Electronic Supplementary Materials for Tsimane Travel Analyses

1. Calculating period lengths

The start date of childhood is the individual's date of birth (methods detailed in: Gurven, M., H. Kaplan, & A. Z. Supa. 2007 Mortality experience of Tsimane Amerindians of Bolivia: regional variation and temporal trends. *American Journal of Human Biology* **19**: 376-398). The length of childhood was set to 13 years for women and 15 years for men, based on Tsimane informant reports about the ages represented by the words used to describe adolescents (see above). The end date for adolescence (and therefore the start date of first marriage) is calculated as the date of birth of the individual's first child (methods detailed in: Gurven, M., H. Kaplan, & A. Z. Supa. 2007 Mortality experience of Tsimane Amerindians of Bolivia: regional variation and temporal trends. *American Journal of Human Biology* **19**: 376-398) minus the individual's estimate of the time from the start of their marriage until the birth of their first child. If the first marriage was ongoing, the end date for the first marriage is the date of the interview. If the first marriage had ended, the end date was calculated as the date of marriage plus the individual's estimate of the length of their marriage. Period lengths were calculated as the duration between the start and end date for each period.

2. Calculating range sizes

Half-range is the median of the distances from the home community to places visited at least once (Hewlett, B., J. M. H. van de Koppel, & L. L. Cavalli-Sforza. 1982 Exploration ranges of Aka pygmies of the Central African Republic. *Man* **17**: 418-430). Exploration range is the mean of the distances from the home community to places visited at least once (MacDonald, D. H. & B. S. Hewlett. 1999 Reproductive interests and forager mobility. *Current Anthropology* **40**: 501-523). The minimum convex polygon method computes the area of the smallest polygon that contains all the visited locations (Laver, P. N. & M. J. Kelly. 2008 A Critical Review of Home Range Studies. *Journal of Wildlife Management* **72**: 290-298 (DOI 10.2193/2005-589)). KUD is a function providing the probability that an animal is found at a given set of coordinates. We calculate the KUD home range as the minimum area in which the individual has a 95% chance of being located, using the ad hoc smoothing parameter which supposes that the utilization distribution is bivariate normal. MCP and KUD were calculated using adehabitatHR (Calenge, C. & S. Fortmann-Roe. 2013 The package adehabitat for the R software: a tool for the analysis of space and habitat use by animals. *Ecological Modeling* **197**: 516-519) in R 3.0.1 (R Development Core Team. 2012 R: A language and environment for statistical computing). As per Supplementary Table 1, we excluded one individual who reported living or visiting less than 5 communities during their whole life because MCP calculation with adehabitatHR requires 5 or more data points.

3. Calculating distances

Distances were calculated using geosphere (Hijmans, R. J., E. Williams, & C. Vennes. 2012 geosphere: Spherical Trigonometry) in R 3.0.1 (R Development Core Team. 2012 R: A language and environment for statistical computing). In approximately 40% of visits, the precise home community could not be identified for a particular visit. For these cases, the distance traveled was calculated as the median distance from the possible home communities (all the communities where the participant lived during the period in question) to the visited community.

4. Methods for supplementary figures

Supplementary Figures 1-6 were made using ggmap (Kahle, D. & Wickham, H. 2012 ggmap: A package for spatial visualization with Google Maps and openStreetMap. R package version 2.2) and ggplot2 (Wickham, H. 2009 ggplot2: elegant graphics for data analysis. R package version 0.9.3.1)

5. Methods for Supplementary Tables 2 and 3

In addition to the linear models presented in Table 3, we also fitted linear mixed-effects models for the log of distances travelled per person-year and the log number of communities visited per person-year. All models include main effects for sex (male = 1, female = 0), time period (childhood, adolescence, first marriage), age, and all two-way interaction terms for sex, time period, and age. The models in Supplementary Table 2 include the individual as a random effect. The models in Supplementary Table 3 include the interview community and the individual as random effects.

These models were run using nlme (Pinheiro, J., Bates, D., DebRoy, S., Sarkar, D., and R Core Team 2013 nlme: Linear and nonlinear mixed effects models. R package version 3.1-108)

Supplementary Table 1. Subsample sizes, starting data, and exclusion criteria for each hypothesis tested (*n* = 105 interviews total).

