



Factor 1 Analysis

Limited English Proficiency (LEP)
populations

August 2013

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EXECUTIVE SUMMARY

On December 14, 2005, The United States Department of Transportation (DOT) published revised guidance for its recipients on the implementation of Executive Order 13166: “Improving Access to Services for Persons with Limited English Proficiency (LEP).” According to the Executive Order, a LEP person is an individual who does not speak English as their primary language and who has a limited ability to read, write, speak, or understand English¹.

The DOT guidance identifies Metropolitan Planning Organizations (MPOs) such as Metro, or any other recipients of DOT assistance such as transit districts, as entities responsible for taking reasonable steps to ensure meaningful access to their programs and activities by LEP persons.

Additionally, the guidance states that recipients providing written translation of vital documents for each eligible LEP language group that constitutes five percent or 1,000, whichever is less, will be considered strong evidence of compliance with the recipient’s written-translation obligations. The DOT describes the following “four-factor” analysis as the starting point to ensure meaningful access:

Factor 1: The number or proportion of LEP persons eligible to be served or likely to be encountered by a program, activity, or service of the recipient or grantee;

Factor 2: The frequency with which LEP individuals come in contact with the program;

Factor 3: The nature and importance of the program, activity, or service provided by the recipient to people’s lives; and

Factor 4: The resources available to the recipient and costs.

This analysis documents Factor 1 and includes an assessment of the number or proportion of persons with Limited English Proficiency in Metro’s jurisdictional boundaries. The data sources utilized in the determination of LEP, as recommended by the DOT, include the U.S. Census Bureau, American Community Survey Data and Oregon Department of Education: 2011-2012 school year enrollment data for school districts in Clackamas, Multnomah and Washington Counties. Metro defined LEP persons as those individuals who speak English “less than very well.”

¹ The DOT guidance also cites the US Census Bureau’s statistical database of individuals speaking English “not well” or “not at all” as meeting LEP criteria.

Key Findings

There were several key findings revealed in the analysis of the above data:

- 265,458 persons over the age of 5, or 18.18% of the Metro region population, speaks a language other than English at home
- 122,511 persons over the age of 5 speak a language other than English at home and speak English less than “very well”. This population is 8.71% of the Metro region’s over-5 population.
- Spanish is the second most predominant language, other than English, spoken in the region
- Thirteen non-native English language groups within Metro’s service area have limited English proficient populations of 1,000 persons or more
- Of the languages spoke in the region, Table 1 shows the languages with over 1,000 LEP persons

Table 1: Languages in Metro’s jurisdictional boundary with more than 1,000 LEP persons

Language spoken at home	Population 5 and over speaking a language other than English at home	Population that is LEP, age 5 and over, by native language	Percent of total LEP population by native language	Percent of total Metro region population age 5 and over (1,406,347), LEP, by language
Spanish, Spanish Creole	124,643	64,692	52.8	4.6
Vietnamese	20,329	12,417	10.1	0.88
Chinese	17,013	9,036	7.4	0.64
Russian	13,589	7,105	5.8	0.51
Korean	7,953	4,141	3.4	0.29
Ukrainian¹	<i>No data</i>	¹ 2,609	2.1	0.19
Japanese	6,839	2,608	2.1	0.19
Romanian¹	<i>No data</i>	¹ 2,232	1.8	0.16
Tagalog	5,702	1,705	1.4	0.12
Arabic	4,155	1,460	1.2	0.1
Hmong	<i>Unreliable</i>	^{1,2} 1,420	1.2	0.1
Somali¹	<i>No data</i>	¹ 1,407	1.2	0.1
Mon-khmer Cambodian	2,115	1,370	1.1	0.1
13 LEP languages		110,670	90.3	7.87
TOTAL, all non-English languages	265,458	122,511	100	8.71

Data source: U.S. Census Bureau, American Community Survey 2006-2010, 5 year estimate; Table B16001, Language spoken at home; except:

¹ Languages not in Census: estimates derived from Oregon Department of Education school language dataset for 2011-2012; listed counts of LEP students in ODE data derived languages are the median value within an estimated range. ^{1,2} The estimate of LEP Hmong speakers is estimated from Oregon Department of Education data rather than based on the published estimate from the ACS. The ACS estimate margin of error is too high for a reliable estimate, and the estimate itself is clearly far too low in comparison with the directly observed ODE student enrollment data. Figures are derived by aggregating Census tract-level data estimates.

BACKGROUND REQUIREMENTS

Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d) states that: “No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity that receives Federal financial assistance.” In the 1974 case of *Lau v. Nichols* (414 U.S. 563), the Supreme Court interpreted Title VI regulations to hold that Title VI prohibits conduct that has a disproportionate impact on Limited English Proficient (LEP) persons.

On Aug. 11, 2000, Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency,” was signed by President Clinton. It directs federal agencies to examine the services they provide and develop and implement a system by which LEP persons can meaningfully access those services. Federal agencies were instructed to publish guidance for their respective recipients in order to assist them with their obligations to LEP persons under Title VI.

The U.S. Department of Transportation (DOT) issued a federal register notice on Dec. 14, 2005 offering “Policy Guidance Concerning Recipients’ Responsibilities to Limited English Proficient (LEP) Persons,” (US DOT, Volume 70, Number 239). The guidance states that Title VI and its implementing regulations require that DOT recipients take responsible steps to ensure meaningful access to the benefits, services, information, and other important portions of their programs and activities for individuals who are Limited English Proficient (LEP). The guidance also suggests that recipients use the DOT LEP Guidance to determine how best to comply with statutory and regulatory obligations to provide meaningful access to the benefits, services, information, and other important portions of their programs and activities for individuals who are LEP.

The Federal Transit Administration (FTA) references the DOT LEP guidance in Circular 4702.1B, “Title VI Requirements and Guidelines for FTA Recipients,” which was finalized on Oct. 1, 2012. Chapter III Part 6 of this Circular reiterates the requirement to take responsible steps to ensure meaningful access to benefits, services, and information for LEP persons and suggests that FTA recipients and sub-recipients develop a language implementation plan consistent with the provisions of Section VII of the DOT LEP guidance found in the December 2005 federal register notice. The FTA Office of Civil Rights also released a handbook in 2007 for transit providers (“Implementing the Department of Transportation’s Policy Guidance Concerning Recipients’ Responsibilities to Limited English Proficient (LEP) Persons” [FTA, April 2007]) to give technical assistance for the implementation of the DOT LEP guidance.

LEP POPULATION SOURCES

Several data sources were utilized to conduct the Factor 1 analysis in Metro's service area in order to understand the number or proportion of LEP persons eligible to be served by Metro or encountered by Metro programs or services.

The data sources utilized in the determination of LEP, as recommended by the USDOT/FTA Guidelines, April 2007², include:

- 2006-2010 America Community Survey (ACS) 5-Year sample: census tract data
- 2007-2011 America Community Survey (ACS) 5-Year sample: county data
- 2006-2008 America Community Survey (ACS) 3-Year sample: state data, special detailed tabulation of language spoken at home by English proficiency (not a part of a standard ACS data release)
- Oregon Department of Education (ODE): 2011-2012 school year enrollment data for school districts in Clackamas, Multnomah and Washington counties

LEP POPULATION ANALYSIS

2006-2010 American Community Survey

Metro's jurisdictional boundary area includes most of Clackamas, Multnomah, and Washington counties. However, Metro's boundary does not conform to the geographies of census data. In order to estimate the LEP populations within the jurisdictional boundary area, Metro staff collected and analyzed census data from the tract level (ACS 2006-2010 5 year estimate) – selecting all tracts that were either partly or completely within Metro's service area boundary. As a result of this process, Metro staff identified 331 census tracts (Figure 1).

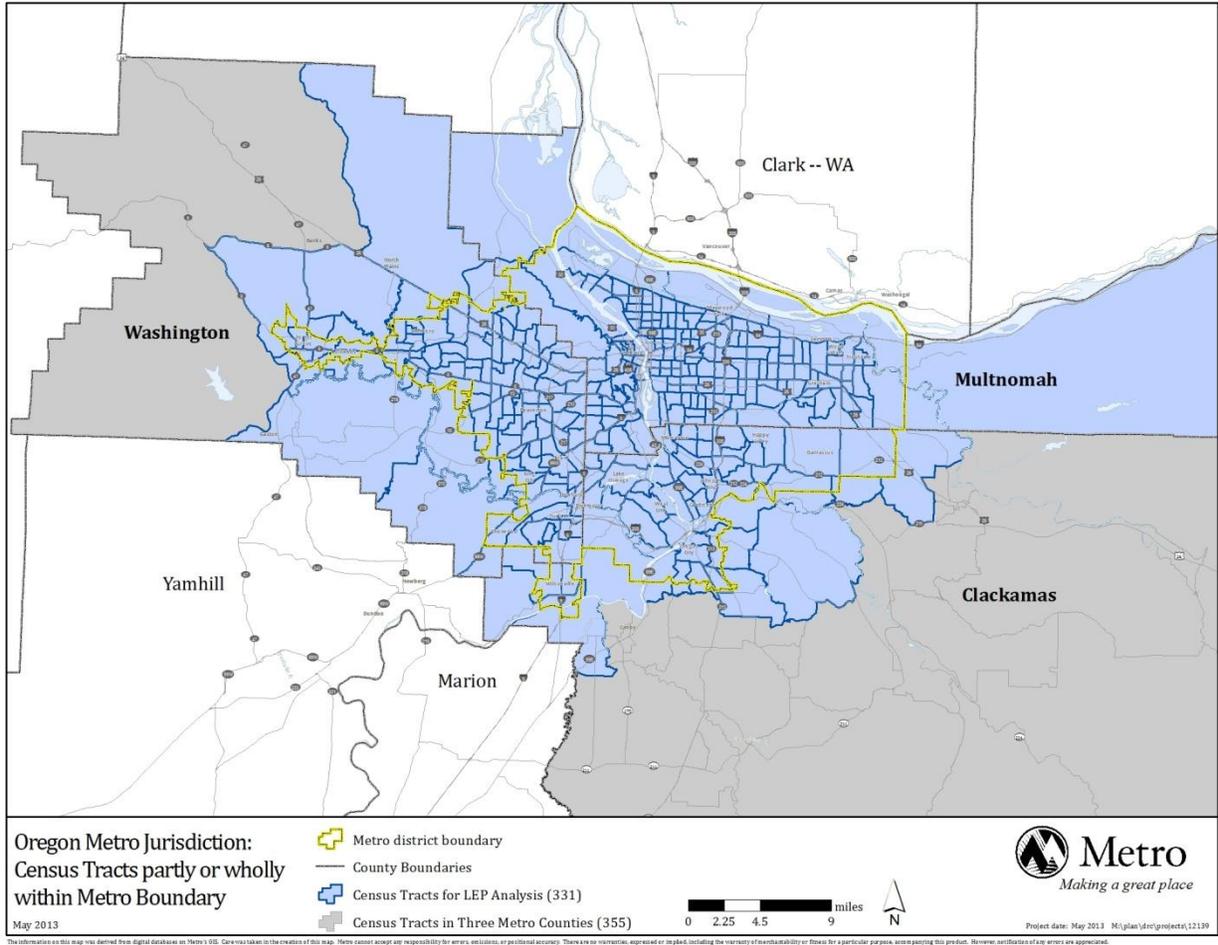
The estimated total counts of LEP population obtained from table B16001 in the 2006-2010 ACS tract data were obtained by aggregating population estimates from 331 census tracts in Clackamas, Multnomah and Washington Counties of people living in these counties that "speak English less than very well" (Figure 1).

Figure 2 displays the percentage of all LEP speakers per census tract and schools in a quintile distribution. Highlighted in yellow, the map shows 121 tract areas that have more than an 8.71% LEP population, regardless of native language.

In Figure 2 Metro staff followed USDOT/FTA Guidelines, April 2007, to "identify specific tracts where the proportion of LEP persons exceeds the proportion of LEP persons in the service area as a whole," by highlighting census tracts where the percentage of LEP persons is greater than the region-wide average of 8.71%. In Appendix A, Figures A1-A13, illustrate the spatial concentration of LEP speakers for each of the 13 languages, in map form.

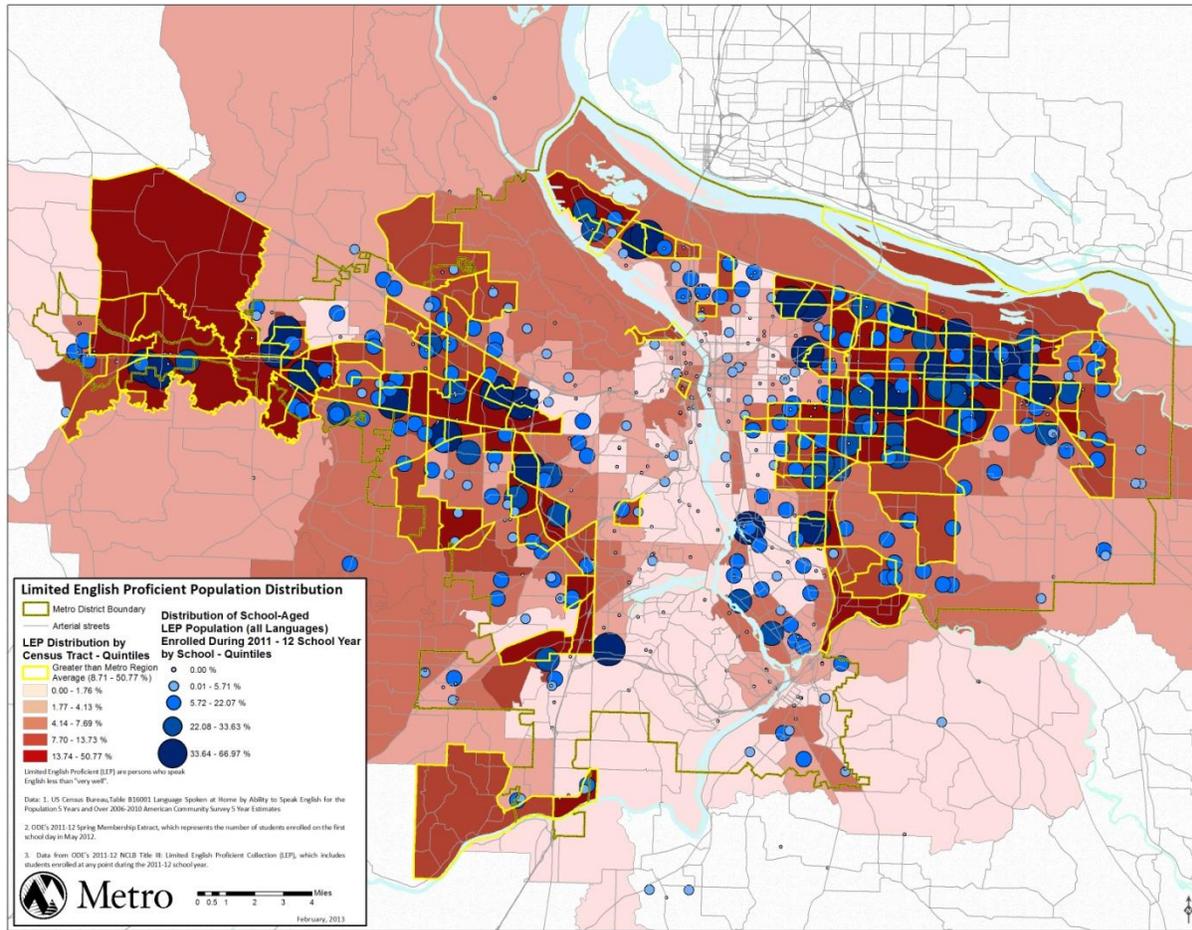
² *Implementing the Department of Transportation's Policy Guidance Concerning Recipients' Responsibilities to Limited English Proficient (LEP) Persons, A Handbook for Public Transportation Providers*, The Federal Transit Administration Office of Civil Rights, April 2007

Figure 1: Census tracts in Clackamas, Multnomah and Washington Counties selected for analysis of 2006-2010 ACS data.



Sources: U.S. Census Bureau Cartographic Boundary Files; Oregon Metro RLIS network GIS data

Figure 2: Distribution of Limited English Proficient Population, all languages



Source: 2006-2010 ACS, Census tract data, table B16001; Oregon Department of Education, 2011-2012 enrollment data

Table 2 shows that the overall LEP population in the Metro’s jurisdictional boundary area is 8.71 percent of persons that are age five years and older.

Table 2: Aggregate estimates, 331 tracts in Metro’s jurisdictional boundary area

Total population, persons over age 5	Persons over age 5, speak a language other than English at home	Persons over 5, speak a language other than English at home, speak English less than very well (LEP)	Percent of estimated Metro region population over age 5 that is LEP
1,406,347	265,458	122,511	8.71%

Source: 2006-2010 ACS, Census tract data, Table B16001

The summary counts revealed nine distinct LEP populations with more than 1,000 persons within the Metro jurisdictional boundary area. Of these, three have populations just slightly over 1,000 for the entire Metro region. They include: Tagalog (1,705); Arabic (1,460); Khmer (1,247) while Laotian (914); Persian (882); German (823), have population estimates just under 1,000. Additionally, five aggregate language groups also have populations of LEP speakers greater than 1,000. These include, “Other Slavic” (3,109); “Other Indo-European” (2,226); “Other Asian” (1,755); “African” (1,705); and Other “Pacific Island” (1,228).

