the tool to break ground on a number of fronts including using data sources that had not been previously available or used before. These include 211 data and aggregated health record data that it had received a grant from the Robert Wood Johnson Foundation to purchase. In the end, CLF decided to include 132 indicators, far fewer than it originally envisioned but many more than IMS originally advised.

The 132 single indicators in the mapping tool come under the general categories of community, democratic participation, demographics, economic opportunity, housing, food, health care, health outcomes, healthy environment, parks and natural areas, quality education, services and amenities, and transportation. Thirty-five of these are heatmaps (or raster surfaces created from spatially high resolution data) that can be compiled, ranked, and displayed in Census tracts, neighborhood boundaries, cities, and counties. In addition, the heatmaps may be combined to create new composite indicators (for example, a Healthy Eating Active Living composite includes the following single heatmap layers: proximity to publicly accessible parks; proximity to publicly accessible natural areas; proximity to publicly accessible recreation facilities; proximity to supermarkets and grocery stores; and proximity to farmers' markets and produce stands). Because the components of the composite indicators are not weighted and because their scores are visible to the user, this approach mitigates against some of the opacity that accompanies the use of indices.

The remaining indicators are mapped to the geography at which the original data were aggregated by their sources (Census blockgroups, tracts, and PUMAs for some American Community Survey variables, where the data were not reliable at the tract level; zip codes; and transportation area zones).

Greater Portland Pulse

At the outset, there was a strong desire not to repeat the Oregon Progress Board's Oregon Benchmarks' failure to build the kind of constituency that would sustain the project over time (it ceased operation in 2009). Mistakes, according those participating in the Greater Portland Pulse project, include the Oregon Benchmarks' top-down nature, a lack of responsiveness to conditions particular to the Portland metropolitan area, and an association of the project with a particular governor's agenda. Metro and IMS responded to these concerns by forming an advisory committee made up of 23 of the region's leaders representing public, private, and nonprofit sectors to oversee the involvement of a regional constituency in the development of the outcomes and indicators. Furthermore, an ongoing community dialogue component for the project, focused on the outcomes and progress toward those outcomes was seen as integral to the overarching vision of Greater Portland Pulse and essential to its sustainability (Martin and Morehead, 2013).

Through the process, nine key issue areas were agreed upon: economic opportunity; education; healthy people; safe people; arts and culture; civic engagement; healthy natural environment; housing and communities; and access and mobility. The desired outcomes for each category were defined as follows:

- Economic Opportunity: individual and family prosperity; business prosperity; community prosperity
- Education: well educated workforce; well educated individuals
- Healthy People: healthy people based on low morbidity, high quality of life, and life expectancy
- Safe People: Community members are able to live with minimal risk of danger, injury, harm, or damage in homes, streets, schools and work places; mutual trust exists between members of the community and public safety leaders and officials regardless of the demographics of either party
- Arts and Culture: daily arts for youth; economic stability of arts providers, equitable access
- Civic Engagement: informed community members; strong sense of community; widespread political participation
- Healthy Natural Environment: healthy soils; clean water and healthy aquatic ecosystems; clean air; resiliency; access to nature; environmental justice and equity; native species
- Housing and Communities: enough housing; access to housing; access to homeownership; renting options; improved homelessness; access to services; community connectedness; parity for people of color
- Access and mobility: access to essential information, goods, services, activities, and destinations; mobility options; economic prosperity; improved environment; system that supports health and safety; a system that ensures equity

In spite of the growing interest in social equity concerns in the region, it is notably absent from the list of issue areas although stated in several of the outcomes. At the first Advisory Committee meeting, in June 2010, there was a debate among members about whether social equity should be considered an issue area unto itself or whether a different approach should be taken given concerns about biases inherent in many traditional sources, datasets, and methodologies (Conrad, 2011). The Advisory Committee decided to form an equity panel to guide the work of the Advisory Committee and the nine results teams.