Analysis	Starting Data	Exclusion Criteria	Final Sample
Descriptive Analyses	*n* = 44 individuals interviewed about reasons for travel	*n* = 7 individuals over the age of 45	*n* = 37
H1	*n* = 105 individuals interviewed about travel during childhood, adolescence, first marriage	*n* = 33 individuals over the age of 45 *n* = 25 individuals without data for all their life periods *n* = 1 individual with <5 home and visited communities, ineligible for MCP	*n* = 46
H2	*n* = 105 individuals interviewed about travel during childhood, adolescence, first marriage	*n* = 33 individuals over the age of 45 *n* = 13 individuals whose adolescent or marriage period lengths could not be determined	*n* = 59
H3	*n* = 72 individuals interviewed about travel in the last month	*n* = 23 individuals over the age of 45 *n* = 2 unmarried, adolescent individuals *n* = 1 divorced individual	*n* = 46
H4	*n* = 72 individuals interviewed about travel in the last month	*n* = 23 individuals over the age of 45 *n* = 2 unmarried, adolescent individuals *n* = 1 divorced individual *n* = 20 individuals whose spouses were not interviewed about visits in the last month	*n* = 26

Supplementary Table 2. Mixed-effects models for distances traveled and number of communities visited with individual as a random effect.

	Log Sum of Distances Traveled Per Person-Year	Log Number of Communities Visited Per Person-Year
	$b \pm SE$	$b \pm SE$
Intercept	1.42 ± 0.72	-0.74 ± 0.52
Sex	0.07 ± 0.88	-0.12 ± 0.62
Adolescence	2.80 ± 0.73 ***	2.41 ± 0.55 ***
Marriage	2.86 ± 0.75 ***	2.66 ± 0.56 ***
Age	0.02 ± 0.03	-0.01 ± 0.02
Community C	1.60 ± 0.53 **	1.22 ± 0.38 **
Community B	-0.72 ± 0.24 **	-0.48 ± 0.17 **
Sex-by-Adolescence	1.65 ± 0.40 ***	1.29 ± 0.30 ***
Sex-by-Marriage	0.77 ± 0.40	0.44 ± 0.30
Sex-by-Age	-0.01 ± 0.03	0.00 ± 0.02
Age-by-Adolescence	-0.05 ± 0.03	-0.03 ± 0.02
Age-by-Marriage	-0.06 ±0.03 *	-0.05 ± 0.02 **
AIC	604.3	506.7