The margins of error in the ACS data at the tract level are significant, and because aggregating large numbers of estimates to yield a single sum invalidates the error estimates, Metro staff sought confirmation that these estimates were valid by performing a second analysis.

2007-2011 American Community Survey (ACS) county level data

Metro staff analyzed Clackamas, Multnomah and Washington County census data from the 2007-2011 American Community Survey to confirm estimates. Population estimates at the much larger geographic area of counties are more reliable: they have larger sample population and thus lower error margins. Because there are only three counties in the Metro region, it is possible to add the three estimates together and still calculate the margin of error (see Appendix B for additional discussion of margins of error for aggregates of estimates).The county data yielded similar results, increasing Metro’s confidence in the aggregated tract estimates of LEP speakers within the Metro jurisdiction boundary (see Appendix B, Table B2).

Table 3: Aggregate estimates, three counties, including, not limited to Metro’s jurisdictional boundary

Total population over age 5	Persons over age 5, speak a language other than English at home	Persons over 5, speak a language other than English at home, speak English less than very well (LEP)	Percent of estimated Tri-County region population that is LEP
1,517,784	283,651	128,339	8.45%

Source 2007-2011 American Community Survey, County level data, Table B16001

The margins of error constructed on the county data allow Metro to confirm that it is highly likely all nine unique populations of LEP speakers within the 331 tracts making up Metro's service area identified in the first analysis do have populations of greater than 1,000.

Further analysis: languages not routinely reported in the American Community Survey

Data from the U.S. Census bureau aggregates 382 distinct languages into 39 categories in Table B16001 data used in this analysis. This table includes 29 unique languages and 10 groupings of multiple languages. Five of these ten language groupings contained LEP population of more than 1,000 in both the census tracts and county data sets. The language groups include:

- Other Slavic (one of five sub-groups within the Indo-European language family)
- Other Indo-European (remaining languages in this family after four sub-groups and 15 individual languages are removed)
- Other Asian
- Other Pacific Island
- African

To determine if a single language population embedded within one of these categories has a population greater than 1,000, Metro staff collected and analyzed two additional data sets, one from the U.S. Census Bureau and one from the Oregon Department of Education. Metro staff used these in conjunction with the ACS 5-year releases to determine rough estimates for populations over age five that live within Metro's jurisdictional boundaries that are LEP within that specific language population.

2006-2008 ACS, State of Oregon, Detailed Languages

The U.S. Census Bureau posts a detailed languages table, a one-time publication of highly detailed estimates of individual language populations at state-level geography³, on their website. It reports data for approximately 135 languages spoken in the U.S., and shows how these are aggregated into the language groups and language families that are used for standard ACS data releases. The table provides valuable insight into the estimated statewide populations of several native languages that are anecdotally known to be significant within Metro's jurisdictional boundary (see Table 4.) The special detailed language tabulation is published as Table 39 from the 2006-2008 American Community Survey, and contains only state-level data (see Table B4a-4b for further discussion of the estimation produce using this dataset.)

³U.S. Census. "Detailed Languages Spoken at Home and Ability to Speak English for the Population 5 Years and Over: 2006-2008." Retrieved January 2013, from <http://www.census.gov/hhes/socdemo/language/data/other/usernote.html>.

Table 4: Estimation of LEP populations embedded within “language groups” reported in the 2006-2010 ACS, using Census Bureau statewide language data from 2006-2008.

Native language other than English spoken at home	Estimated total population over age 5				Estimated total population over age 5 speaks English less than “very well”			
	Table 39 (2006-08)	Table 39 margin of error	Ratio, language to language group	331 Metro Tracts (2006-2010)	Table 39 (2006-08)	Table 39 margin of error	Ratio, language to language group	331 Metro Tracts (2006-2010)
<u>Other Slavic</u>	6872	+/- 1515	0.8763	<u>6022</u>	3644	+/- 1010	0.8532	<u>3109</u>
Ukrainian	5261	+/- 1476	“- -“	4611	3143	+/- 953	“- -“	2682
Slovak	571	+/- 407	“- -“	501	320	+/- 356	“- -“	273
Czech	664	+/- 216	“- -“	581	103	+/- 85	“- -“	88
Bulgarian	376	+/- 267	“- -“	329	78	+/- 104	“- -“	66
	Sum, estimated populations:			6022	Sum, estimated populations:			3109

*Italicized cell values are estimated populations for the 331 Census tract geography based on ratios generated from Table 39, State of Oregon data. **Bolded** population estimates rise above the 1,000 persons safe harbor threshold*

Oregon Department of Education (ODE) 2011-2012 Enrollment data

FTA recommends using public school enrollment data to identify LEP populations and the types of languages spoken in Metro’s jurisdictional boundary area.

Every year, the Oregon Department of Education (ODE) collects student enrollment data from public school districts and state-accredited public charter schools. Each school reports on the following:

- non-native English speaking students;
- LEP students (data includes native English LEP speakers, LEP totals are significantly different from those in the American Community Survey);
- socio-economic data; and race/ethnicity

The data represent 100 percent counts rather than sample estimates. ODE collects native language and LEP status data on a rolling basis throughout the academic year in compliance with Title III of the federal No Child Left Behind Act. The schools data is highly detailed, with more than 200 individual languages represented and LEP data collected for native speakers of each language. However, ODE cautions that the language classification is not highly validated. To protect student confidentiality, ODE suppresses data at the individual school level when six or fewer students are counted as speaking English less than very well. Metro has calculated an estimate for the number of

students who are represented by a suppressed value in order to more precisely count total enrollment at the regional level. More than 400 schools are aggregated in this process, so confidentiality protections are preserved.

The Oregon Department of Education 2011-2012 data helped refine Metro’s estimates of more than a dozen languages which have significant LEP populations in the schools but are not reported in the U.S. Census. Five language populations that either do not appear in the American Community Survey, or have unusable estimates, have at least 250 LEP speakers in the schools. Five of these represent recent immigrant groups from less-developed nations where many expatriates are economic or political refugees, and are therefore more likely to have higher proportions of LEP individuals in their populations: Somali, Chuukese (Trukese), Karen, Nepali, and Amharic.

Figures 3 and 4 illustrate all LEP students enrolled in Oregon public and private schools that speak Spanish and all other languages, besides Spanish.

Figure 3: LEP students enrolled in public schools within the Metro jurisdiction that speak Spanish and other languages besides Spanish

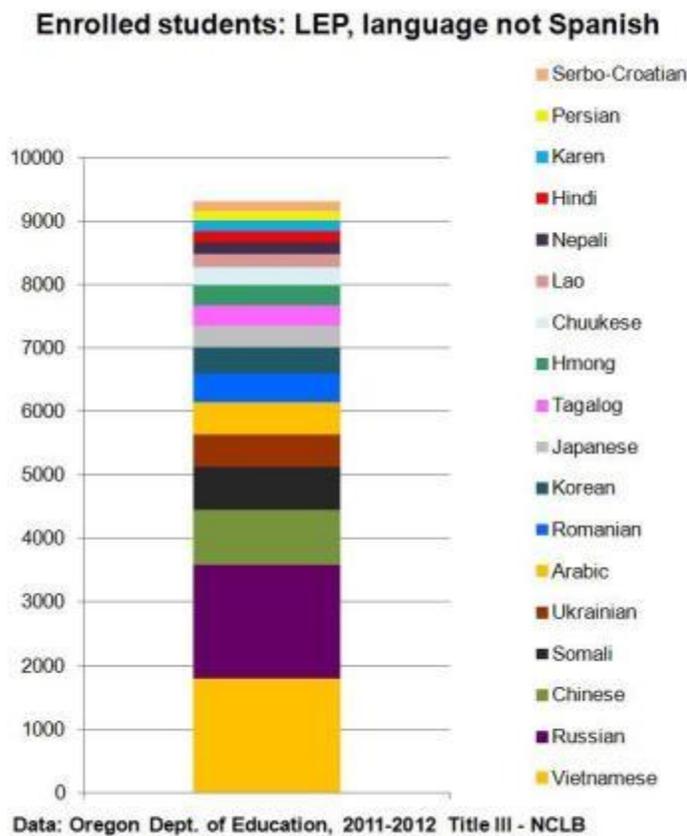
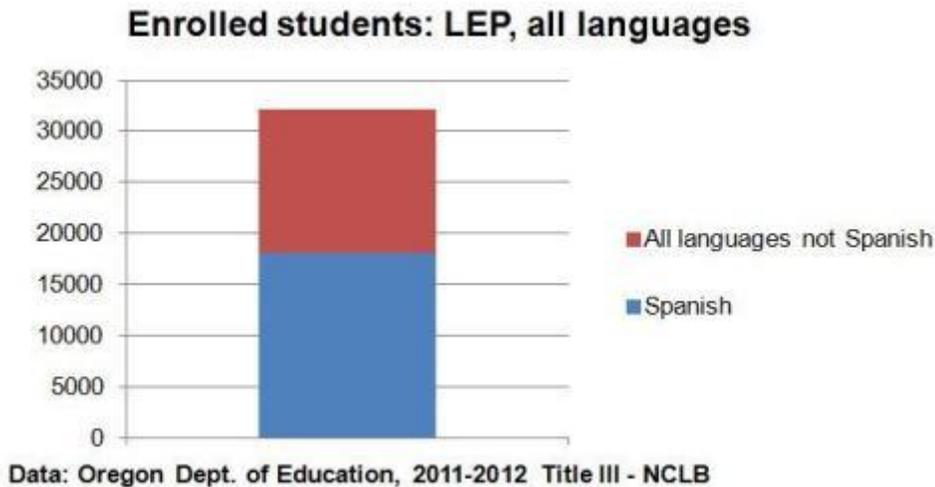


Figure 4: LEP students enrolled in Oregon public and private schools that speak other languages besides Spanish



Metro used two different procedures to estimate the number of LEP speakers of languages not estimated in the ACS in the general population over age 5 by extrapolating the ODE student enrollment data.

1. The number of speakers of a non-Census LEP language, such as Ukrainian, from the ODE dataset, was multiplied by two ratios generated by dividing the ACS estimate for a related language by the ODE LEP count for that language. The first ratio is based on the linguistically most closely related language for which an ACS estimate exists. The second ratio is based on the language of a culturally similar immigrant group. Appendix B, Table B7 illustrates the calculations for languages linguistically, culturally and demographically.
2. All 147 languages from the ODE data set were classified according to how they are aggregated in the ACS Table B16001, the principal data source for this report. A sum total of all native speakers and all LEP speakers for the group of languages that matched a category from Table B16001 was calculated; the ratio of LEP speakers of each language within the group to the group sum was multiplied by the ACS estimate for the group from Table B16001. For a complete table and further discussion of methods see Appendix B, Table B7.

RESULTS SUMMARY

The analysis of the four data sources included in this report identified 13 specific languages in Metro’s jurisdictional area with more than 1,000 individuals who are Limited English Proficient (LEP).

Figures 5 and 6 illustrate the general distribution of the 13 LEP populations in Metro’s jurisdictional boundary. Of the LEP populations, more than 50 percent speak Spanish as their first language, and approximately 75 percent speak Spanish, Vietnamese, Chinese (Mandarin and Cantonese) or Russian.

Metro has determined that translation of vital documents should be evaluated for translation into 13 languages, including vital documents found on Metro’s website: www.oregonmetro.gov. Upon request and subject to available resources, Metro will provide translation of other documents pertaining to programs and services into relevant languages.

Somali, Ukrainian, Romanian, and Hmong languages were added to the nine languages identified in the 2006-2010 ACS data as having more than 1,000 LEP speakers in the general population over age 5. This was done after reviewing Oregon school district data for the region. Table 5 shows the 13 languages, including the range of possible population sizes generated by different estimation procedures, based on supplemental data for the four languages which are not reported in ACS table B16001.

Figure 5: All persons over age 5, speak English less than “very well”

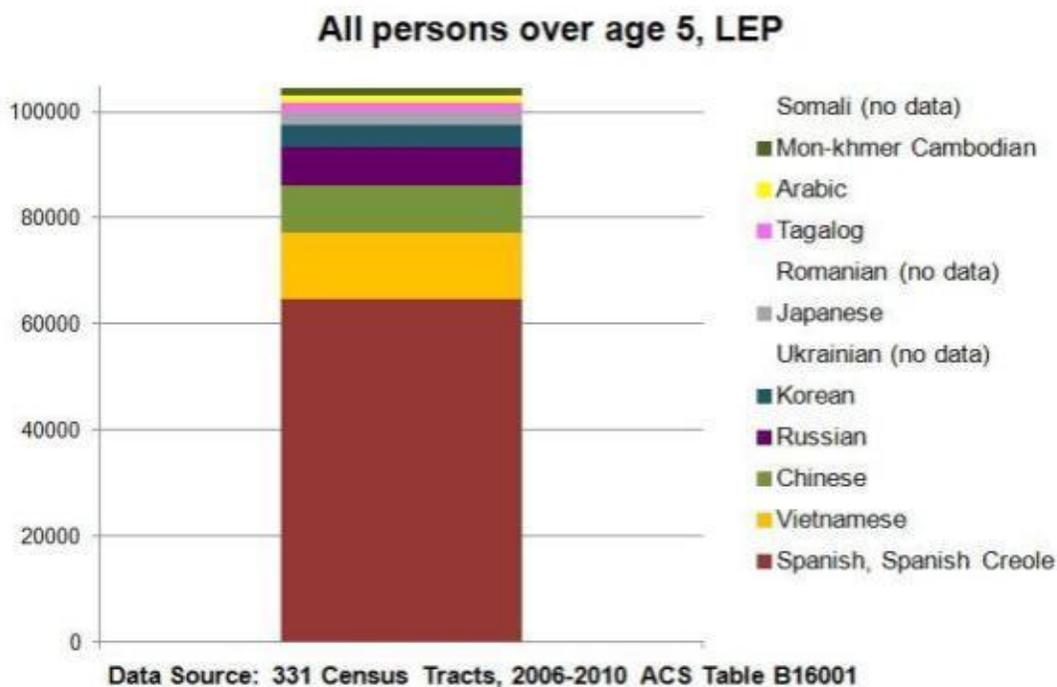


Figure 6: All persons over age 5, speak English less than “very well”

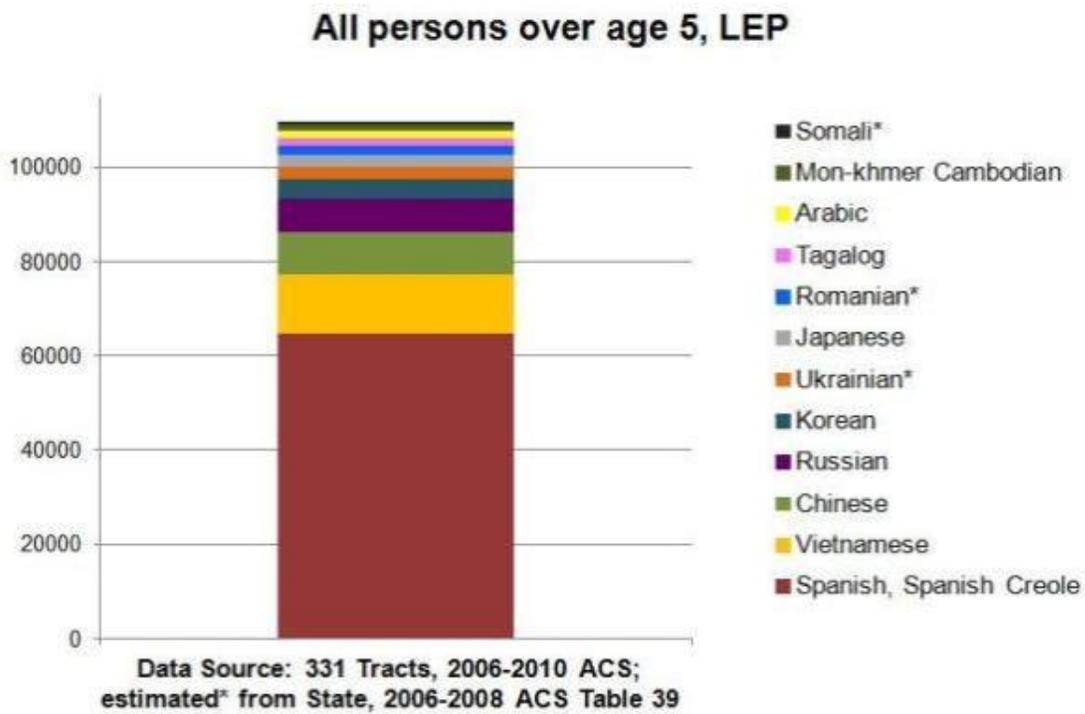


Table 5: Languages eligible (bold) or potentially eligible for safe harbor provisions in Metro-wide services. Table 5 incorporates estimates from three different procedures to account for LEP populations of languages not recorded in the 2006-2010 ACS.