In all, there were five Equity Panel discussions to identify the key concerns that the results teams would need to consider if equity was to be addressed in the project. These include:

- Disaggregation: The need to break down as many indicators as possible by race, ethnicity, income, and age);

- Mapping and scale: As many indicators as possible should be mapped at the neighborhood scale to understand place-based effects);
- Data availability: The lack of publicly accessible data that can be disaggregated to adequately measure social equity is limited. A list of “aspirational” indicators should be developed for which to advocate;
- Community perspective: Results teams would need to take on the perspectives of diverse communities to avoid stereotyping and recognize the value of supporting a diverse community. (Conrad, 2011)

Results teams, whose members were recommended by the Advisory Committee and comprised of policy and data experts in relevant fields, were formed for each of the nine issue areas. They were charged with identifying and coming to consensus about the outcomes and indicators that would be used for the particular issue area. Unlike the Regional Equity Atlas process that put no limits on the number of possible indicators, each results team was limited to six to eight indicators at the outset of deliberations.

Currently, the project is comprised of 64 indicators, under the nine categories, with the healthy people category having the largest number (Appendix B). Wherever possible, the data are disaggregated by race, ethnicity, income, and when appropriate, age. However, in spite of the Equity Panel’s recommendation to map as many of the indicators as possible at the neighborhood level only 14 of the indicators include interactive maps (only data at the sub-county level are mapped). This is because the desired indicator data weren’t available or collected in the same ways in both states, couldn’t be disaggregated, weren’t replicable, weren’t publicly accessible, or were too timely or costly to process on a regular basis. The remaining indicators are presented in tables, charts, and graphs and are at county or Metropolitan Statistical Area (MSA) geographic aggregations.

For Greater Portland Pulse, the primary driver behind the project was to provide a scorecard by which change could be monitored and measured over time, as soon as the data are available, at the regional level (a scale that was particularly important to Metro). Therefore, the decision to trade spatial specificity for temporal frequency was clear.

Measuring Equity: Data Analysis and Visualization Tools

It is well accepted that data are more easily consumed and understood when visualized in charts, graphs, and maps. Both projects saw data visualization, particularly online interactive data visualization, as essential to building the kind of enthusiasm that would inspire their use. Interactive visualization tools are expensive to build and to purchase and modify. To a large degree, the choices that each project took were opportunistic rather than intentional. And, although both platforms provide data visualization, the platforms themselves have, to some degree, shaped these projects’ effectiveness.

Regional Equity Atlas 2.0

During the first Regional Equity Atlas effort, a Metro GIS analyst who was interested in participatory GIS and intrigued by the idea of mapping equity, volunteered to advise on the project. When it was time to think about the update for the Atlas, CLF became aware of the existence of a new raster-based desktop mapping tool that this same analyst had helped to develop as an in-house regional scenario planning platform for Metro. Called the Context Tool, Metro, seeing its utility and potential for other uses, was considering marketing it outside of the agency. CLF's new version of the Equity Atlas seemed like an opportunity for Metro to showcase its tool to the larger world and to incorporate CLF's Equity Atlas indicators for use in its own Opportunity Mapping efforts.

Given the challenges of raising funds for the project generally, this seemed to CLF and IMS an incredible opportunity to provide mapping capabilities beyond their wildest dreams. An arrangement was made that resulted in a combination of an in-kind donation by Metro, a sharing of findings from CLF's own equity indicator public engagement work, and payment by CLF for some Context Tool modifications that would be necessary to host the vector-based shapefiles (that would be essential given the availability of many of the desired indicator data sets), and the creation of a new Regional Equity Atlas interface to brand the project.

The resulting map-based tool, which will be publicly debuted in May 2013, provides users with access to pre-loaded "scenarios" that combine related sets of indicators or the option to explore the indicators and the capabilities of the tool without direction. CLF is currently building a "splash page" for the Atlas that will assist users in the use of the tool and provide a series of "issue papers" with direct links to the tool for users' inspection and use. Once in the tool, the indicators may be mapped in any numbers of combinations. The indicator data may also be displayed in tables and charts that, for the heatmap or raster variables, can be compared interactively (by mousing over the map) to the regional mean. Additionally, the data tables, user aggregated composite heatmap data tables, maps, and charts may be downloaded.

Most of the data included in the Atlas are dated as close to Census 2010 as possible. Data with a temporal dimension are limited and are generally displayed in terms of the percent change over time. The change in platform from the original flat maps of the first atlas to Metro's Context Tool limits the comparability between the two, however, the expectation is that some of the data (for example, the 5-year ACS estimates for Census tracts and can only be compared every five years in any case) will be updated allowing for more change over time analysis in five year increments (with non-overlapping data).

A serious down-side of the Context Tool as it stands, is that only Metro staff may upload new data to the tool. Originally designed for desktop use only, an additional concern is that the tool is based on Silverlight and requires Flash to operate. This means that currently it is not available for use on tablet devices.