Intercept: Sex=Female, Period=Childhood, Community=Community A, Age=0

* $p < .05$, ** $p < .01$, *** $p < .001$

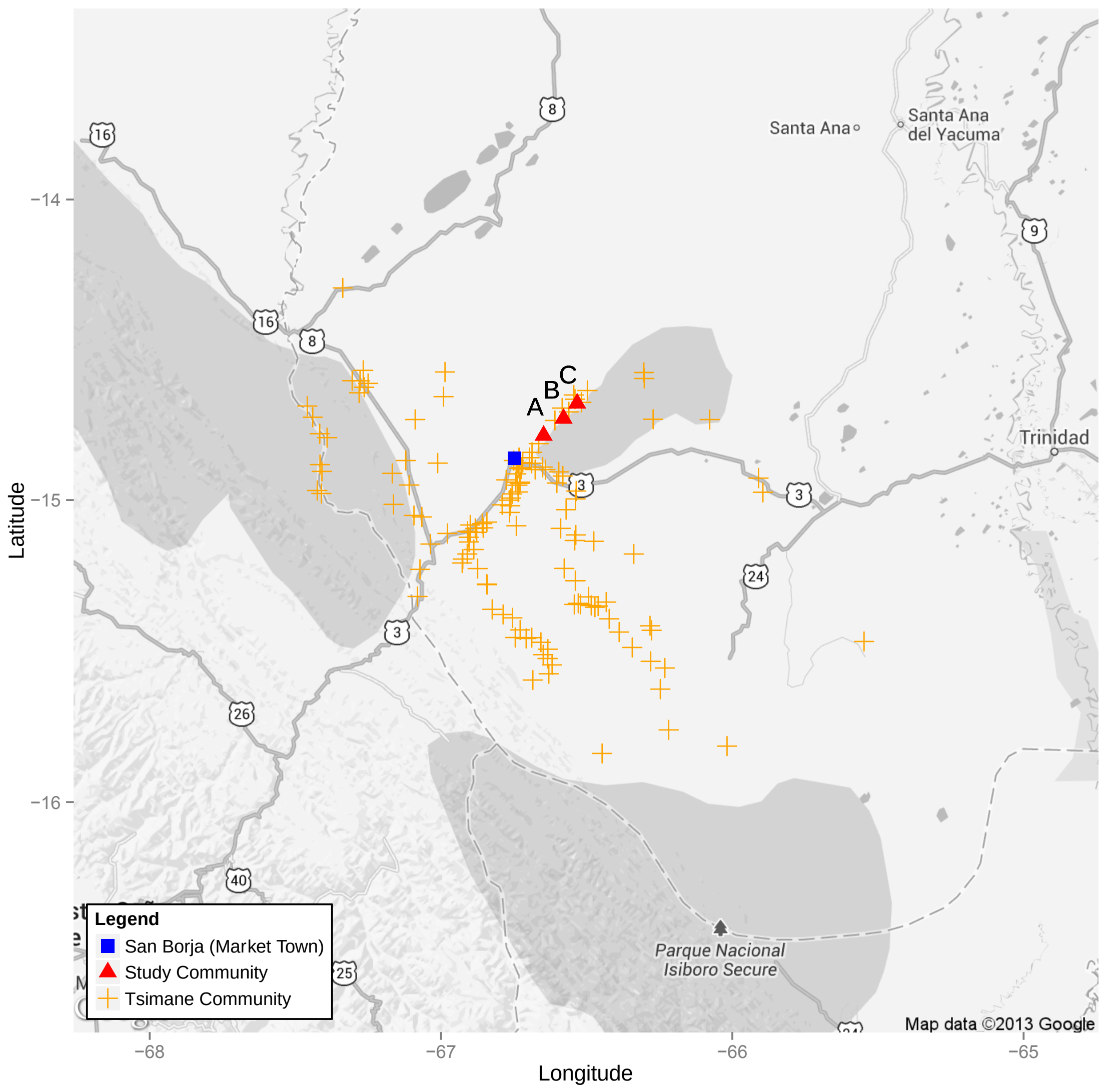
Supplementary Table 3. Mixed effects models for distances traveled and number of communities visited with both individual and interview community as random effects.

	Log Sum of Distances Traveled Per Person-Year	Log Number of Communities Visited Per Person-Year
	$b \pm SE$	$b \pm SE$
Intercept	0.87 ± 0.78	-1.12 ± 0.56 *
Sex	0.68 ± 0.97	0.33 ± 0.69
Adolescence	2.83 ± 0.75 ***	2.43 ± 0.56 ***
Marriage	2.56 ± 0.76 **	2.41 ± 0.57 ***
Age	0.03 ± 0.03	-0.00 ± 0.02
Sex-by-Adolescence	1.69 ± 0.40 ***	1.31 ± 0.30 ***
Sex-by-Marriage	0.76 ± 0.41	0.44 ± 0.30
Sex-by-Age	-0.03 ± 0.03	-0.02 ± 0.02
Age-by-Adolescence	-0.05 ± 0.03	-0.03 ± 0.02
Age-by-Marriage	-0.05 ± 0.03	-0.04 ± 0.02 *
AIC	622.2	523.3