Estimated total population over 5 years, Metro region: 1406347 (331 Tracts)							
1517784 (3 Counties)							
DATA	ACS 2006-2010 (Tract)	ACS 2006-2010 (Tract)	ACS 2007-2011 (County)	ACS 2006-2008 (State)	ODE 2011-2012		
GEOGRAPHY	331 Tracts	331 Tracts	3 Counties	Tracts - Counties	Metro schools	331 Tracts	
	1) Estimated persons over age 5, language at home is not English:	2) Estimated LEP persons over age 5, language at home is not English,	3) Estimated LEP persons over age 5, language at home is not English (From Table B2)	4) Estimated LEP persons over age 5, language at home is not English (From Tables B4a – B4b)	5) Enrolled students in Metro; native language not English, LEP (From Table B5)	6) <i>Estimated range, total Metro region LEP population > 5, based on schools data*</i> (From Tables B6-B7)	7) Estimated percentage of total regional population (tracts), by language spoken at home and LEP
	All languages	265458	122511	128032	<i>not estimated</i>	27097	<i>not estimated</i> 8.71%
Language Spoken at Home	Spanish	124643	64692	67501		18088	4.60%
	Vietnamese	20329	12417	13314		1801	0.88%
	Chinese	17013	9036	9322		878	0.64%
	Russian	13589	7105	6775		1776	0.51%
	Korean	7953	4141	4192		415	0.29%
	Ukrainian	<i>no data</i>	<i>no data</i>	<i>no data</i>	2682 – 2802	515	2070 – 3147 0.15 - 0.22%

Japanese	6839	2608	2378		344		0.19%
Romanian	<i>no data</i>	<i>no data</i>	<i>no data</i>	1856 – 1936	436	1691 – 2773	0.12 - 0.20%
Tagalog	5702	1705	1420		325		0.12%
Arabic	4155	1460	1578		514		0.10%
Hmong [#]	1126	[#] 347	[#] 235	--	325	1420	0.10%
Somali	<i>no data</i>	<i>no data</i>	<i>no data</i>	^{\$} 784 – ^{\$} 911	668	1029 – 1784	0.07 - 0.13%
Mon-khmer	2115	1370	1247		68		0.09%
Laotian	2070	914	909		209		
Persian	2615	882	836		160		
Nepali	<i>no data</i>	<i>no data</i>	<i>no data</i>		189	286 - 511	
German	8005	823	921		131		
French	5485	797	743		115		
Thai	1543	725	705		124		
Chuukese	<i>no data</i>	<i>no data</i>	<i>no data</i>	332 – 369	111	591 – 1432	
Serbo-Croatian	1290	584	738		149		
Karen	<i>no data</i>	<i>no data</i>	<i>no data</i>	<i>no data</i>	118	439 – 708	

^{\$} See note for Table B4 for more information about estimating Somali LEP population from the 2006-2008 state languages dataset.

APPENDIX A: LANGUAGE DISTRIBUTION MAPS

Figure A1: Distribution of Limited English Proficient population, native Spanish speakers: by census tracts, quintile distribution

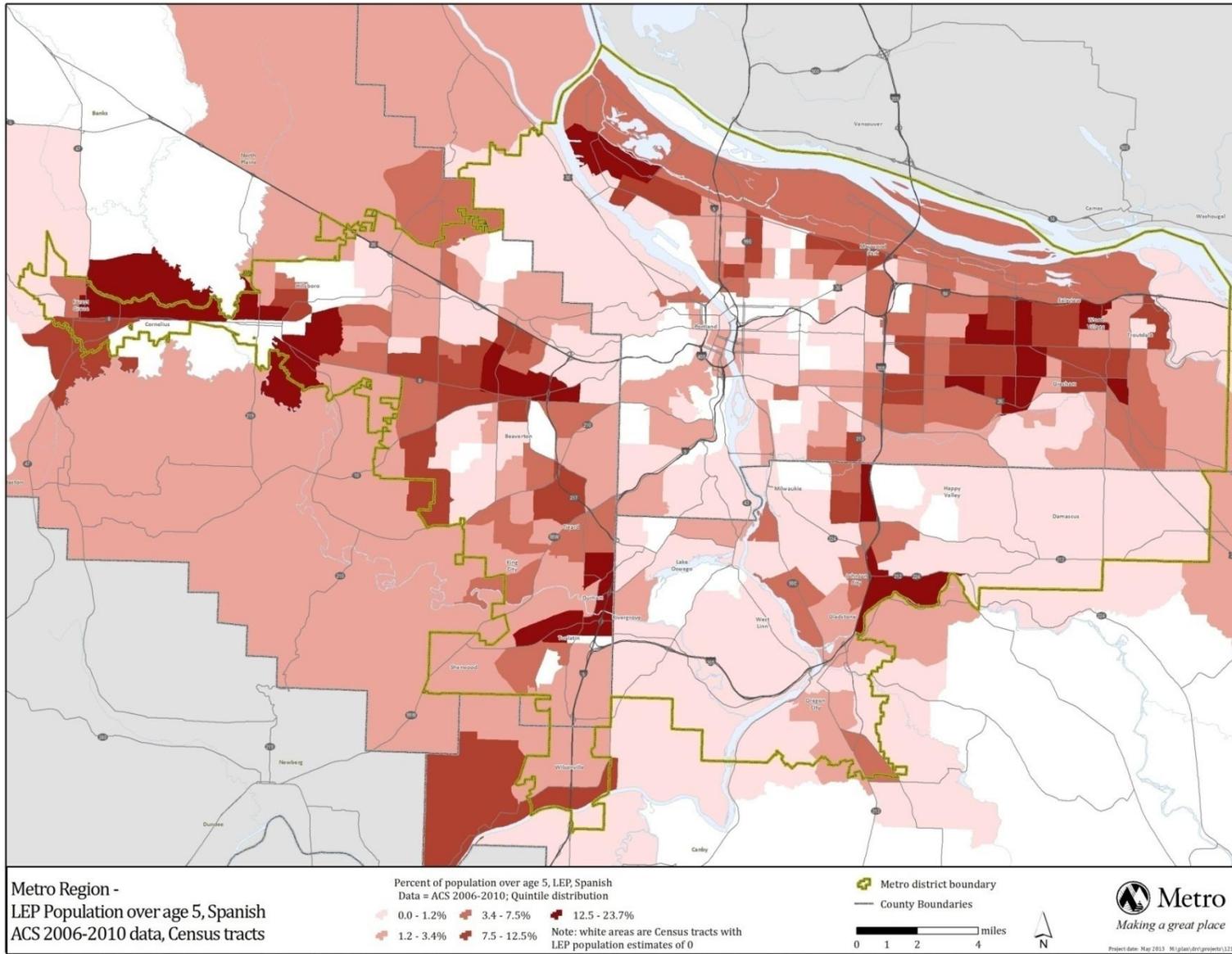


Figure A2: Distribution of Limited English Proficient population, native Vietnamese speakers, by census tracts, quintile distribution

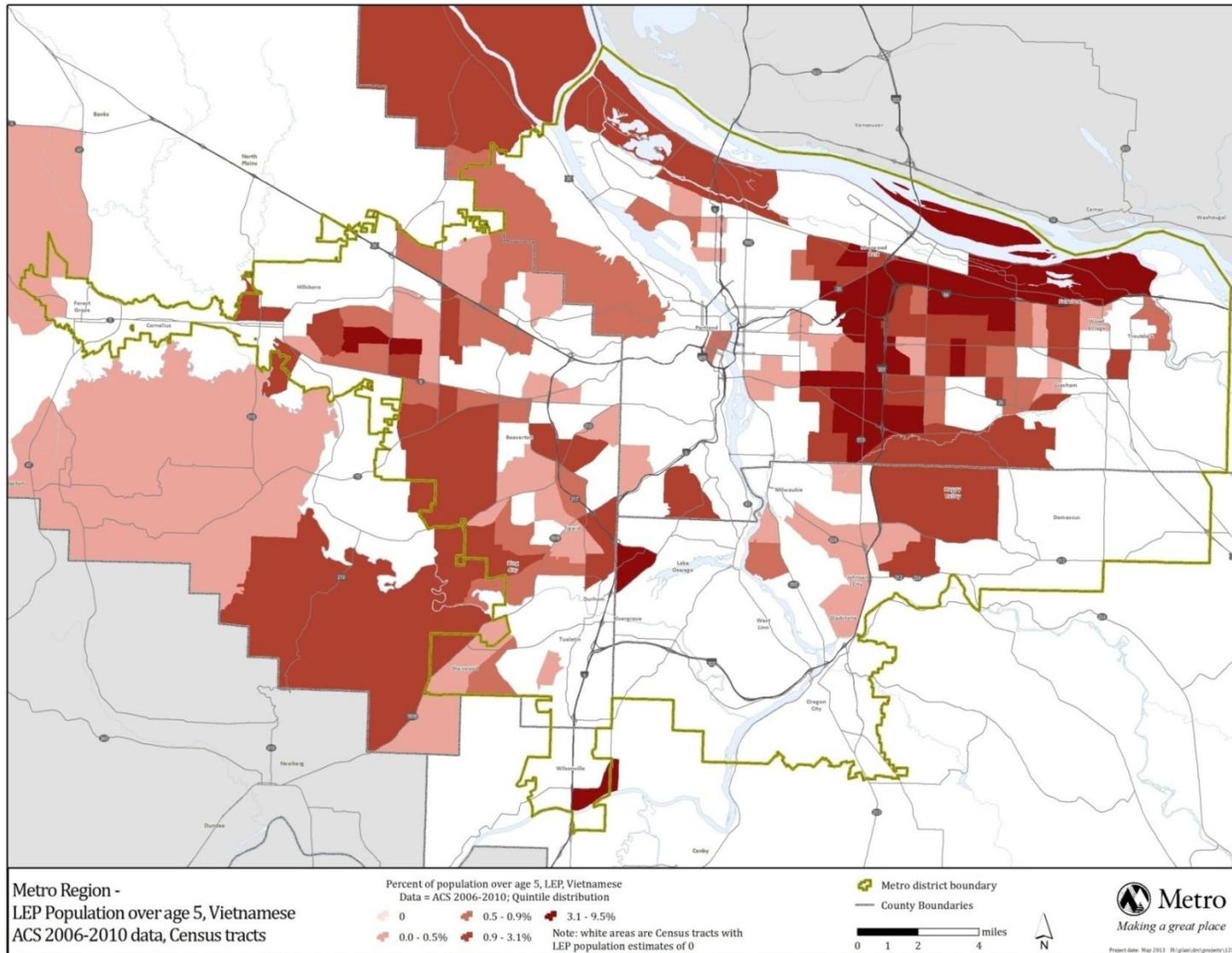


Figure A3: Distribution of Limited English Proficient population, native Chinese speakers, by census tracts, quintile distribution

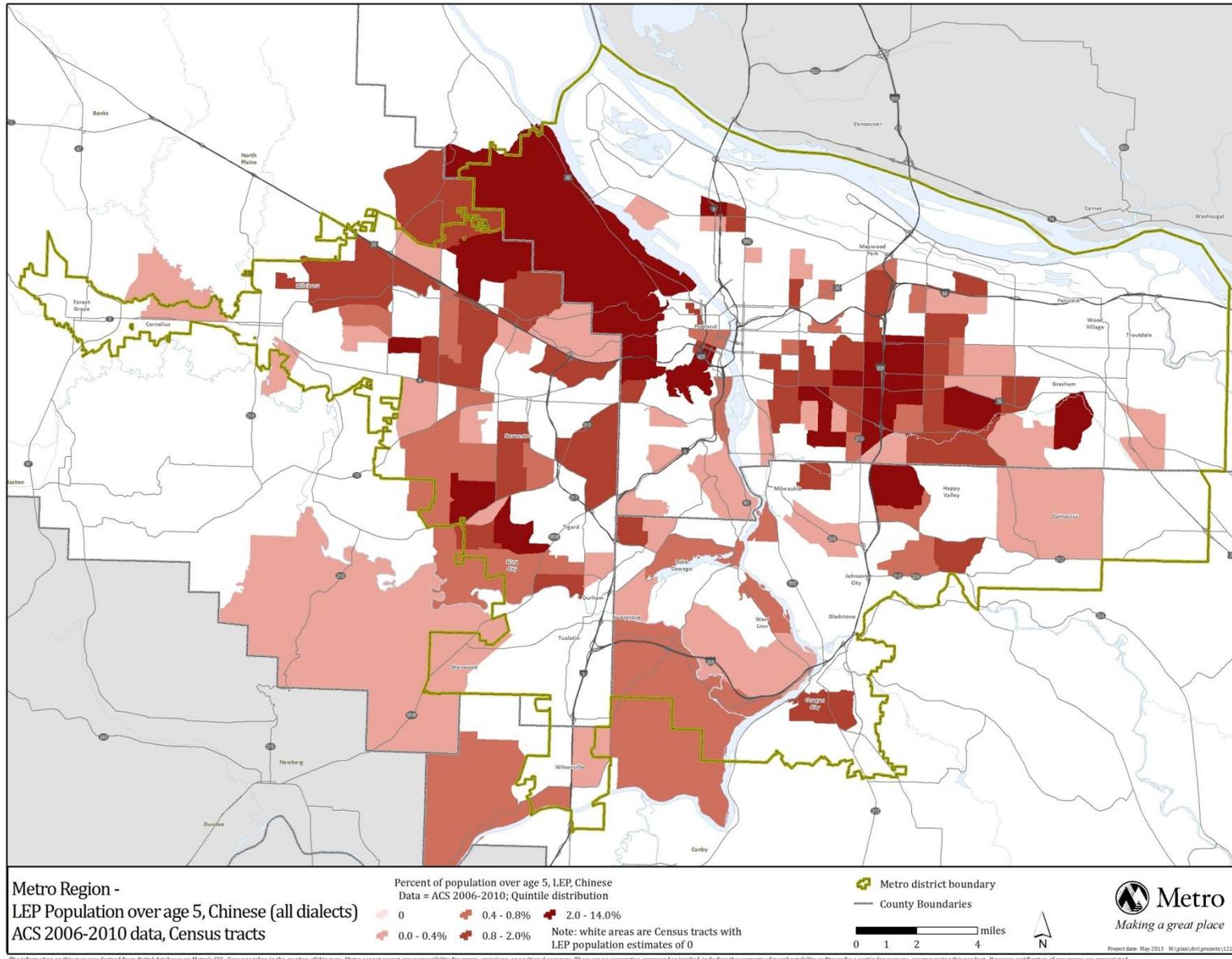


Figure A4: Distribution of Limited English Proficient population, native Russian speakers, by census tracts, quintile distribution

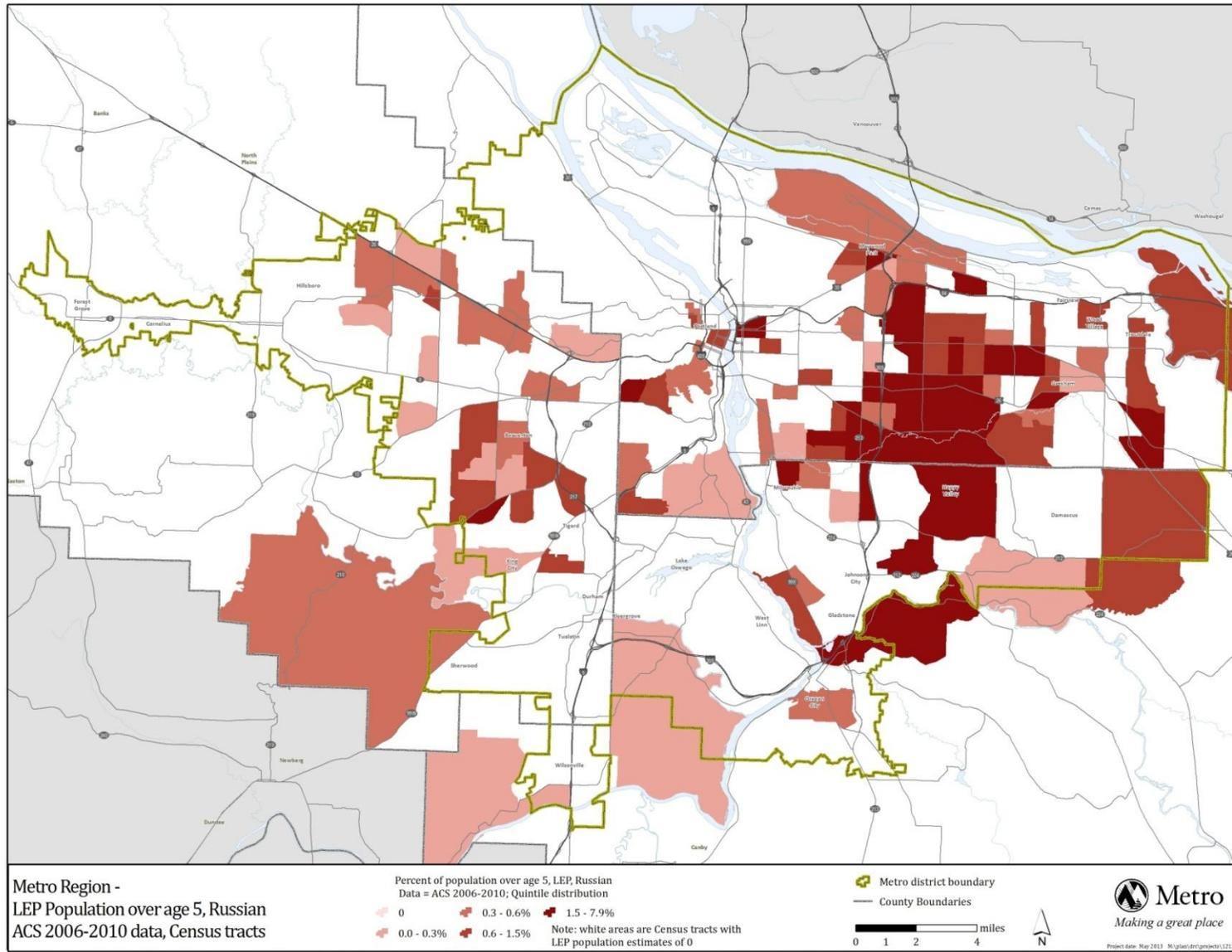


Figure A5: Distribution of Limited English Proficient population, native Korean speakers, by census tracts, quintile distribution