That said, with the 132 indicators primarily at the neighborhood level and the ability to create new composite indicators from the heatmaps, the Regional Equity Atlas 2.0 give users the ability to not only see a snapshot of the distributions of key resources and access to them by underserved populations but the ability to explore at the neighborhood level many of the complexities that underlie social equity conditions with the kind of spatial specificity that CLF believes is necessary to affect meaningful policy change.

Greater Portland Pulse

Initially, IMS planned to build its own data visualization interface, however, as an NNIP member it became aware of the Weave Open Indicators Consortium that is operated out of the University of Massachusetts, Lowell. Weave was being used successfully by several NNIP partners and seemed to be the kind of visualization and analytical tool that would suit the requirements of the Pulse well. By agreeing to become a beta tester for the Consortium, IMS was able to obtain a license for the product at no cost.

Weave allows users to create interactive tables, charts, graphs (including histograms and scatterplots), and maps for the Web. The interactivity can be simple in the sense that by mousing over a visualization element such as a bar chart, the data that are pre-specified for that particular element, in this case, bar, may be viewed. A more powerful aspect of the tool is the ability to link charts and graphs such as histograms or scatterplots to the data in a map and for the user to view the linkages interactively. The mapping functions for this tool do not include raster analyses.

Because GPP was intended to provide a scorecard for the region that would allow users to track progress toward an agreed upon set of outcomes, the depiction of the data in charts and graphs that allow the user to readily see up or down trends, is effective. However, unlike the Context Tool, GPP's use of Weave's mapping capability only allows users to add layers to the maps with considerable difficulty. Indeed, the purpose of the maps on the GPP site is not to use them as mapping tools but as a way to view the distributions and patterns of the data one indicator at a time, and to see where in the statistical distribution of the regional data particular locations are placed (via a histogram).

A key advantage of Weave for GPP is that licensees may freely upload and customize their own data. Since the Pulse is committed to providing new indicator data within a week of their release, this capability is essential. There are costs, however, with regard to being a beta tester, in terms of the reliability of new functionalities and updates. An additional disadvantage, that is shared with the Context Tool, is a reliance on Flash. This problem has been recognized by the Consortium as a top priority and is being addressed.

Discussion and Concluding Thoughts

One could ask whether or not it is fair to compare these two projects in terms of the measurement of social equity when one clearly makes equity its primary objective and the other doesn't even call it out as a theme. That does not mean that the Greater Portland Pulse Advisory Committee wasn't keenly aware of social equity's importance for the region and didn't want the project to be able to monitor it. The governmental champions for GPP were, however, sensitive to the possible politicization of the project and concluded that integrating the notion of equity into the process itself, the selection of outcomes and the indicators, would be the best approach.

Indeed, some GPP supporters saw the Regional Equity Atlas as just that, political, and assumed that "equity indicators" must be politicized largely because CLF is an advocacy organization. That said, the GPP Advisory Team formed an Equity Panel to provide guidance to the project; social equity generally and equity concerns related to the indicators and the related methodologies are intended to be foundational to all of GPP's outcomes and indicators.

Because of this, when a comparison is made, there is considerable overlap between the two sets of outcomes and indicators. The key differences come from the choices that the two projects made between the importance of frequent temporal change (the traditional approach to indicator projects) and spatial specificity and the number of indicators that would be necessary to inspire action and inform policy (Appendix C). As Noll has suggested, "[m]onitoring and reporting tools as they have been developed...provide societies – the general public as well as decisions makers – with the kind of information and knowledge needed for continuous self-reflection" (Noll, 2002:p. 28). This is the tradition that the Greater Portland Pulse followed.

CLF also values "continuous self-reflection" but it found that given limited resources, because of its experience in social equity research and the outcomes of its stakeholder engagement processes, it was unwilling to sacrifice the spatial definition it considered necessary to provide meaningful and actionable data – that could direct resources to people and places with relative accuracy – for more frequent temporal change. Even prior to the publication of the first Equity Atlas, maps from the Atlas were used by greenspaces advocates to push for a \$15 million Nature in Neighborhoods Grants Program as a part of a successful greenspaces bond measure in 2006. The first Atlas has since been used by Metro's Nature in Neighborhoods staff to target its outreach efforts to the places that the Atlas identified as low income neighborhoods with few parks and natural areas. This example, and others, provided proof to CLF that neighborhood level data was compelling and actionable.