Intercept: Sex=Female, Period=Childhood, Age=0

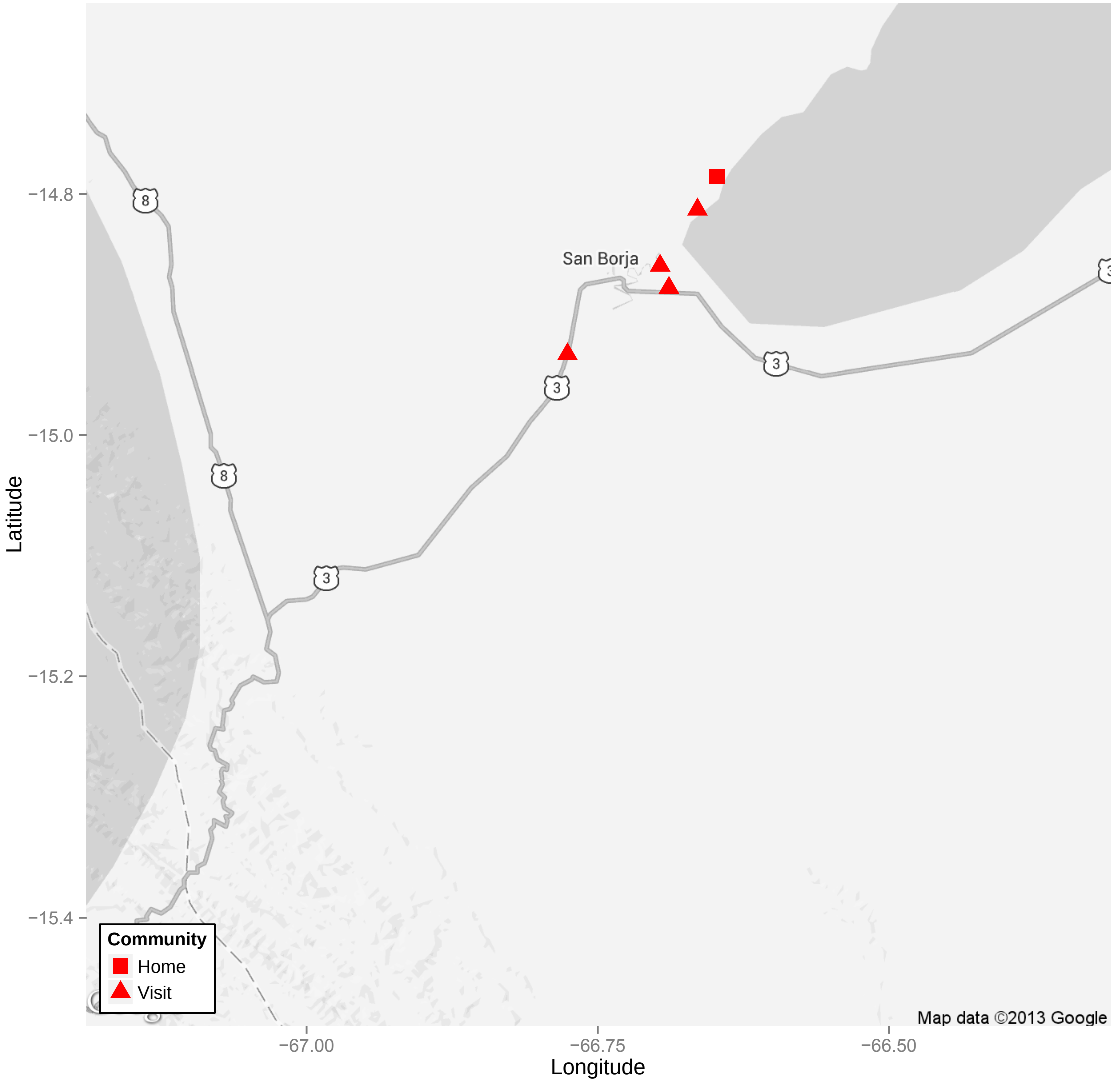
* $p < .05$, ** $p < .01$, *** $p < .001$

Supplementary Figure 1. Color map of Tsimane territory.