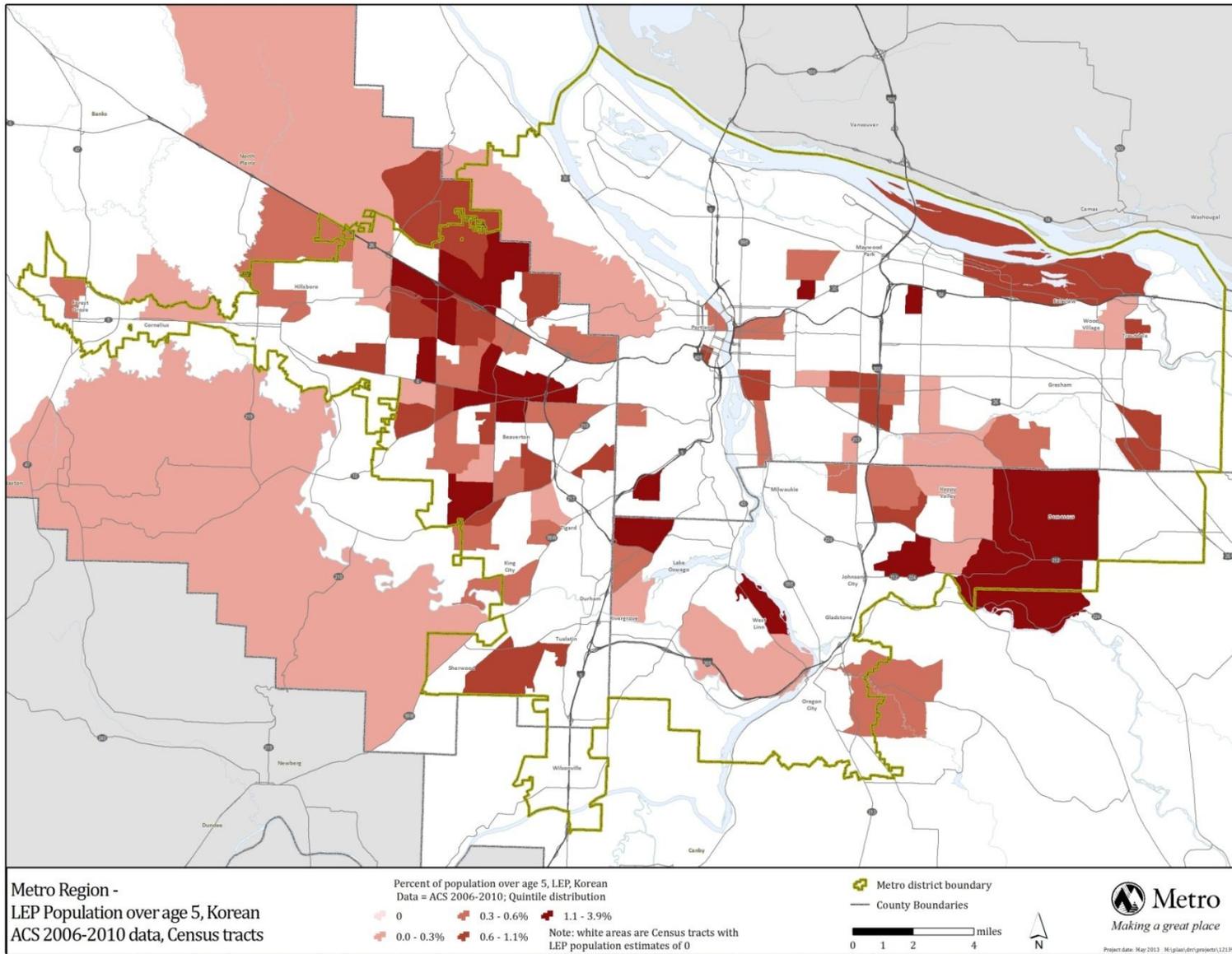
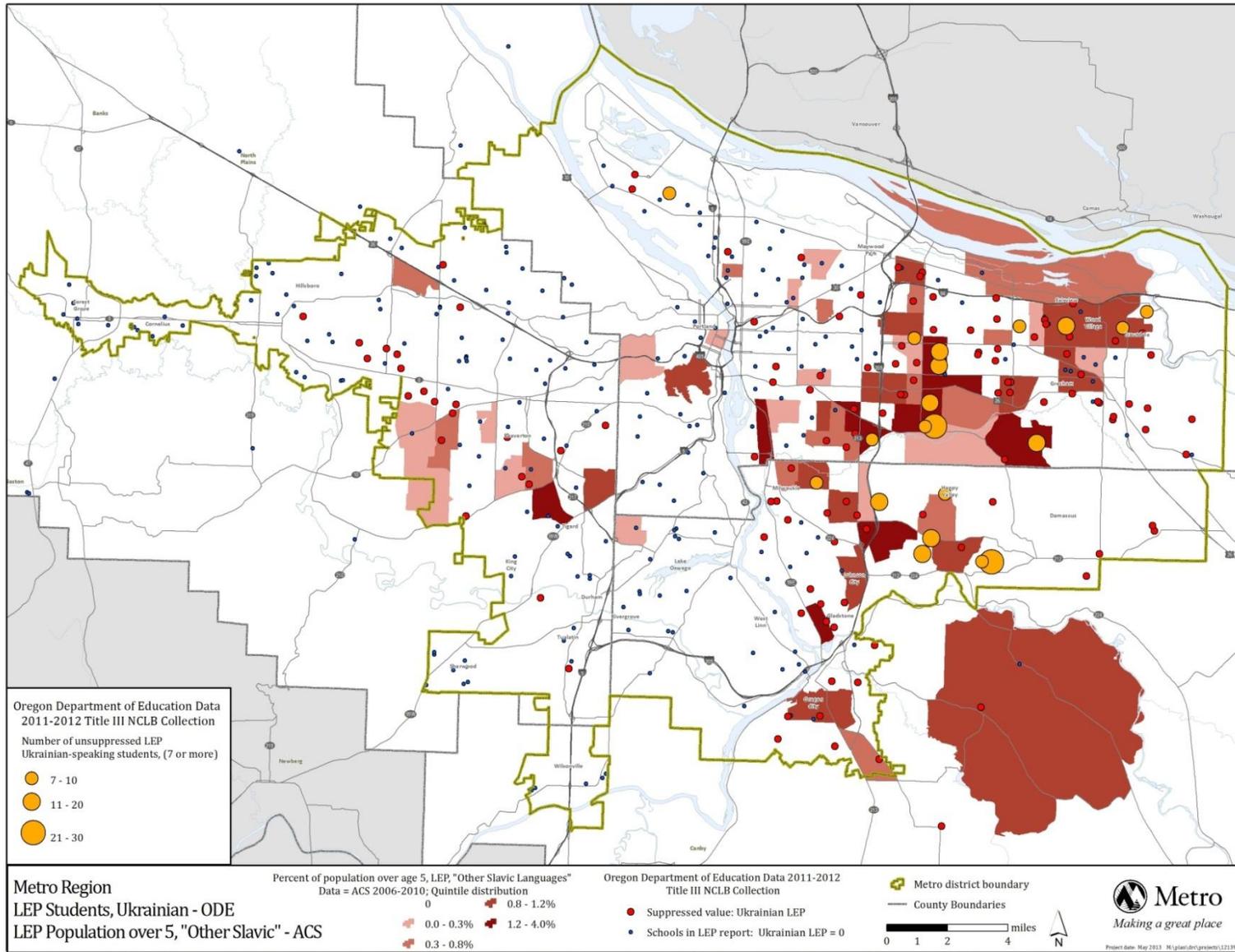


Figure A6: Distribution of Limited English Proficient population, Other Slavic languages, by census tracts, quintile distribution; and native Ukrainian speakers, by schools. Note that the total enrolled Ukrainian LEP school population displayed in the map is an undercount.



The information on this map was derived from digital databases on Metro's GIS. Care was taken in the creation of this map. Metro cannot accept any responsibility for errors, omissions, or positional accuracy. There are no warranties, expressed or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying this product. However, notification of any errors are appreciated.

Figure A7: Distribution of Limited English Proficient population, native Japanese speakers, by census tracts, quintile distribution

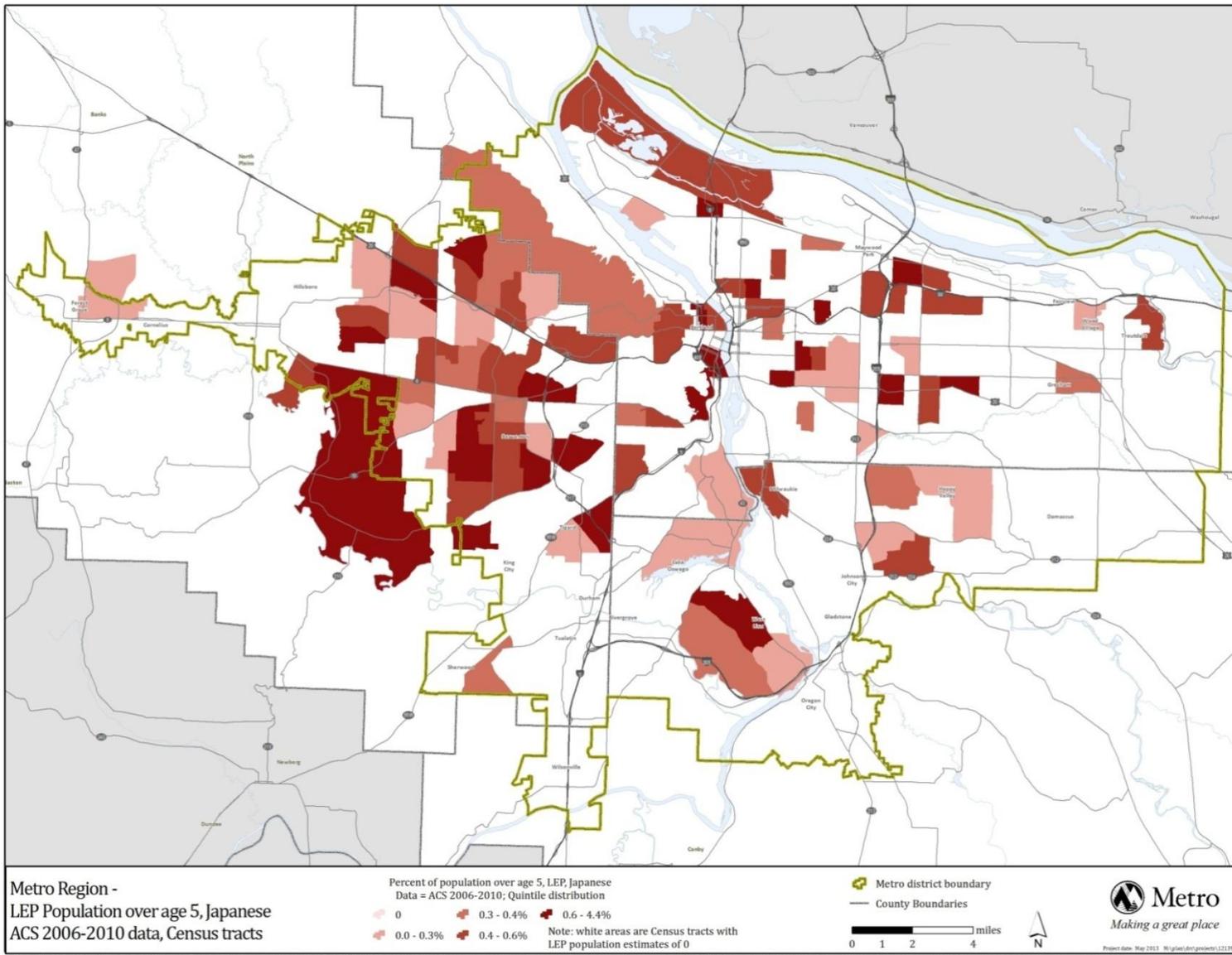


Figure A8: Distribution of Limited English Proficient population, Other Indo-European languages, by census tracts, quintile distribution; and native Romanian speakers, by schools. Note that the total enrolled Romanian LEP population in the map is an undercount.

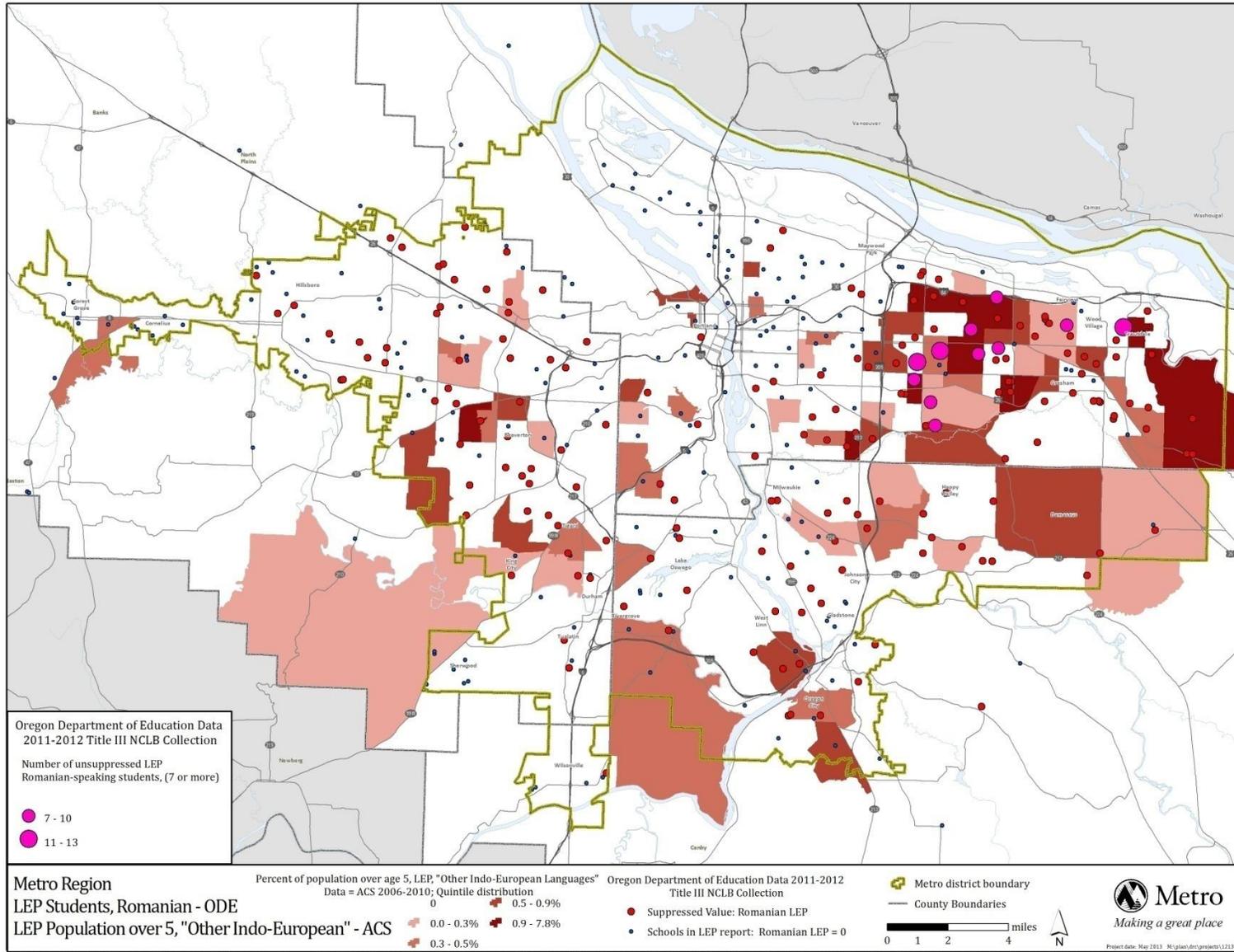


Figure A9: Distribution of Limited English Proficient population, native Tagalog speakers, by census tracts, quintile distribution