Furthermore, CLF believed that social equity is too complex an issue to leave to a small number of data points to describe let alone understand. Progress toward social equity or the efficacy of policies could not be meaningfully determined by the traditional indicator approach. Moreover, knowing that many of the desired indicators would of necessity be proxies, the Coalition wanted users to be able to experiment, triangulate, bring as many of the indicators that stakeholders'

determined were important to the equation – again, in the spatial context. This has the potential for misuse and CLF is attempting to mitigate misuse with extensive caveats, trainings, metadata, and a series of user-friendly “issue papers” that use the Atlas’ data and mapping tool.

The promotion of high resolution geographic scales come at an additional cost – that of disaggregation. For many variables, especially ACS data, subsets of populations, that are considered important to equity analyses (such as racial minorities, ethnicity, and age), are not reliable in small geographies. This is a significant trade-off and is the reason why the Greater Portland Pulse indicators, that are most often given at the county-level, are disaggregated for a number of variables that the Equity Atlas cannot. However, CLF believes that it has to some degree overcome this inadequacy by providing a series of “population overlays” that can be added to any map that are Census tracts with above the regional average for populations of color, populations in poverty, youth (ages 0-17), and seniors (ages 65 and above). These allow Equity Atlas users to view any of the other indicators in relationship to the locations of these populations of interest.

It is interesting that the GPP Equity Panel suggested that, because of the known lack of data that would meet both the bar for disaggregation and neighborhood scale (attributes that members suggested were important to measuring social equity), the results teams should include “aspirational” indicators in the project – indicators for which there are no appropriate data. GPP did not do this but the Regional Equity Atlas 2.0, even with its large number of indicators, will include such a list on its website. GPP does allow the results teams to add, for future consideration in a “parking lot” space on the website, what it calls “experimental indicators.” With the consent of the results teams, these may be exchanged for existing indicators.

Finally, the GPP Equity Panel emphasized first, the importance of disaggregation, and second, the importance of mapping:

To understand the effects of place-based issues, it is critical to geo-map as many indicators as possible so neighborhoods and communities can be compared for both beneficial destinations such as healthy food or jobs, and harmful qualities such as environmentally compromised environments. (Conrad, 2011: p. 3)

As an indicator project that favors temporal change over geographic specificity, by utilizing primarily county and regional level data, GPP was able to meet the Equity Panel’s first recommendation, however, it falls far short of its second. Here, the Regional Equity Atlas excels. And, while the Greater Portland Pulse provides a simplicity that is easily consumed – generally, a hallmark of indicator projects – that simplicity may not be adequate to either measure progress toward equity outcomes or “inspire action” as the Greater Portland Pulse’s tag line suggests.

The Regional Equity Atlas 2.0 will be released in May 2013; its efficacy is yet to be tested. But many who have seen it in its beta stages have expressed the hope that it will have the capacity to provide enough “indication” to meaningfully inform policy.

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Appendix A
Regional Equity Atlas 2.0
List of Indicators

HEATMAPS

Housing

- Home owners (density per acre)
- Renters (density per acre)
- Vacant units (density per acre)
- Density of single-story housing and elevator buildings as proxy for housing accessibility

Parks and Natural Areas

- Proximity to publicly accessible parks
- Proximity to publicly accessible natural areas
- Proximity to greenspaces with limited public access
- Proximity to water access points
- Proximity to recreation facilities

Quality Education

- Proximity to nearest elementary school
- Proximity to Headstart and licensed child care centers

Transportation

- Mobility access (para-transit lift requests and ramp deployments)
- Transit Access
- Bikeability
- Walkability - Sidewalk density

Food

- Proximity to typical sources of “unhealthy food” (liquor stores, convenience stores, fast food restaurants)
- Proximity to supermarkets and grocery stores
- Proximity to supplemental food programs (food pantries and summer food sites)
- Proximity to Farmers’ Markets and produce stands
- Proximity to food stores and Farmers’ Markets accepting WIC
- Proximity to food stores and Farmers’ Markets accepting SNAP

Health Care

- Proximity to primary care facilities (including family medicine, pediatrics, and obstetrics)