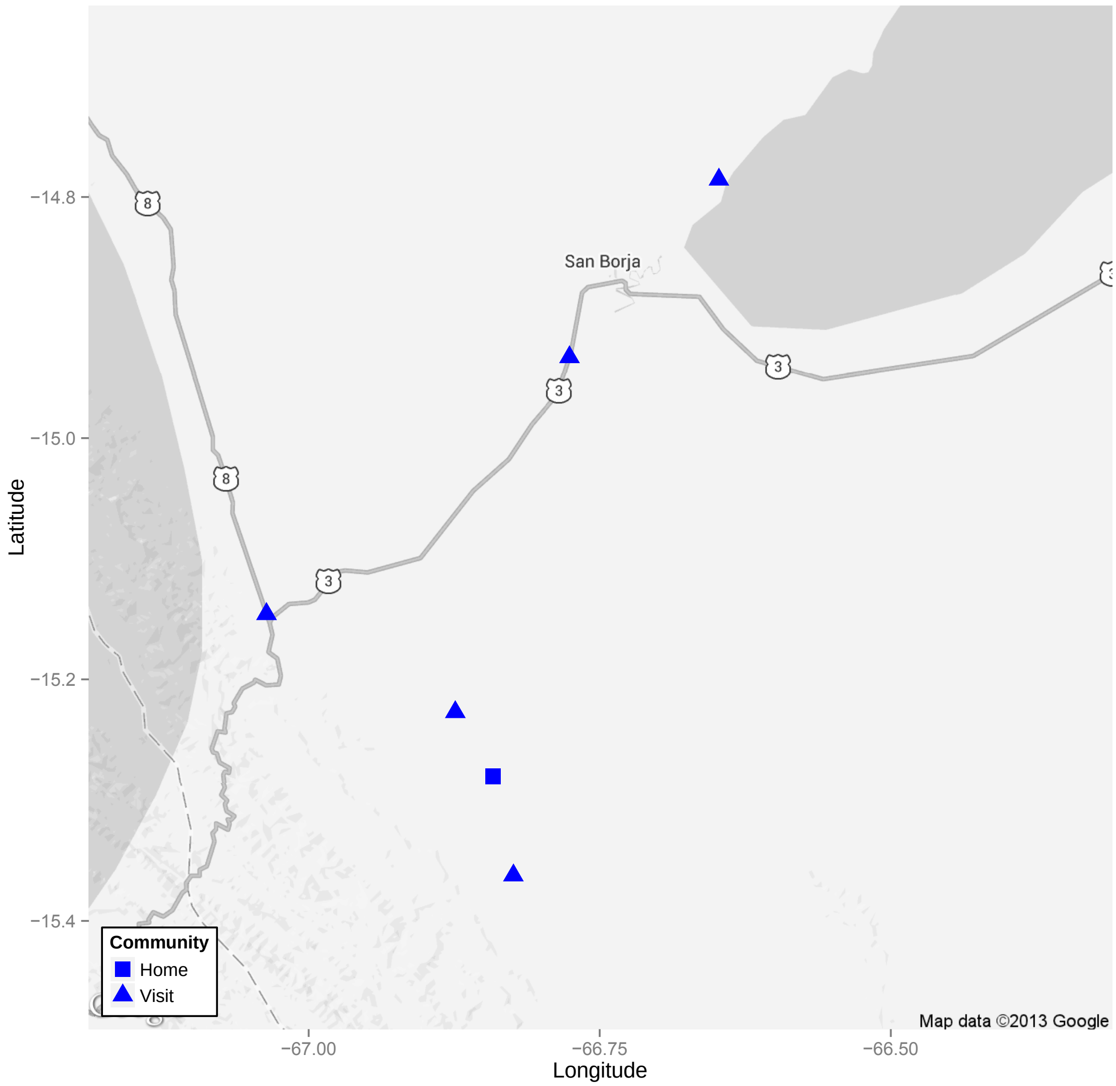
The market town of San Borja is marked on the map as a blue square. The three study communities (A, B, and C) are marked as red triangles. The remaining 136 communities visited by participants in this study are marked as orange crosses.

Supplementary Figure 2. Visits and home community for the woman with the median sum distance traveled per year of adolescence.