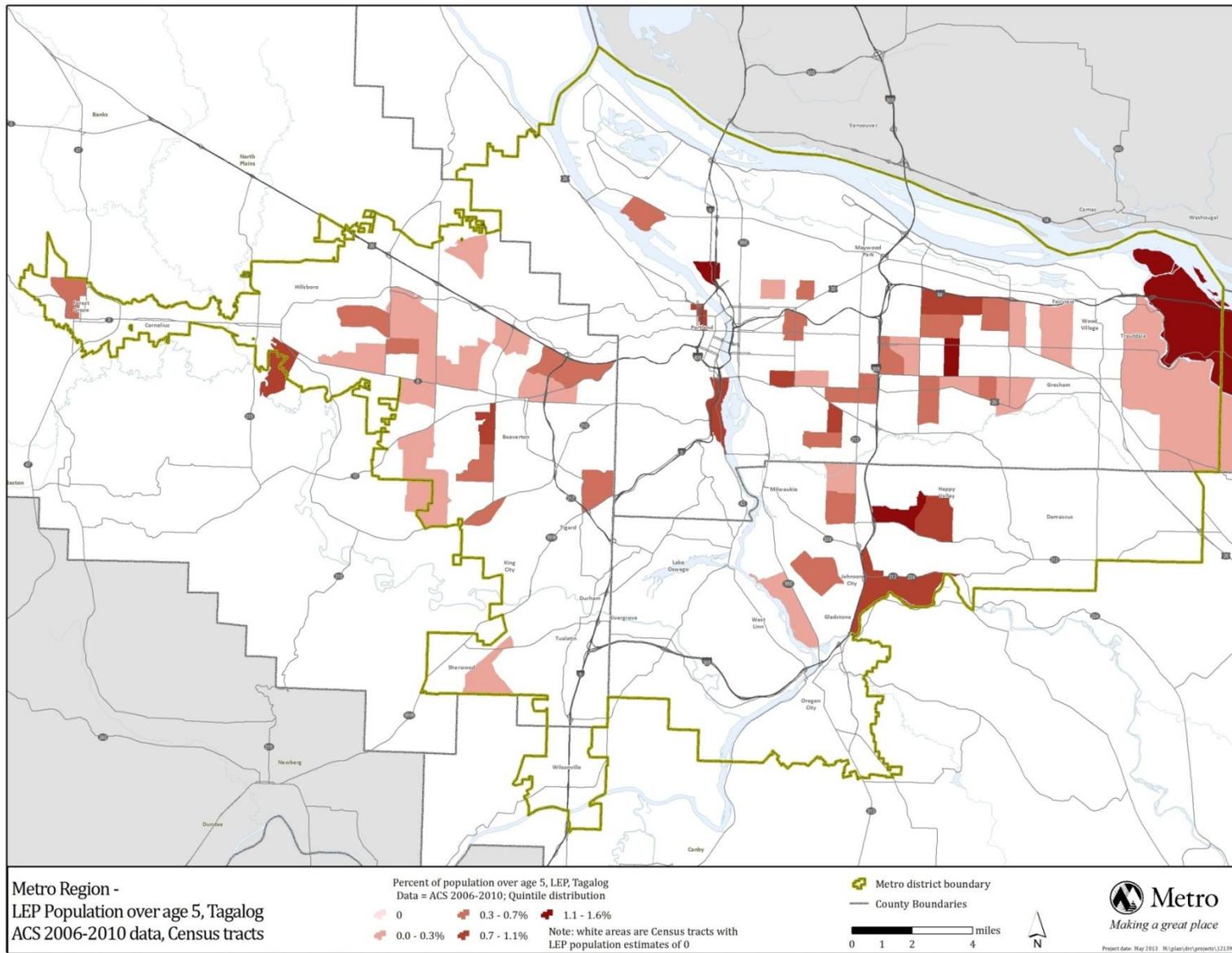


Figure A10: Distribution of Limited English Proficient population, native Arabic speakers, by census tracts, quintile distribution

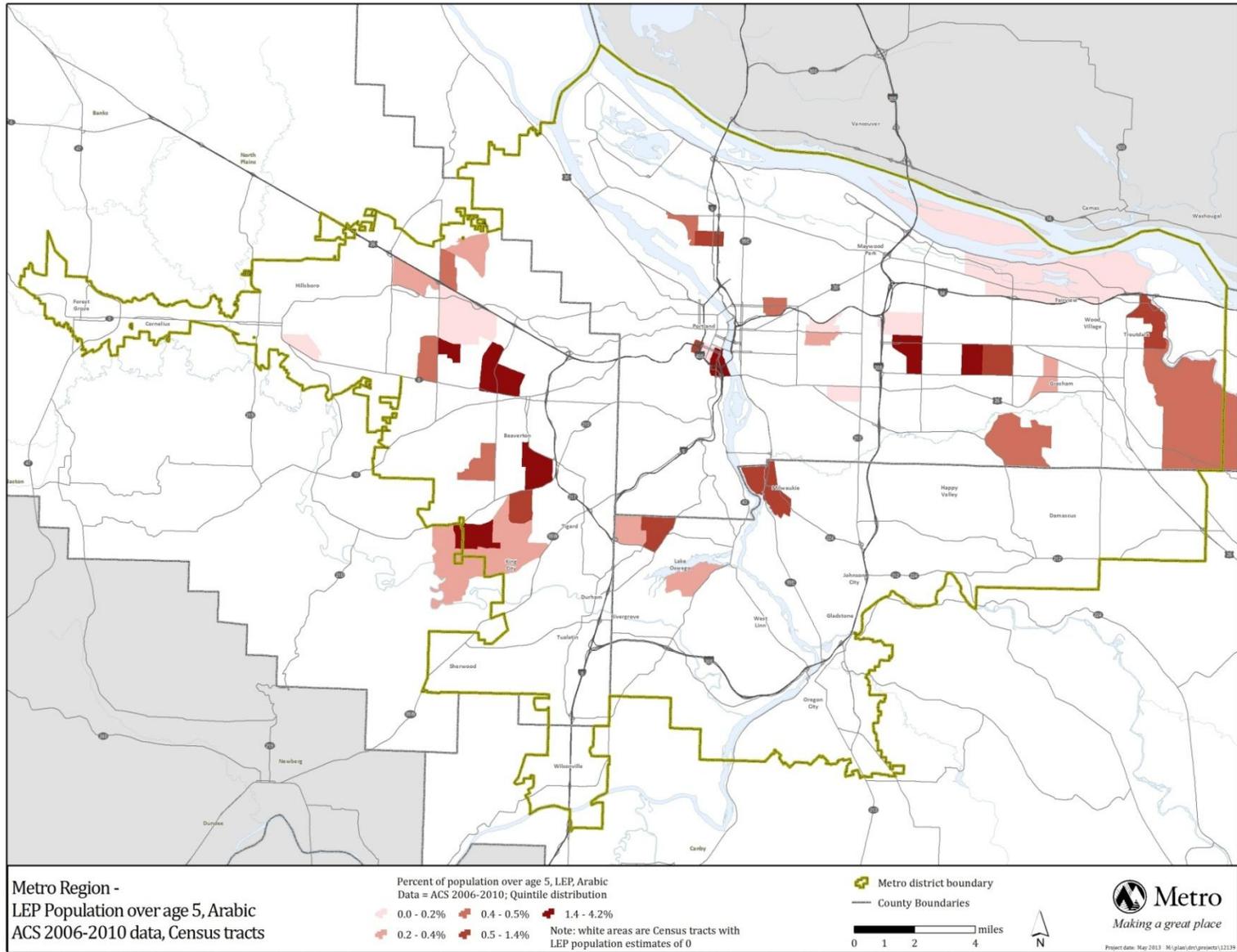
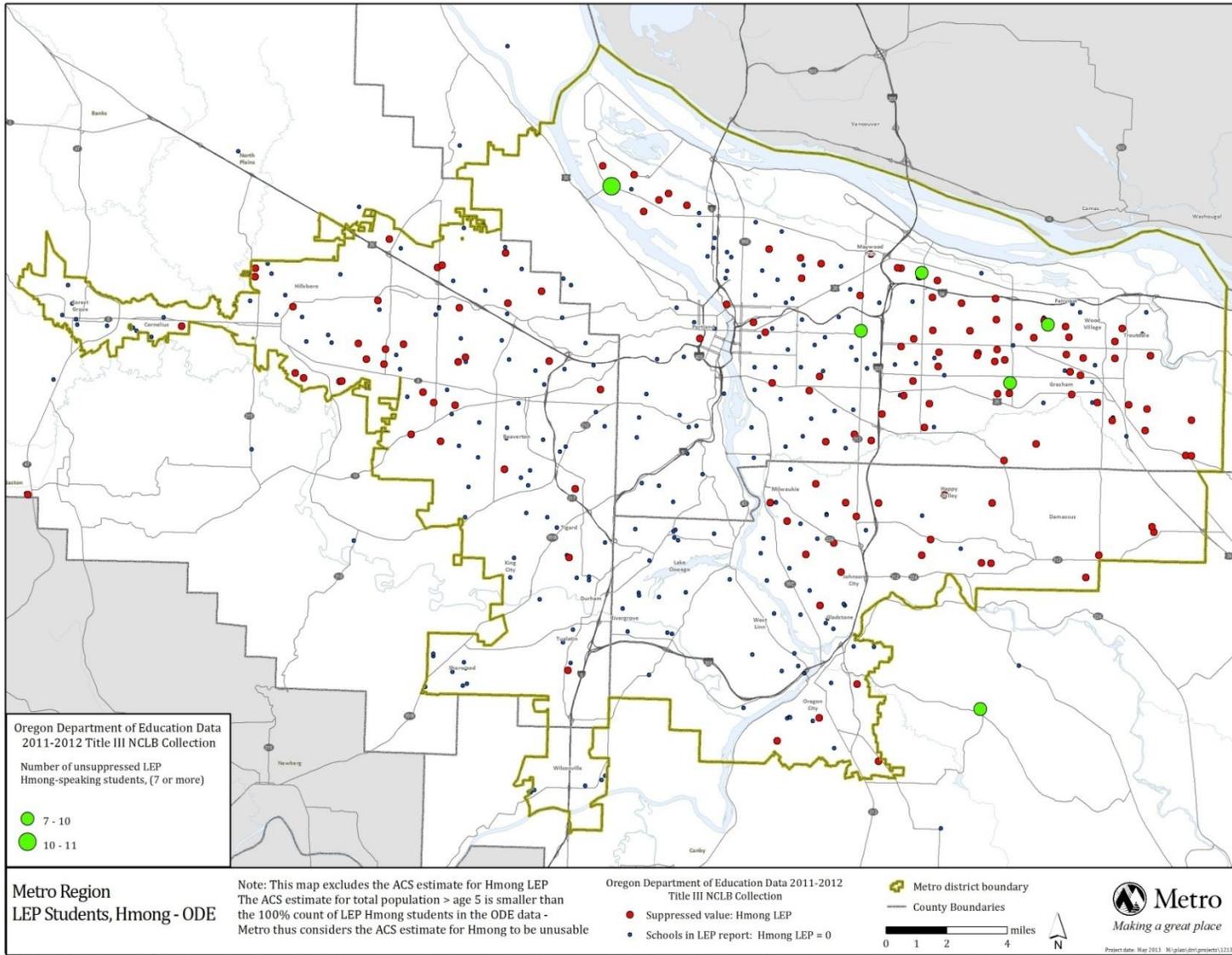


Figure A11: Distribution of Limited English Proficient population, Hmong language, by census tracts, quintile distribution; and native Hmong speakers, by schools. Note that the total enrolled Hmong LEP school population displayed in the map is an undercount.



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Figure A12: Distribution of Limited English Proficient population, African languages, by census tracts, quintile distribution; and native Somali speakers, by schools. Note that the total enrolled Somali LEP school population displayed in the map is an undercount.

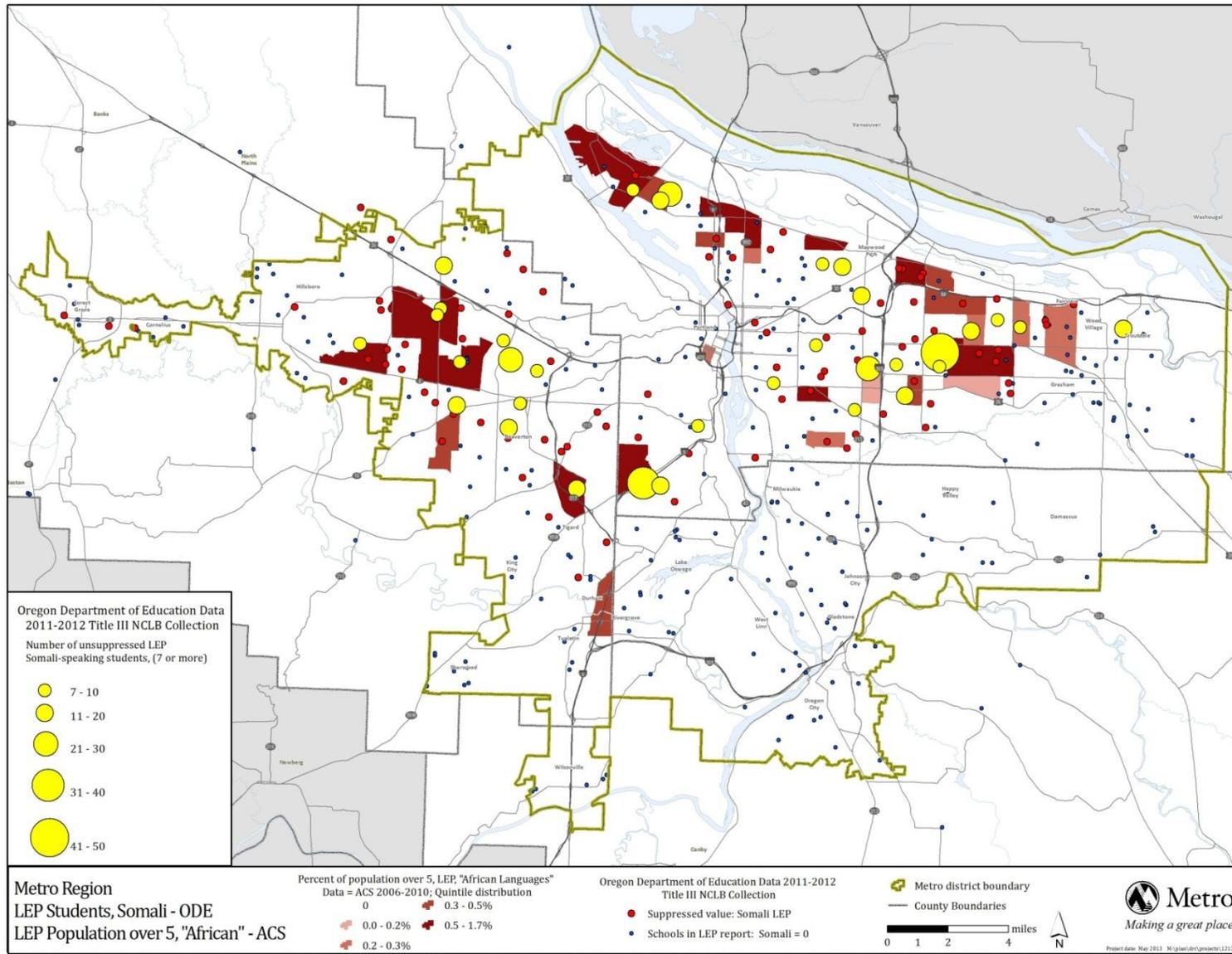
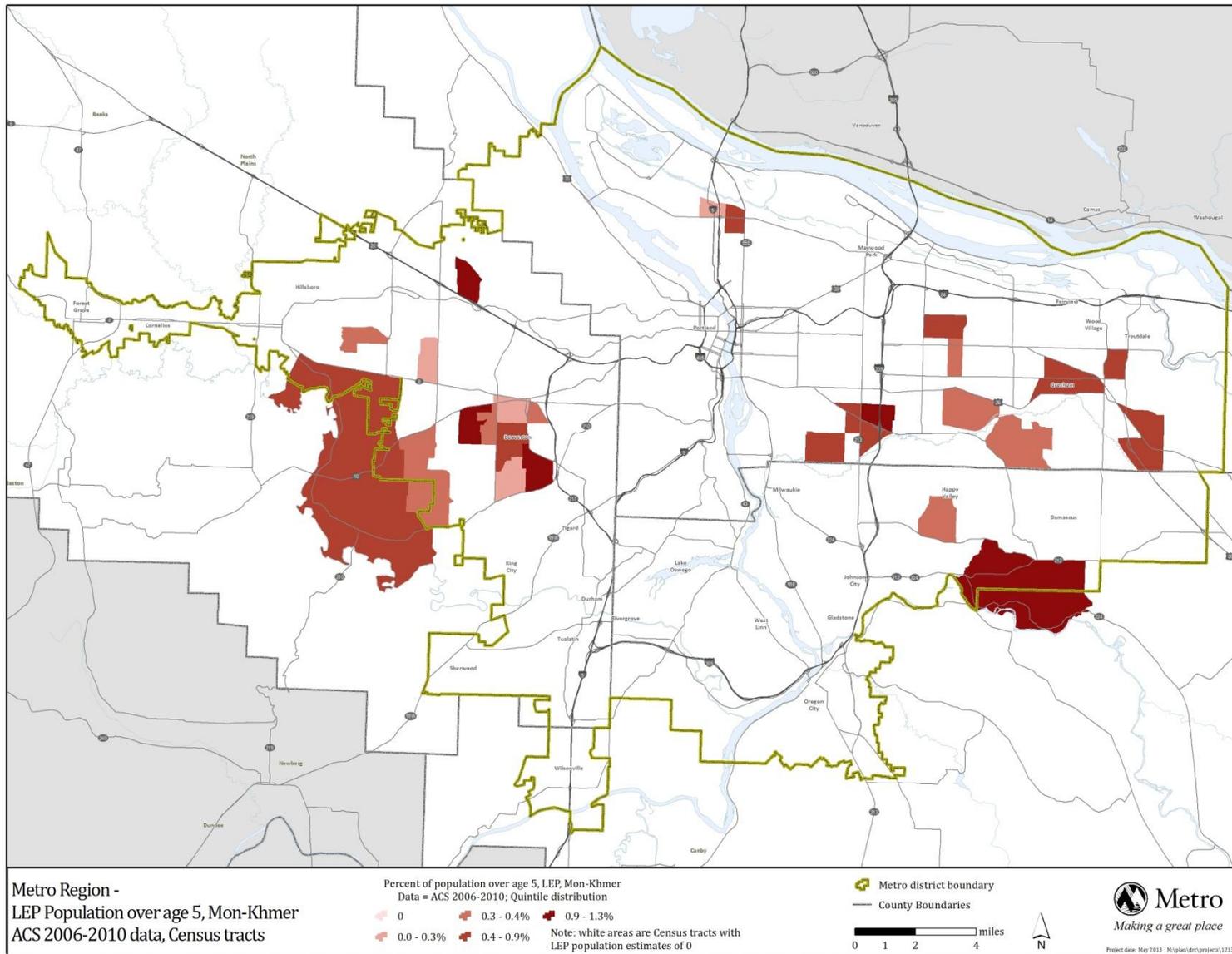