Services and Amenities

- Proximity to financial services
- Proximity to key retail services

- Proximity to public services
- Proximity to human and social services

Community

- Proximity to faith-based institutions
- Proximity to community spaces and indoor gathering places
- Community stability (density of housing vacancies)
- Proximity to arts and culture institutions
- Proximity to civic and community organizations
- Density of civic and community organizations
- Proximity to public libraries

Demographics

- Density of residents
- Density of residents and employees
- Age under 5 (density per acre)
- Age 5-17 (density per acre)
- Age 18-44 (density per acre)
- Age 45-64 (density per acre)
- Age 65 and over (density per acre)
- Age 0-17 (density per acre)
- Populations of color (density per acre)
- Hispanic (density per acre)
- African American (density per acre)
- Asian (density per acre)
- Native American or Alaskan Native (density per acre)
- Hawaiian or Pacific Islander (density per acre)
- Households with no children (density per acre)
- Households with children (density per acre)
- Families with children (density per acre)
- Single-parent families (density per acre)

Economic Opportunity

- Transit access for family wage jobs (up to 60 minutes travel time)
- Transit Access to family wage jobs (up to 90 minutes travel time)

SHAPES

Housing

- Location of publicly-subsidized affordable housing [points]
- Percent change in median home value (2000-2010) [Tracts]
- Housing affordability (inflation adjusted) [Tracts]
- Median rental cost (2-bedroom units) [zip code]
- Median home value (sales price) [Tract]
- Foreclosures (percent Notice of Transfer Sale - Realty Trac) [zip code]
- Percent renters spending over 35% of their income on housing [PUMA]
- Percent owners (with mortgages) spending 35% on housing (PUMA)
- Minority homeownership gap [Block Group]
- Housing and transportation cost burden [MetroScope housing needs analysis subareas]
- Access to home loans: Number of applications for Conventional Loans [2000 Tracts]
- Access to home loans: Number of applications for FHA Loans [2000 Tracts]
- Access to home loans: Home loan denials (White) [2000 Tracts]
- Access to home loans: Home loan denials (non-White) [2000 Tracts]
- Access to home loans: Home loan denials (All) [2000 Tracts]

Quality Education (by school)

- Percent minority students (K-12) [points]
- Number of languages spoken (K-12 student body) [points]
- Schools meeting/not meeting adequate yearly progress (AYP) [points]
- Percent of students meeting State benchmarks for 3rd grade reading [points]
- Average class size (elementary) [points]
- Availability of Advanced Placement/ International Baccalaureate courses (Oregon only) [points]

SHAPES

- Availability of arts/media classes (Oregon only) [points]

Transportation

- Percent of households with no motorized vehicle [PUMA]
- Percent of workers who commute by other means (including biking) [PUMA]
- Percent of workers who commute by walking [PUMA]
- Percent of workers who commute by car [PUMA]
- Average commute time to work (minutes) [PUMA]
- Public transit stop safety amenities (curbcuts) [points]
- Public transit stop safety amenities (sidewalks) [points]
- Transportation safety: ODOT crash data (fatalities) [points]
- Transportation safety: ODOT crash data (car/ car incidents) [points]
- Transportation safety: ODOT crash data (car/ pedestrian incidents) [points]
- Transportation safety: ODOT crash data (car/ bicycle incidents) [points]

Food

- Locations of community gardens [points]

Democratic Participation

- Voter registration numbers [2010 Block Groups]
- Voter participation rates (voted in last 3 primaries) [2010 Block Groups]
- Voter participation rates (voted in last 3 general elections) [2010 Block Groups]

Health Care

- Proximity to health care providers that accept Medicaid [Zip Codes]
- Proximity to health care providers that accept Medicare [zip codes]
- Proximity to community, public, and school-based health clinics for uninsured and low-income patients [points]

- Rate of 1st trimester pre-natal care [2000 Tracts]

Health Outcomes

- Obesity (Body Mass Index) [2010 Block Groups]
- Rate of pre-term births [2000 Tracts]
- Rate of low weight births [2000 Tracts]
- Rate of Diabetes [Tracts]
- Rate of Diabetes [Neighborhoods]
- Rate of Preventable Emergency Department Visits, Adults [Tracts]
- Rate of Preventable Emergency Department Visits, Adults [Neighborhoods]
- Rate of Well-Child Visits, 3-6 yrs. [Tracts]
- Rate of Well-Child Visits, 3-6 yrs. [Neighborhoods]
- Rate of Cardiovascular Disease [Tracts]
- Rate of Cardiovascular Disease [Neighborhoods]