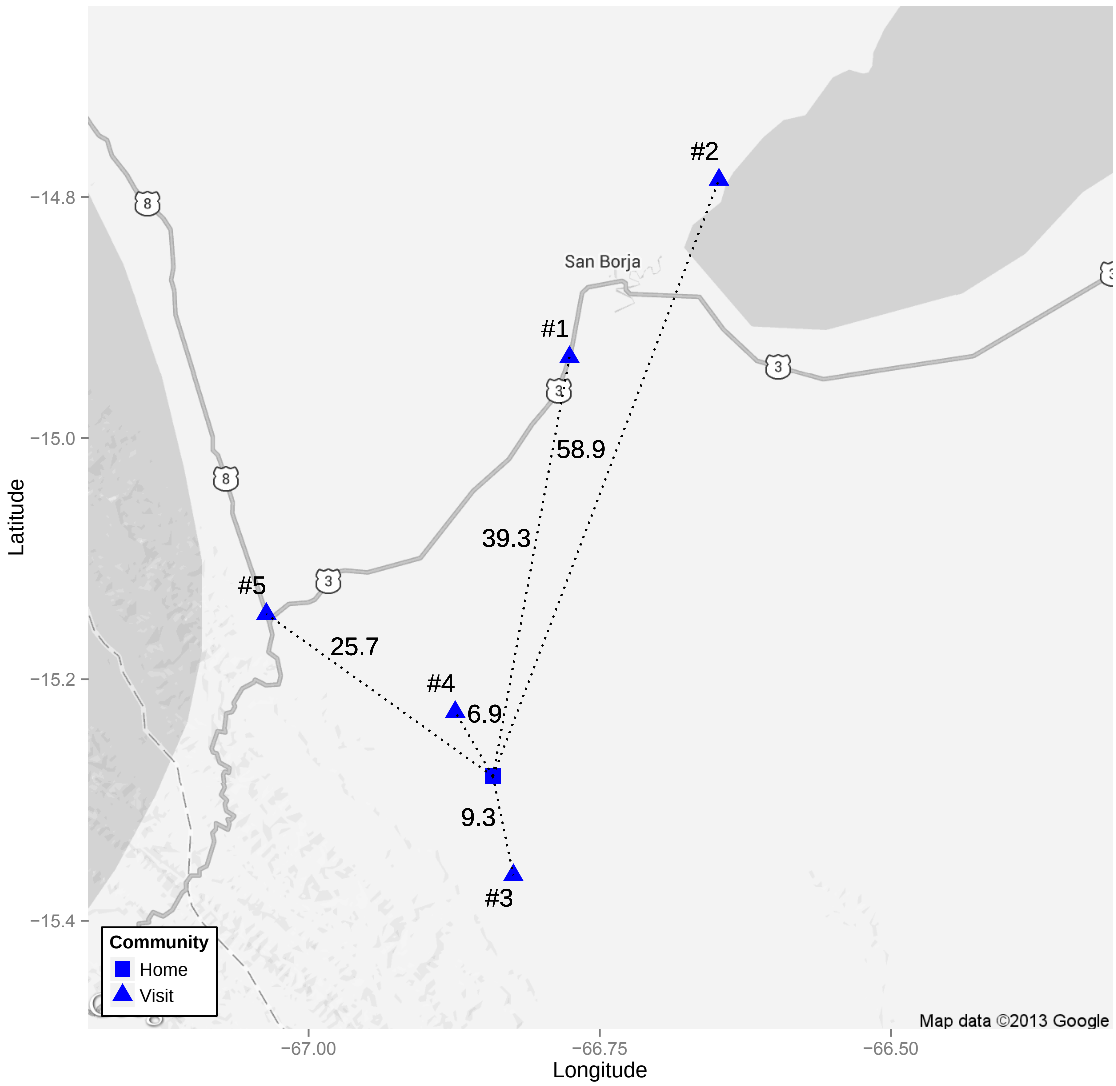
The sum distance traveled for this woman is 24.89 km/year of adolescence.

Supplementary Figure 3. Visits and home community for the man with the median sum distance traveled per year of adolescence.



The sum distance traveled for this man is 66.7 km/year of adolescence. Example calculations are shown with Supplementary Figure 4.

Supplementary Figure 4. Example calculation of sum distance traveled for the man with the median sum distance traveled per year of adolescence.