Figure A13: Distribution of Limited English Proficient population, native Mon-Khmer speakers, by census tracts, quintile distribution.



APPENDIX B: LIMITED ENGLISH PROFICIENT FACTOR 1 METHODOLOGY

Methods: American Community Survey data analysis

2006-2010 ACS 5-year estimate data: Census tracts

Oregon Metro's service area includes most of the populated areas of Clackamas, Multnomah, and Washington Counties, Oregon. However, its boundary conforms precisely neither to local political jurisdictions nor to the geographies of Census data. In order to estimate the LEP populations within the service area, we elected to collect and analyze Census data from the tract level. We selected all tracts that are either wholly or partly within Metro's service area boundary (Figure B1). This process yielded 331 Census tracts. We explicitly chose to analyze and map LEP data at the tract, rather than block group, level. We concluded that the margins of error for block group data in the ACS are too high to produce tolerably accurate estimated counts of LEP speakers, and maps showing the spatial distribution of these estimates at block group geography would be potentially misleading as a result. The fact that elementary school attendance areas (a large majority of LEP enrolled students are at the elementary school level) within the Metro jurisdiction tend to have similar spatial extent to census tracts also underpins our decision (Figure B2a and B2b).

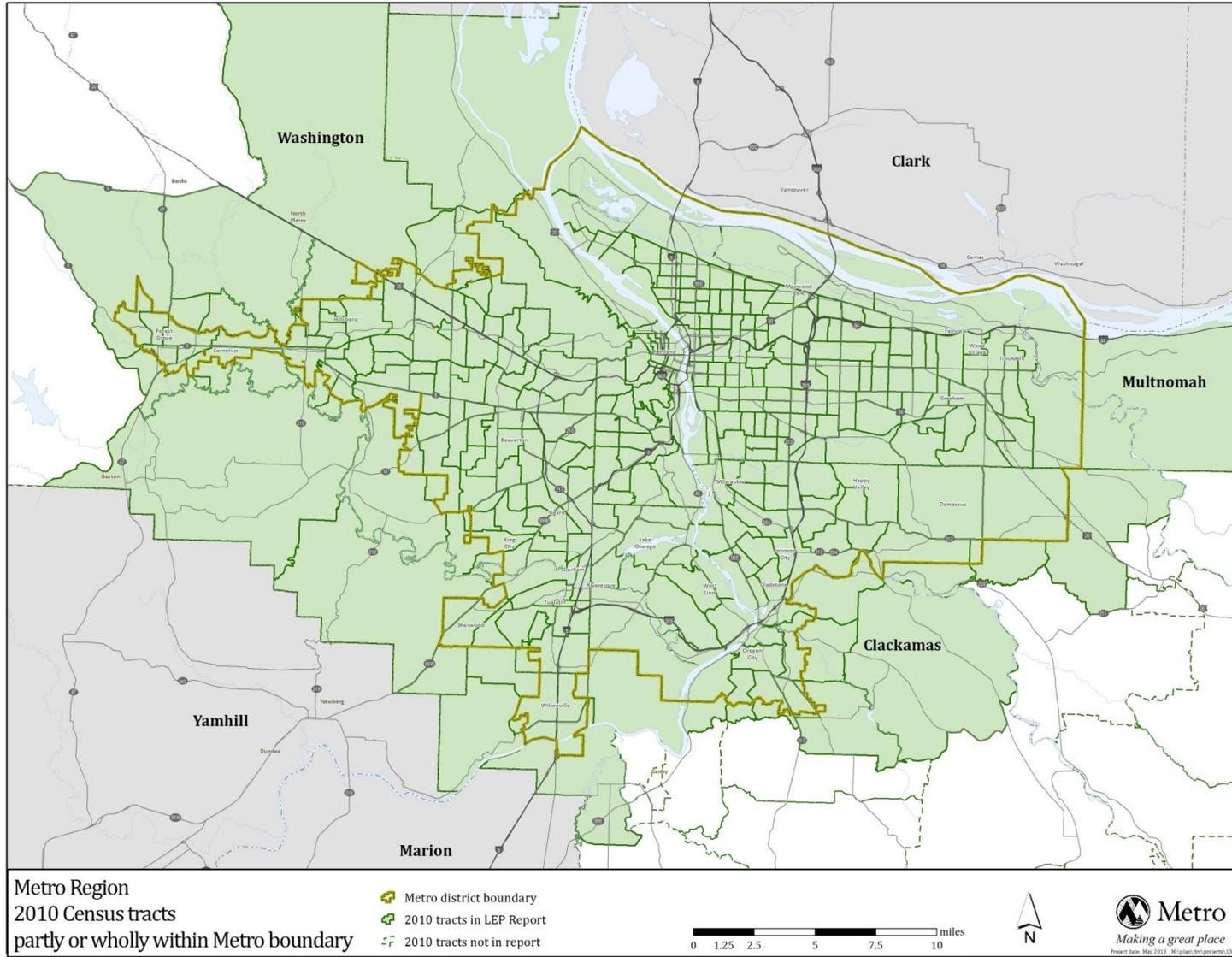
Language data from the ACS

The Census Bureau maintains 382 unique language codes for coding responses to the ACS surveys on the question of "what language do you speak at home?" However, citing economy and confidentiality protection, the Bureau collapses these into just 39 data lines, of which 29 are individual languages and 10 are either a language family, language group, or aggregation either of multiple groups within a family, or multiple families. For example: "African languages," one of these ten categories, aggregates every language, whether related or not related, from the African continent into a single data line.

The American Community Survey provides 61 tables within the population category "language spoken at home." In nearly all cases, however, the Bureau chooses to stick with four umbrella categories in addition to English: Spanish; Other Indo-European; Other Asian and Pacific Island; and "Other." Using tables with this high degree of categorical collapsing would result in a meaningless LEP analysis beyond Spanish.

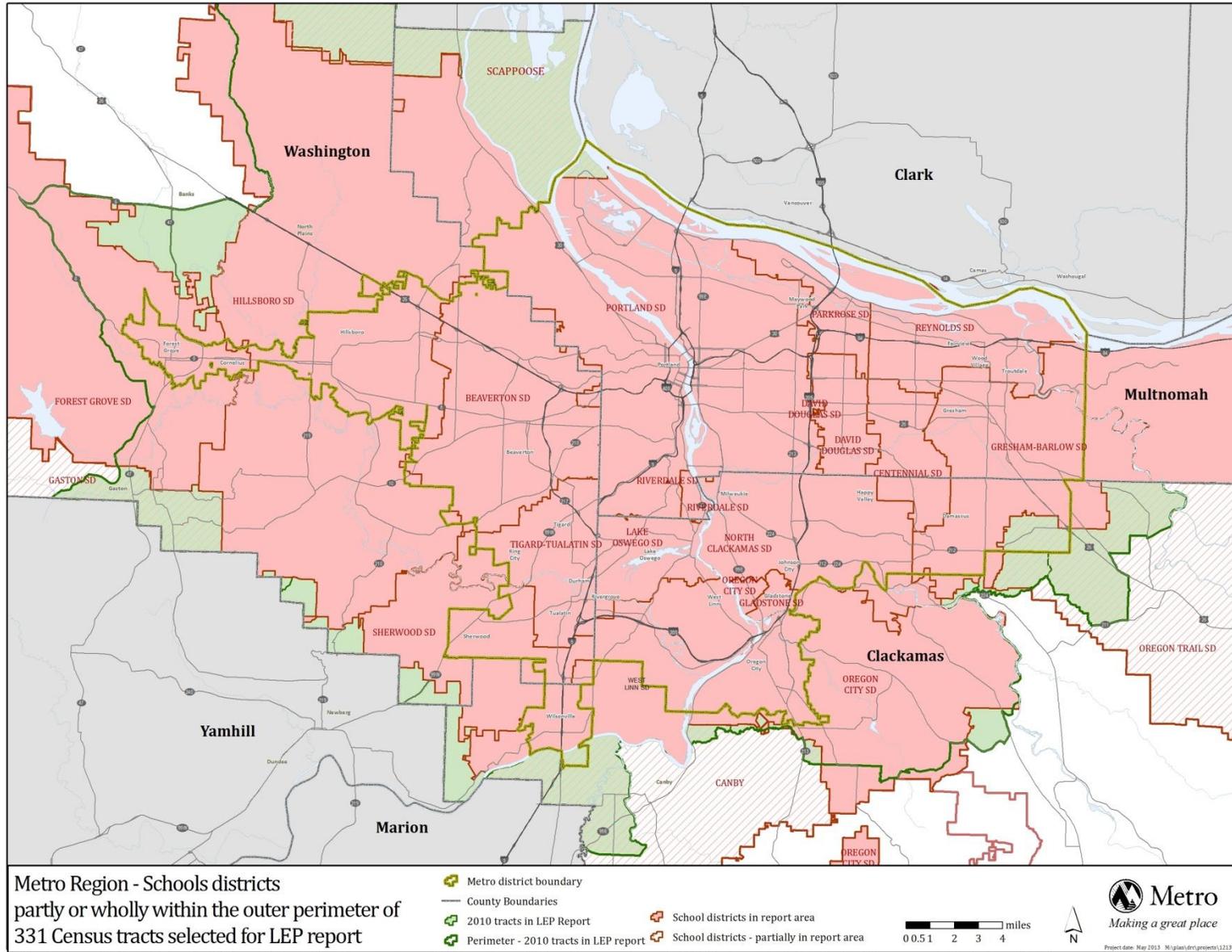
We chose to analyze data from table B16001: "Persons 5 Years and Older, by Language Spoken at Home, by English Proficiency." This table contains the most detailed breakout of languages spoken in the ACS: 29 individual languages plus the ten language groupings. Our first round of analysis, displayed in Tables B1 and B2, focused on the 29 individual languages from these tables. The "language group" populations require a second round of analysis, for which we use an additional data set and enrollment data from the Oregon Department of Education; these analyses are displayed in Tables B3 through B7.

Figure B1: Census tracts in Clackamas, Multnomah and Washington Counties selected for analysis of 2006-2010 ACS data



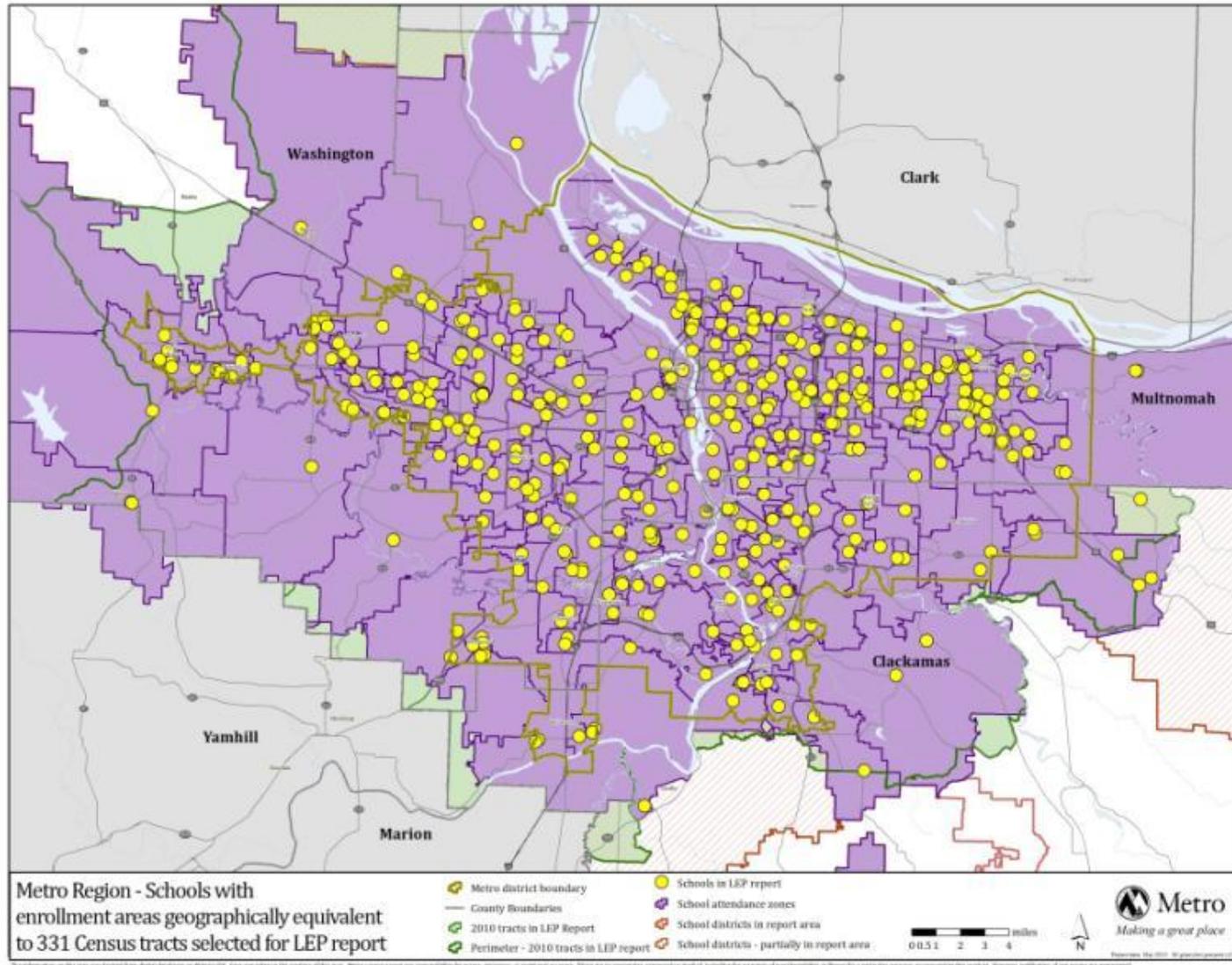
Sources: U.S. Census Bureau Cartographic Boundary Files; Oregon Metro RLIS network GIS data

Figure B2a: School districts wholly or partially included in Metro LEP analysis



Source: Oregon Department of Education, 2010-2011 School attendance zone data, Metro RLIS network GIS data

Figure B2b: Elementary school attendance area boundaries, Metro region



Source: Oregon School District 2010-2011 school attendance zone data

2007-2011 American Community Survey 5-year estimate, counties

Margin of error estimates are invalid when summary counts are arrived at by aggregating multiple estimates. Thus it is impossible to verify with certainty whether the populations of LEP speakers meet the 1,000 persons “safe harbor” threshold. The summary count of population estimates are within +/- 500 of the 1,000 persons safe harbor threshold. Margins of error for individual tracts in this data set are in the range of +/- 300. It is very possible that neither Arabic nor Mon-Khmer LEP populations are safe-harbor eligible if the actual counts represent the low end of the error estimate. Conversely, Laotian, French or Serbo-Croatian may be eligible if actual counts are at the upper bound of margins of error for each tract estimates.