Demographics

- Percent change in populations of color (2000-2010) [Tracts]
- Percent change in median income [2000 to 2006-2010 estimates] [Tracts]
- Median household income [Tracts]
- Percent households below poverty level [Tracts]
- Percent Veterans [PUMA]
- Percent foreign born [PUMA]
- Percent recent immigrants (2000 and later) [PUMA]
- Percent households with low English proficiency [PUMA]
- Percent students eligible for free and reduced lunch (by school) [points]

Healthy Environment

- Air quality: Number of times levels were above benchmark (all sources) [polygons]
- Air quality: Number of times levels were above benchmark (road sources) [polygons]
- Air quality: Number of times levels were above benchmark (non-road sources)

[polygons]

- Air quality: Number of times levels were above benchmark (residential wood burning) [polygons]
- Air quality: Number of times levels were above benchmark (point sources) [polygons]
- Air quality: Number of times levels were above benchmark (area sources) [polygons]

Economic Opportunity

- Adult educational attainment: Percent with graduate degree [PUMA]
- Adult educational attainment: Percent with BA/BS degree [PUMA]
- Adult educational attainment: Percent with some college [PUMA]
- Adult educational attainment: Percent with high school diploma [PUMA]
- Adult educational attainment: Percent with 9-12th grade, no diploma [PUMA]
- Transportation to jobs [2013 TAZs]
- Locations of workforce training and employment-related services [points]

Population Overlays

- Above regional average percent populations of color [Tracts]
- Above regional average percent populations in poverty [Tracts]
- Below regional average median income [Tracts]
- Above regional share of youth (ages 0-17) [Tracts]
- Above regional share of seniors (ages 65 and over) [Tracts]

ANALYSIS UNITS

- 2010 Census Tracts
- Neighborhoods
- Cities
- Counties

Appendix B
Greater Portland Pulse
List of Indicators

Access to nature

Access to parks and nature*

Environmental justice and equity

Proximity to compromised environments (developmental)

Native species

Functional ecological corridors (developmental)

Native species*

Improved environment

Vehicle miles traveled

Transportation emissions

Health, safety and improved environment

Environmentally friendly

transportation modes (transit, carpools, walking and bicycling)

Fatalities and injuries

Equity

Transportation Costs

PHYSICAL CAPITAL

QUALITY HOUSING AND COMMUNITIES

Access to housing, home ownership and housing choices

Homeownership gap (between racial and ethnic groups) †

Access to housing, connectedness and parity for people of color

Racial/ethnic segregation* †

Enough housing

Transportation + housing costs*

Homeownership

High interest rate loans* †

Improved (reduced) homelessness

Homelessness rate

Enough housing

Housing cost burden*†

Enough housing and renting options

Housing - wage gap



arts and culture



economic opportunity



access and mobility



civic engagement



safe people



housing and communities



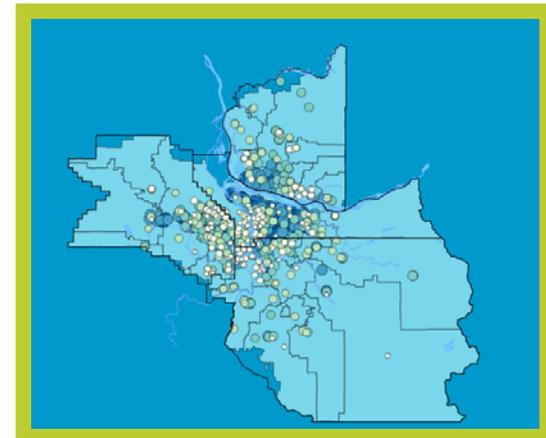
healthy people



healthy natural environment



education



Measuring what's important

This brochure contains a complete list of the indicators for Greater Portland Pulse. They can be further explored in detail at portlandpulse.org. There you will find background information that explains the significance of each indicator, findings and analysis of the data, data charts and tables, source and methodology information and some thoughts on how the specific indicator can be used.