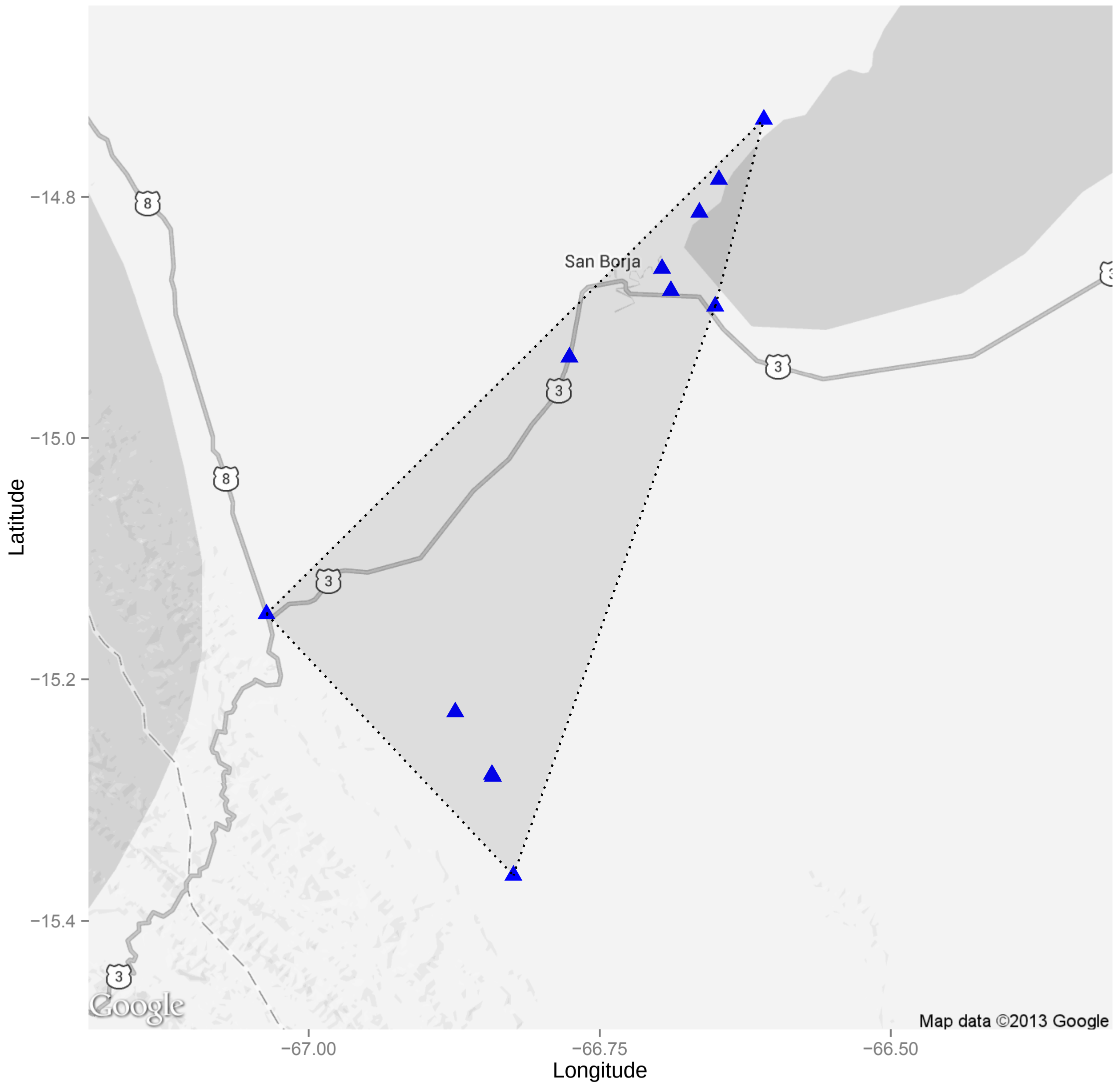


The individual's home community is marked by a blue square. The communities visited during adolescence are numbered #1-5. The line segments $\overline{H1}, \overline{H2}, \overline{H3}, \overline{H4},$ and $\overline{H5}$ are marked with dotted lines. To calculate the sum of distances traveled during adolescence for this individual, we used the following equation:

$$\text{Sum of Distance Traveled Per Year of Adolescence}=\frac{(\overline{\text{H1}}+\overline{\text{H2}}+\overline{\text{H3}}+\overline{\text{H4}}+\overline{\text{H5}})}{\text{length of adolescence}}$$