To further refine our aggregate estimates in Table B1, we compared the aggregate census tract observations in with estimates of the same populations for all of Clackamas, Multnomah, and Washington Counties: all of Metro’s service area as well as outlying areas. By aggregating only three observations we are able to achieve a rough estimate of the margin of error for the entire population using a formula provided by the Census Bureau. For instances in which two to four observations are aggregated, the Bureau recommends using the following formula:

$$MOE (X + Y + Z) = SQRT [(MOE X)^2 + (MOE Y)^2 + (MOE Z)^2 + Covariance]$$

Because the covariance is not reported in the data release, the Bureau recommends treating it as zero. Using this formula we can estimate fairly accurate margins of error for all individual language LEP populations in Table B1 in order to determine whether those marginally above 1,000 (Arabic, Mon-Khmer) or below (Laotian, etc) may fall above or below the safe harbor threshold at the scale of all three counties. A population that falls below the threshold at the tri-county scale will certainly also fall below it within Metro’s jurisdiction. A population rising above the threshold at the tri-county scale may require further examination, but it is likely that it also rises above the threshold within Metro’s jurisdiction since the outlying areas of the three counties beyond the Metro boundary are sparsely populated⁴.

⁴ For further discussion of the problems with estimating margins of error in aggregated observations, refer to: http://www.census.gov/acs/www/Downloads/data_documentation/Accuracy/MultiyearACSAccuracyofData2010.pdf pages 21-28

Table B1: Principal languages eligible for safe harbor provisions in Metro-wide initiatives: census tracts within Metro region boundary. All individual languages with at least 1,000 primary speakers who speak English less than very well.

	Estimated persons, primary language is not English: language spoken at home	<i>Margin of error</i>	Estimated population that speaks other language at home: English less than very well = “LEP”	<i>Margin of error</i>	Percent of individual language population that Speaks English less than very well	Percent of total Metro region population that speaks English less than very well, by language	Percentage of all LEP persons in Metro region by individual languages
Total Metro Region population over 5 years old	1406347	<i>n/a</i>					
Total Metro region LEP population	265458		122511	<i>n/a</i>			
Spanish, incl. Spanish Creole	124643	<i>n/a</i>	64692	<i>n/a</i>	51.90%	4.60%	52.81%
Vietnamese	20329		12417		61.09%	0.88%	10.14%
Chinese	17013		9036		53.11%	0.64%	7.38%
Russian	13589		7105		52.28%	0.51%	5.80%
Korean	7953		4141		52.07%	0.29%	3.38%
Japanese	6839		2608		38.13%	0.19%	2.13%
Tagalog	5702		1705		29.90%	0.12%	1.39%
Arabic	4155		1460		35.14%	0.10%	1.19%

Mon-Khmer Cambodian	2115		1370		64.78%	0.09%	1.12%
Laotian	2070		914		44.15%	0.06%	0.75%
Persian	2615		882		33.73%	0.06%	0.72%
German	8005		823		10.28%	0.06%	0.67%
French, incl. Patois, Cajun	5485		797		14.53%	0.06%	0.65%
Thai	1543		725		46.99%	0.05%	0.59%
Serbian-Croatian	1290		584		45.27%	0.04%	0.48%

Source: 2006-2010 ACS. Numbers are aggregated estimates from all 331 census tracts that are wholly or partly within the Metro region boundary. [This procedure invalidates margin of error estimates for each individual tract estimate; hence they are not reported.](#) These data are corroborated with tri-county data from the 2007-2011 Census for which margins of error can be aggregated. See Table B2.

The tri-county LEP population estimates are listed in Table B2. As with the tract data, no language spoken at home within Metro’s jurisdiction has enough LEP speakers to reach the 5% of total population threshold identified in the Department of Justice Title VI guidelines. The same top-seven languages appear in nearly identical relative proportion to the tract data. It is possible that the population of LEP Mon-khmer speakers *might* be less than 1,000 in the tri-county area if the lower bound of the margin of error is applied; hence within the Metro jurisdiction as well. Similarly, the number of German, Laotian and Persian LEP speakers *might* exceed 1,000 in the tri-county area, and hence within Metro’s jurisdiction.

Table B2: Principal languages eligible for safe harbor provisions in Metro-wide initiatives: Tri-county region. All individual languages with enough primary speakers who speak English less than very well after accounting for the possibility that the upper margin of error bound is above 1,000 speakers.

Total Tri-County Population over 5 years old: 1517784		+ / - 122					
	Estimated population primary language not English: language spoken at home	Estimated aggregate margin of error (calculated)	Estimated population, language other than English at home, speaks English less than very well = “LEP”	Estimated aggregate margin of error (calculated)	Percent of individual language population that Speaks English less than very well	Percent of total tri-county population that speaks English less than very well, by language	Percentage of all LEP persons in tri-county region by individual languages
Total	283651	+ / - 4293	128339	+ / - 2720			
Spanish, incl. Spanish Creole	134905	+ / - 2222	67501	+ / - 2144	50.04%	4.45%	52.60%
Vietnamese	21116	+ / - 1556	13314	+ / - 1157	63.05%	0.88%	10.37%
Chinese	17872	+ / - 1358	9322	+ / - 991	52.16%	0.61%	7.26%

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Russian	14505	+ / - 1543	6775	+ / - 856	46.70%	0.45%	5.28%
Korean	7982	+ / - 1075	4192	+ / - 646	52.51%	0.28%	3.27%
Japanese	6385	+ / - 734	2378	+ / - 431	37.24%	0.16%	1.85%
Arabic	4523	+ / - 959	1578	+ / - 562	34.89%	0.10%	1.23%
Tagalog	5692	+ / - 735	1420	+ / - 329	24.95%	0.09%	1.11%
Mon-khmer Cambodian	2411	+ / - 559	1247	+ / - 346	51.72%	0.08%	0.97%
German	7913	+ / - 736	921	+ / - 238	11.66%	0.06%	0.72%
Laotian	2364	+ / - 654	909	+ / - 353	38.75%	0.06%	0.71%
Persian	2406	+ / - 589	836	+ / - 274	34.74%	0.06%	0.65%
French, incl. Patios, Cajun	5696	+ / - 569	743	+ / - 179	13.04%	0.05%	0.58%
Serbo-Croatian	1705	+ / - 448	738	+ / - 238	43.28%	0.05%	0.58%
Thai	1574	+ / - 449	705	+ / - 219	44.79%	0.05%	0.55%

Source: 2007-2011 ACS. Note that the cell values in columns 2 and 4 represent aggregates of only three observations, for which it is possible to use a formula to calculate an approximate margin of error (reference Table B1).

Consult state and local sources of data

Further analysis: languages not routinely reported in the ACS

The 5-year ACS data, for both tracts and counties, aggregates many individual native language populations into the language groups, language families, or aggregates of families to which they belong, and reports the group or aggregate estimate in lieu of separate rows for each constituent language. This results in ten “other languages” categories in Census Table B16001. The categories are not equivalent in terms of linguistic family trees. For example, the “other Indo-European” category does not include estimated counts for the two categories below that are subsidiary to it. The categories are:

- Other Indo European languages (family)
- 1) Other Indic languages (group within Indo-European language family)
- 2) Other Slavic languages (group within Indo-European language family)
- 3) Other West Germanic languages (group within Indo-European language family)
- 4) Scandinavian languages (group within Indo-European language family)
- 5) Other Indo European languages (remaining languages in this family)
- 6) Other Asian languages (aggregate of multiple language families)
- 7) Other Pacific Island languages (equivalent to the Austronesian language family)
- 8) African languages (aggregate of multiple language families)
- 9) Other Native North American languages (aggregate of multiple language families)
- 10) Other and unspecified languages

Of these, five have estimated LEP populations in the census of greater than 1,000. Table B3 compares estimates for language group or family populations from the ACS tract and county data for these five groups plus “Other Indic,” which is the largest of the non-safe harbor eligible language group populations. The margins of error shown for the county data are calculated in the same manner as the procedure for Table B2.

2006-2008 ACS, State of Oregon, Detailed Languages (Table 39, release April 2010)

To estimate the population of individual language speakers embedded within each of the groups shown in Table B3, we compared the aggregate estimates of non-English native language group or family population from the 331 tract and 3 county ACS data sets with the state estimate from Table 39⁵. The results of this estimation procedure are shown in Tables B4a and B4b. The procedure is as follows:

- Collect state-wide population estimates for total persons and LEP persons speaking one of the 135 languages, language families, or groups, listed in Table 39.
- Compute the ratio of state-wide population to tri-county population and Metro area tracts population for the major groupings listed in Table B3. For example, the ratio of statewide

⁵ <http://www.census.gov/hhes/socdemo/language/data/other/usernote.html>

population to Metro area tracts population of persons speaking an “Other Indo-European” language at home is 0.8121 (refer to Table B4a).

- Multiply the resulting ratio by the state-wide population estimate for each individual language population reported within the grouping to which it belongs in the ACS data releases. For example, for all persons speaking Romanian at home = $0.8121 * 5187$ (statewide estimate, Table 39) = 4213. (Table B4b)

The product is at best a rough estimate of the individual native language population and its LEP fraction in either the Metro region (331 tracts) or tri-county region. There are two significant problems with the procedure:

- The elapsed time span between the estimation of data in Table 39 and Metro-region tract data is approximately 5 years. For smaller populations that are primarily the result of immigration, significant growth may have occurred during that interval, resulting in a serious under-estimate of the population.
- The procedure assumes that the distribution of individual languages is spatially consistent with that of the major language grouping to which they belong, and that there was no significant shift in the distribution of the major grouping population within the boundaries of the State of Oregon during the elapsed 5 year period.

Because this analysis is highly provisional, we collected and analyzed data from the Oregon Department of Education to further explore the gaps in the standard ACS data.

Table B3: Individuals who speak one of a group of languages within a language family and MAY be subject to safe harbor provisions depending upon corroboration from other data sources. All language groups with at least 1,000 primary speakers who speak English less than very well.

	Estimated population primary language not English: language spoken at home	<i>Margin of error</i>	Estimated population primary language not English: language spoken at home	<i>Margin of error</i>	Estimated Population that speaks English less than very well	<i>Margin of error</i>	Estimated Population that speaks English less than very well	<i>Margin of error</i>	Percent of total Tri-county population that speaks one language of this group at home and is LEP
Data Set	2006-2010 ACS: 331 Tracts		2007-2011 ACS: 3 Counties		2006-2010 ACS: 331 Tracts		2007-2011 ACS: 3 Counties		
Total population over 5 years old	1406347	<i>n/a</i>	1517784	<i>+ / - 122</i>		<i>n/a</i>			
Total LEP population	265458		283651	<i>+ / - 4293</i>	122511		128339	<i>+ / - 2720</i>	
Other Slavic	6022	<i>n/a</i>	6596	<i>+ / - 1114</i>	3109	<i>n/a</i>	3248	<i>+ / - 580</i>	0.20%
Other Indo-European	5360	<i>n/a</i>	5449	<i>+ / - 986</i>	2266	<i>n/a</i>	2365	<i>+ / - 535</i>	0.16%
Other Asian	5495	<i>n/a</i>	6142	<i>+ / - 951</i>	1755	<i>n/a</i>	2010	<i>+ / - 581</i>	0.13%
African	4255	<i>n/a</i>	4896	<i>+ / - 969</i>	1705	<i>n/a</i>	1981	<i>+ / - 514</i>	0.13%
Other Pacific Island	3455	<i>n/a</i>	3972	<i>+ / - 618</i>	1228	<i>n/a</i>	1363	<i>+ / - 352</i>	0.09%
Other Indic	2859	<i>n/a</i>	3765	<i>+ / - 915</i>	562	<i>n/a</i>	1191	<i>+ / - 489</i>	0.08%

Source: 2006-2010 ACS, census tract data and 2007-2011 ACS, County Data.

Table B4a: Estimated individuals who speak a specific language embedded in a language group or family as published in the Census and MAY be subject to safe harbor provisions depending upon corroboration from other data sources.

	Estimated total population over age 5		<i>Margin of error</i>	Estimated total population over age 5, LEP		<i>Margin of error</i>	Percent of language group that is LEP	
	Data set	331 tracts		Oregon	331 tracts		Oregon	3 Counties
Total		265458	493513	<i>n/a</i>	122511	227081	<i>n/a</i>	
	<i>Ratio</i>	<i>0.5379</i>			<i>0.5395</i>			
Language spoken at home	Other Slavic	6022	6872	<i>n/a</i>	3109	3644	<i>n/a</i>	49.24%
		<i>Ratio</i>	<i>0.8763</i>		<i>0.8532</i>			
	<u>Ukrainian</u>	4611	5261		2682	3143		
	<u>Slovak</u>	501	571		273	320		
	Other Indo-European	5360	6600	<i>n/a</i>	2266	2483	<i>n/a</i>	43.40%
		<i>Ratio</i>	<i>0.8121</i>		<i>0.9126</i>			
	<u>Romanian</u>	4213	5187		1856	2033		
	<u>Albanian</u>	293	361		135	148		
	Other Asian	5495	5810	<i>n/a</i>	1755	1674	<i>n/a</i>	32.73%
		<i>Ratio</i>	<i>0.9458</i>		<i>1.0484</i>			
	<u>Telugu</u>	1353	1431		638	608		
	<u>Mien</u>	1208	1277		610	582		
	African	4255	5206	<i>n/a</i>	1705	1849	<i>n/a</i>	40.46%

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	<i>Ratio</i>	<i>0.8173</i>			<i>0.9221</i>			
	<u>Cushite*</u>	2141	2619		784	850		
	<u>Amharic</u>	890	1088		536	581		
	Other Pacific Island	3455	4967	<i>n/a</i>	1228	1798	<i>n/a</i>	34.32%
	<i>Ratio</i>	<i>0.6956</i>			<i>0.6830</i>			
	<u>Chuukese</u>	573	824		332	486		56.00%
	<u>Marshallese</u>	324	466		209	306		
	Other Indic	2859	3473	<i>n/a</i>	562	699	<i>n/a</i>	31.63%
	<i>Ratio</i>	<i>0.8232</i>			<i>0.8040</i>			
	<u>Punjabi</u>	999	1213		271	337		
	<u>Bengali</u>	511	620		108	134		

Sources: 2006-2010 ACS, tract data; 2006-2008 ACS, state of Oregon detailed languages table 39 (see text for discussion of this special tabulation). Cell values in *italics* are estimates for total population over age 5, and LEP population over 5 for non-native English language speakers. **Bolded** values highlight estimated LEP populations within the Metro service area greater than 1,000. ⁵ “Cushite” is not a language but a branch of the Afro-Asiatic language family. Cushitic languages are generally native to the horn of Africa region. They include Oromo (Ethiopia, Kenya), Somali (Somalia, Kenya) and Sidamo (Ethiopia). ⁶ For example, the percentage of all “Other Slavic” speakers whose native language is Ukrainian: all speakers | LEP speakers

Table B4b: Estimated Individuals who speak a specific language embedded in a language group or family as published in the Census and MAY be subject to safe harbor provisions depending upon corroboration from other data sources.