Out of a total of 64 Greater Portland Pulse indicators, 19 are either mapped (*) or stratified by race and ethnicity (†) to shed light on the equity challenges faced by our region.

portlandpulse.org

ACCESS AND MOBILITY

Access

Access (to travel options and nutritious food)*

Mobility and economic prosperity

Travel delay and congestion

PROSPERITY

ECONOMIC OPPORTUNITY

Individual and family prosperity

Average wage per job
Wage distribution
Per capita income
Unemployment rate †
Self sufficiency wage

Business prosperity

Land for business
Job growth
Business loans

Community prosperity

Government efficiency (developmental)

HUMAN CAPITAL

EDUCATED PEOPLE

Well-educated individuals, Well-educatec force

Head start access
Student achievement*†
Student attendance*
High school graduation*†
Public schooling
Adult education levels*†

HEALTHY PEOPLE

Health as influenced by health promotior disease prevention

Chlamydia †
Obesity and overweight rates
Physical activity
Healthy eating
Tobacco use
Teen birth rates †

Health as influenced by health services

Low Birth Weight †
Tooth decay in children
Immunization
Mental health

Health insurance †
Emergency room visits
(developmental)
Preventive clinical care
(developmental)

Health as influenced by social context an environment

Income, unemployment,
graduation rates, education
achievement, good air days,
proximity to nature, volunteering,
voter registration, equitable access
to arts

SAFE PEOPLE

Safety

Crime rates
Juvenile crime rates
Recidivism
Juvenile recidivism
Arrests and charges
Child Abuse
Domestic and Interpersonal Violence
Perceived safety (developmental)

Trust

Parity †
Perceived trust (developmental)

SOCIAL CAPITAL

ARTS AND CULTURE

Daily arts for youth

School arts specialists*
Youth participants (developmental)

Economic stability of arts providers

Funding for arts providers
Artists' Wages
Funding for diverse arts providers
(developmental)
Earned income of arts providers
(developmental)
Financial health of arts providers
(developmental)

Financial health of arts providers
(developmental)

Equitable access (to the arts)

Cultural participation
Diverse Arts Providers
(developmental)

CIVIC ENGAGEMENT

Informed community members

Internet access
Library use

Strong sense of community

Volunteering
Group participation
Charitable giving*
Charitable donations benefit ethnic
and racial minorities (developmental)
Corporate Giving (developmental)
Healthy ethnic and race relations
(developmental)

Widespread political participation

Voting †
Activism
Elected and non-elected officials
racially and ethnically represent the
communities they serve
(developmental)

NATURAL CAPITAL

HEALTHY, NATURAL ENVIRONMENT

Healthy soils

Land cover*

Clean water

Ecologically healthy waterways*

Clean air

Unhealthy air days*

Resiliency (of environment to hazards, disas climate change)

Protected lands (developmental)

Appendix C. Regional Equity Atlas 2.0 and Greater Portland Pulse Comparisons

	Regional Equity Atlas	Greater Portland Pulse
Key Champions	Advocacy coalition of community-based organizations	Government Higher education
Primary Funders	Foundations (health focused)	Government Higher education
Outcome Frame	Social equity	9 outcome themes – social equity is considered in all outcomes and indicators but is not a separate outcome theme
Purpose	1.Inspire dialogue 2.Inform policy 3.Measure progress toward outcomes	1.Measure progress toward outcomes 2.Inform policy 3.Inspire dialogue
Audience	1.Public 2.Government	1.Government 2.Public
Measurement priorities	1.Objective, unbiased 2.Spatial precision 3.Replicability	1.Objective, unbiased 2.Temporal change 3.Replicability
Indicator identification	Broad engagement Best practices Publicly available a priority but not essential No initial limitation	Broad engagement Best practices Publicly available Strict limits set
Number of indicators	132 (with additional composites)	64
Indicator costs	Some proprietary data High processing costs	No proprietary data Low processing costs
Update cycles/ Maintenance costs	5 to 10 year cycle Low maintenance costs	Continuous High maintenance costs (project requires ongoing funding)
Visualization tools	Context Tool	Weave
License holder	Metro is sole license holder	IMS holds license
Visualization emphasis	Map-based with spatial analytical capacity Interactive tables and charts secondary	Interactive tables, charts, graphs, and map capabilities Graphs primary; maps secondary
Analytical capacity	Spatial (raster) analytic Limited linkages between map data and tables and charts	Vector only (no spatial analytic capacity) Linkage between charts, graphs, map data
Data export	Yes	Yes
Data visualization export	Yes	Yes
Data upload capability for users	No	Yes
Metadata	Yes	Yes