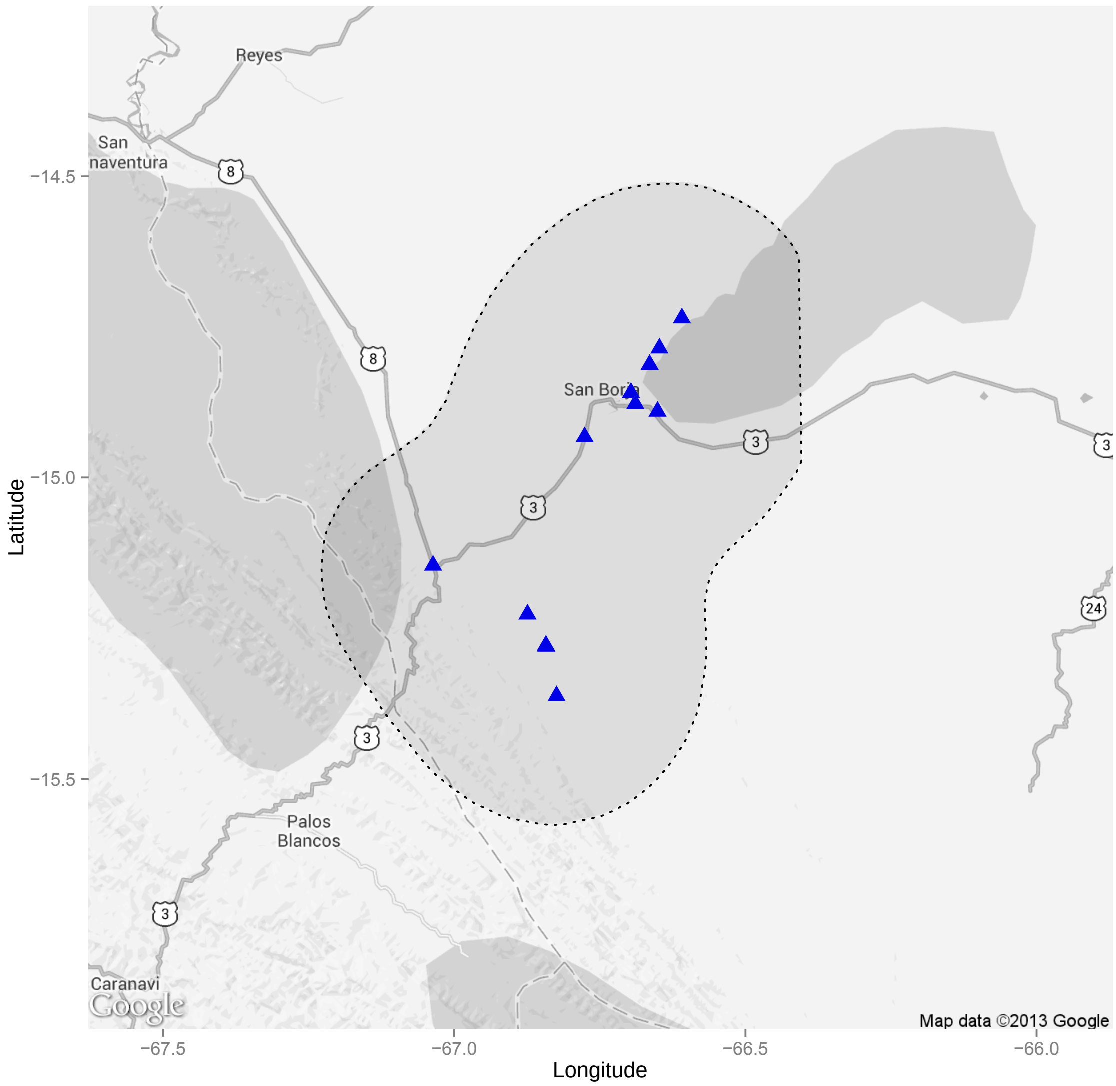
$$=\frac{39.3\text{km}+58.9\text{km}+9.3\text{km}+6.9\text{km}+25.7\text{km}}{2.1\text{ years}}=66.7\text{km/year}$$

Supplementary Figure 5. Example for whole-life minimum convex polygon home range area for the man with the median sum distance traveled per year of adolescence.



The minimum convex polygon (MCP) area for this individual's whole life is 1110.52 km^2. MCP area was calculated using adehabitatHR (Calenge, C. & S. Fortmann-Roe. 2013 The package adehabitat for the R software: a tool for the analysis of space and habitat use by animals. *Ecological Modeling* **197**: 516-519. R package version 0.4.7).

Supplementary Figure 6. Example map of whole-life 95% kernel-utilization-distribution for the man with the median sum distance traveled per year of adolescence.



The 95% kernel-utilization-distribution (KUD) area for this individual's whole life is 7002.85 km^2. KUD area was calculated adehabitatHR (Calenge, C. & S. Fortmann-Roe. 2013 The package adehabitat for the R software: a tool for the analysis of space and habitat use by animals. *Ecological Modeling* **197**: 516-519. R package version 0.4.7). Note that this map is zoomed out to accommodate the large size of the KUD area as compared with the MCP area.