		Estimated total population over age 5, spoke a language other than English at home					Estimated total population over age 5, spoke a language other than English at home, LEP					Percent of language group, 3 Counties [%]	
		Oregon (Table 39)	MOE	Ratio, counties to state	3 Counties (Table B16001)	MOE	Oregon (Table 39)	MOE	Ratio, counties to state	3 Counties (Table B16001)	MOE	All native speakers	Native speakers: LEP
	Total	493513	+/- 6059		265468		227081	+/- 4693		122511			
Language spoken at home	Other Slavic	6872	+/- 1515	0.9598	6596		3644	+/- 1010	0.8913	3248			
	Ukrainian	5261	+/- 1476	0.9598	5050	n/a	3143	+/- 953	0.8913	2801	n/a	76.6% 86.2%	
	Slovak	571	+/- 407	0.9598	570	n/a	320	+/- 356	0.8913	285	n/a	8.6% 8.8%	
	Other Indo-European	6600	+/- 1437	0.8256	5449		2483	+/- 705	0.9525	2365			
	Romanian	5187	+/- 2033	0.8256	4283	n/a	2033	+/- 609	0.9525	1936	n/a	78.6% 81.9%	
	Albanian	361	+/- 148	0.8256	298	n/a	148	+/- 220	0.9525	141	n/a	5.5% 6.0%	
	Other Asian	5810	+/- 1155	1.1036	6142		1674	+/- 594	1.2007	2010			
	Telugu	1431	+/- 601	1.1036	1579	n/a	608	+/- 403	1.2007	730	n/a	25.7% 36.3%	
	Mien	1277	+/- 681	1.1036	1410	n/a	582	+/- 418	1.2007	699	n/a	23.0% 34.8%	
	African	5206	+/- 1181	0.9405	4896		1849	+/- 543	1.0714	1981			
	Cushite ^s	2619	+/- 1086	0.9405	2463	n/a	850	+/- 470	1.0714	911	n/a	50.3% 46.0%	
	Amharic	1088	+/- 629	0.9405	1024	n/a	581	+/- 351	1.0714	623	n/a	20.9% 31.4%	

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Other Pacific Island	4967	+/- 856	0.7997	3972		1798	+/- 584	0.7581	1363		
Chuukese	824	+/- 443	0.7997	659	n/a	486	+/- 378	0.7581	368	n/a	16.6% 27.0%
Marshallese	466	+/- 389	0.7997	373	n/a	306	+/- 304	0.7581	232	n/a	9.4% 17.0%
Other Indic	3473	+/- 473	1.0841	3765		699	+/- 252	1.7039	1191		
Punjabi	1213	+/- 577	1.0841	1315	n/a	337	+/- 234	1.7039	574	n/a	34.9% 48.2%
Bengali	620	+/- 298	1.0841	672	n/a	134	+/- 94	1.7039	228	n/a	17.8% 19.1%

Sources: 2006-2010 ACS, tract data; 2006-2008 ACS, state of Oregon detailed languages table 39 (see text for discussion of this special tabulation). Cell values in *italics* are estimates for total population over age 5, and LEP population over 5 for non-native English language speakers. **Bolded** values highlight estimated LEP populations within the Metro service area greater than 1,000. The two languages within each Census grouping with the most LEP speakers estimated in Table 39 from the 2006-08 ACS are shown.⁵ “Cushite” is not a language but a branch of the Afro-Asiatic language family. Cushitic languages are generally native to the horn of Africa region. They include Oromo (Ethiopia, Kenya), Somali (Somalia, Kenya) and Sidamo (Ethiopia).⁶ For example, the percentage of all “Other Slavic” speakers whose native language is Ukrainian: all speakers | LEP speaker.

⁵ Note to Tables B4a and B4b: The ACS detailed language table for states using 2006-2008 data aggregates African languages into their respective language families when breaking down the monolithical category “African languages” from the list of 39 standard languages or language families used in all other ACS language data releases. African languages are the only ones from a major world region which are treated this way in the census. The detailed language table thus lists “Cushite” under “African languages.” Cushite is not a spoken language but a language family centered on the Horn of Africa region. The two most widely spoken Cushitic languages are: Oromo, 35 million speakers, mostly spoken in Ethiopia, Eritrea, eastern Sudan and southeastern Egypt; and Somali, 18 million speakers, mostly spoken in Somalia and northeastern Kenya. It is reasonable to expect that nearly all of Oregon’s “Cushite” LEP population as recorded in the 2006-2008 ACS are Somali rather than Oromo speakers, as is borne out by the ODE data set from school districts in the Metro region.

Oregon Department of Education (ODE) 2011-2012 Enrollment data

We used ODE enrollment data to estimate LEP populations for languages that are not reported in the 5-year ACS releases, but that belong to language groups or families which in aggregate do have LEP populations of greater than 1,000 in that data. Table B5 displays the raw data.

Table B5: LEP speakers in Metro-area schools, identified by school districts partly or wholly within Metro area boundary.

Student's native language	Enrolled students whose native language is not English	Enrolled students, native language is not English; and LEP <u>reported value</u> ^{&}	Number of suppressed observations, LEP enrolled students ^{&}	Sum, mean of the range of possible values at each record with suppressed data [§]	Final estimate, enrolled students in Metro area schools who are LEP, by native language
Spanish	32725	17789	106	299	18088
Vietnamese	4127	1363	186	438	1801
Russian	3382	1305	229	471	1776
Chinese	2322	381	228	497	878
Somali (*)	871	498	87	170	668
Ukrainian (*)	1011	263	119	252	515
Arabic	802	179	167	335	514
Romanian (*)	783	101	179	335	436
Korean	909	152	137	263	415
Japanese	571	87	151	257	344
Tagalog	498	7	192	318	325
Hmong	600	49	139	276	325
Chuukese (*)	355	111	99	162	273
Lao	324	0	121	209	209
Nepali (*)	218	109	55	80	189
Hindi	273	0	113	236	175
Karen (*)	177	118	25	44	162
Persian	242	0	102	160	160
Serbo-Croatian	198	0	107	191	149

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Burmese (*)	162	79	43	63	142
Amharic (*)	174	0	91	133	133
German	167	0	94	131	131
Thai	157	0	92	124	124
French	139	0	91	115	115
Urdu (*)	136	0	66	101	101
Telugu (*)	210	8	43	80	88
Oromo (*)	112	15	44	68	83
Tamil (*)	143	0	49	82	82
Swahili (*)	105	15	50	65	80
Khmer	105	0	40	68	68
Samoan (*)	76	0	49	63	63
Portuguese	64	0	51	57	57
Tigrinya	77	0	37	57	57
Punjabi	70	0	44	57	57
Kurdish	76	0	35	56	56
Hebrew	69	17	47	37	54
Marshallese (*)	77	14	21	40	54
Tibetan	63	0	39	51	51
Bengali (*)	104	0	29	51	51
North American Indian (Other)	68	0	38	51	51
Turkish (*)	97	0	39	49	49

(*) Indicates language that is not reported individually in Table B16001 of the ACS. Data are from Oregon Department of Education Title III (NCLB) rolling collection during the 2011-2012 school year; **Caution:** language of origin data are not highly validated by ODE prior to their release.⁸ Reported values for observations that are greater than 6 LEP students per school site; for 6 or fewer observations, a suppressed value (0) is recorded. If no observations, the cell in the ODE dataset is <null>.⁵ See text for discussion of the method for converting suppressed values to a range of possible values.⁵ *Bosnian* is a Census-reported language; in the Census it is named *Serbo-Croatian*, a third language population distinct from *Serbian* and *Croatian*.

We performed two different estimation procedures for each of the language populations that had more than 90 LEP persons in the schools data. Results of these procedures are in Tables B6 and B7, following.

In the first estimation procedure we compared LEP populations from the ODE data that are missing census counterparts with a linguistically and/or demographically similar LEP population for which we have both ODE data and a census estimate. For example: ODE data indicate a large number of LEP Ukrainian speakers in the schools within Metro's service area, but Ukrainian is not reported in the standard ACS data releases.

- Among the individual language populations for which there are both ODE data and also ACS estimates, the closest linguistic relative of Ukrainian is Polish.
- We calculated the ratio of LEP Polish speakers in the ODE data to LEP Polish speakers in the 331-tract ACS data set: 6.6471 total population over age 5 per LEP student.
- We multiply this ratio by the number of Ukrainian speaking LEP students in the ODE data: $263 * 6.6471 = 1749$ persons over age 5 within the Metro region who are Ukrainian speaking and LEP, a number that triggers safe harbor eligibility.

In order to corroborate this estimate, we perform the procedure a second time if there is also a demographically related population that can be used for comparison.

- In the case of Ukrainian, the most demographically similar population in Metro's region is likely to be the Russian-speaking community.
- We calculate the ratio of Russian speaking LEP students from the ODE dataset by the estimate of Russian LEP speakers over age 5 in the ACS and multiply the ratio by the number of Ukrainian LEP speakers in the ODE dataset:
 - $7105 / 1335 = 5.3221$
 - $5.3221 * 263 = 1400$ Ukrainian speaking LEP persons over age 5

In the second estimation procedure, we generated the ratios of language-group LEP speakers from the ODE data to those in the ACS tracts data set, replicating the procedure we performed on the Table 39 state data discussed previously.

- The ODE data isolate each individual language spoken by enrolled students.
- We filtered the data fields by assigning raw data for each language and its LEP population to the grouping in which the Census Bureau classifies that particular language. See next page for example:

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ODE Language	Language Family	Language Group	Largest national population of speakers	All students - language of origin	
				All	LEP
Bulgarian	Indo-European	Balto-Slavic: South	Bulgaria	52	32
Czech	Indo-European	Balto-Slavic: West	Czech Republic	23	21
Slovak	Indo-European	Balto-Slavic: West	Slovakia	10	7
Ukrainian	Indo-European	Balto-Slavic: East	Ukraine	1038	263
			SUM	1123	323

- Using this procedure we determine that there are 263 Ukrainian speaking LEP students enrolled in Metro-area schools, and there are 323 LEP students enrolled who speak either Ukrainian or another of the languages which the Census Bureau aggregates along with Ukrainian in the category “Other Slavic.”
- 81.2% of “Other Slavic” language LEP persons in the schools are Ukrainian speakers.
- In this procedure we assume that LEP Ukrainian speakers in the general population make up an identical proportion of all LEP Other Slavic speakers, which may not be a valid assumption – but the error is likely tolerable given the small populations of other languages within this group in the schools data.
 - Applying this percentage to the Census tracts estimate of Other Slavic LEP population produces the following: $80.2\% * 3109 = 2493$ Ukrainian-speaking LEP persons over age 5 in the Metro service.

Using the ODE data to extrapolate from the census tract estimate, we produced three estimates for Ukrainian LEP persons in the region ranging from 1400 to 2493. We concluded it is safe to assume that there are at least 1,000 Ukrainian LEP persons in the Metro region and add a line for Ukrainian to Table B1. By the same procedures, we also identify Somali and Romanian as safe-harbor eligible languages.

Qualifications with this data:

- Schools are required to suppress observations of fewer than six LEP speakers for confidentiality protection, though districts do report the suppressed numbers in aggregate with all district schools.
- The numbers we use in the estimation procedures are the non-suppressed aggregate totals from each school district’s reports and should include data suppressed at the level of the individual school.
- ODE is not a 100% count of school-aged children who speak a language other than English at home and are LEP, for the following reasons:

- ODE data includes public, charter, and private schools, but does not include home-schooled students. The metadata do not indicate how private schools data are treated with respect to suppression and aggregation, but we assume that since private schools do not belong to districts that their school-specific reports are included with the public school district totals, therefore undercounting LEP individuals in private schools where there are fewer than six members of a population.
- General enrollment data is collected on a single day of the school year, so students who are not in attendance may be missed unless they are recipients of aid programs for which schools must track their data throughout the year (such as the federal free- and reduced-price lunch program).

These limitations are especially important in interpreting Figure B1 and Appendix A Figures A6, A8 and A12, where a school-based LEP population is mapped against the census language group counterpart at the tract geography. Because we must join the ODE data to the geographic location of specific schools, it is necessary to display the counts at each individual school. Thus:

- Because schools with one to six LEP persons of a particular language must report a zero, it is the zero which is being mapped; hence our map shows some false negatives where small numbers of LEP persons in schools actually are.
- Also, data-swapping errors in the district and individual school tables exist, and may have the effect of reducing the count of LEP populations that are more than six at a given school. The data set is too large for us to track individual errors of this nature, but the error is in each case an under-report.

Table B6: Estimated regional LEP speakers extrapolated from Metro-area LEP school students (*Procedure 1, nearest relative comparison*)

	Native language	(# of) Nearest linguistic relative	(# of) Nearest demo- graphic relative	Number of LEP enrolled school students	LEP persons, (ACS 2006- 2010 est, tracts)	Ratio, LEP speakers in region to LEP enrolled students	Estimated tri-county LEP population
1	Spanish			18088	64692	3.58	
2	Vietnamese			1801	12417	6.89	
3	Russian			1766	7105	4.02	
4	Chinese			878	9036	10.29	
5	Somali (*)	7	none	668		(2.67)	1784
6	Ukrainian (*)	37		515		(6.11)	3147
			3	515		(4.02)	2070
7	Arabic			514	1370	2.67	
8	Romanian (*)	37		436		(6.36)	2773
			19	436		(3.92)	1709
9	Korean			415	4141	9.78	
10	Japanese			344	2608	7.58	
11	Tagalog			325	1705	5.26	
12	Hmong			325	**327	**	
			14	325		(4.37)	1420
13	Chuukese (*)	11	11	273		(5.24)	1432
14	Lao			209	914	4.37	
15	Nepali (*)	16	16	189		(2.70)	511
16	Hindi			175	472	2.70	
17	Karen (*)		14	162		(4.37)	708

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18	Persian			160	882	5.51	
19	Serbo-Croatian			149	584	3.92	
20	Burmese (*)	none	14	142		(4.37)	621
21	Amharic (*)	7	none	133		(2.67)	355
22	German			131	823	6.28	
23	Thai			124	725	5.85	
24	French			115	797	6.93	
25	Urdu			101	**39	**	
26	Telugu (*)	none	none	88	--		--
27	Oromo (*)	7	none	83		(2.67)	222
28	Tamil (*)	none	none	82	--		--
29	Swahili (*)	7	none	80		(2.67)	389
30	Khmer			68	1226	%18.03	
31	Samoan (*)	11	11	63		(4.49)	283
32	Portuguese			57	308	5.40	
33	Tigrinya (*)	7	none	57		(2.67)	152
34	Punjabi (*)	16	16	57		(2.70)	154
35	Kurdish (*)	56		56			
36	Bengali (*)	16	16	51		(2.70)	138
37	Polish			37	226	6.11	
38	Italian			36	229	6.36	

** Note that high margins of error for estimates in the ACS invalidate these estimates completely;

% Margins of error for Khmer LEP are poor, which may be the cause of an unrealistically high ratio of LEP students to all adults over 5 who are LEP – this ratio is not used for any estimates in this table even when Khmer would otherwise be an appropriate match. Languages marked by (*) are not reported in the Census. *Italics* indicate borrowing of a ratio from the data row indicated by the line number of a “nearest relative.”

Table B7: Estimated regional LEP speakers extrapolated from Metro-area LEP school students *(Procedure 2, proportional representation within language groupings)*

ACS Language family / ODE language	Languages – 2011-12 ODE Data	Estimate, total number of native speakers: ACS / Enrolled students, ODE	Estimate, number of native speakers LEP: ACS / Enrolled students, ODE	Percent of total enrolled students within schools language family Percent of total enrolled LEP students within schools language family		Estimate: Total Native language speakers in Metro region (schools ratio * total language family population estimate)	Estimate: Total Native language LEP speakers in Metro region (schools ratio * total language family population estimate)
AFRICAN		4205	1705				
All African Languages		1432	1108				
5	Somali	871	668	60.8%	60.3%	2557	1029
21	Amharic	174	133	12.2%	12.0%	513	205
29	Swahili	105	85	7.3%	7.6%	307	130
27	Oromo	112	83	7.8%	7.5%	328	128
33	Tigrinya	77	57	5.4%	5.1%	227	87
Remaining African		93	83	6.5%	8.8%	274	150
Other ASIAN		5495	1755				
All Other Asian languages		952	645				
17	Karen	177	162	18.6%	25.0%	1022	439
20	Burmese	162	142	17.0%	21.9%	934	384
26	Telugu	210	88	22.1%	13.6%	1215	239
28	Tamil	143	82	15.0%	12.7%	824	223
Remaining Other Asian		260	172	27.3%	26.7%	1500	469
Other INDIC		2859	**562				
All Other Indic languages		506	372				
	Nepali	218	189	43.1%	50.9%	1232	286

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	Punjabi	70	57	13.8%	15.3%	395	86
	Bengali	104	51	20.6%	13.7%	589	78
	Remaining Indic	114	75	22.6%	20.2%	646	114
Other INDO-EUROPEAN		5360	2266				
All Other Indo-European languages		584	974				
8	Romanian	783	436	80.4%	74.6%	4310	1691
	Kurdish	78	56	8.0%	9.5%	429	215
	Albanian	53	40	5.4%	6.8%	289	154
	Remain. Oth. Indo-European	60	53	6.2%	9.2%	333	209
Other PACIFIC ISLAND		3455	1228				
All other Pacific Island languages		723	567				
	Chuukese	355	273	49.1%	48.1%	1696	591
	Samoan	76	63	10.5%	11.0%	363	135
	Marshallese	77	54	10.7%	9.5%	370	117
	Remaining Oth Pacific Island	215	178	29.7%	31.4%	1026	386
Other SLAVIC		6022	3109				
All other Slavic languages		1097	590				
6	Ukrainian	1011	515	92.2%	87.2%	5552	2711
	Remaining Other Slavic	86	75	7.8%	12.8%	470	398

** ACS estimate likely too low; margin of error is unacceptably high