

Criminal Justice and Behavior

<http://cjb.sagepub.com>

Commentary On Duwe, Donnay, and Tewksbury (2008): "Does Residential Proximity Matter? A Geographic Analysis of Sex Offense Recidivism"

Paul A. Zandbergen

Criminal Justice and Behavior 2008; 35; 1449

DOI: 10.1177/0093854808325115

The online version of this article can be found at:

<http://cjb.sagepub.com>

Published by:



<http://www.sagepublications.com>

On behalf of:

[International Association for Correctional and Forensic Psychology](#)

Additional services and information for *Criminal Justice and Behavior* can be found at:

Email Alerts: <http://cjb.sagepub.com/cgi/alerts>

Subscriptions: <http://cjb.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations (this article cites 9 articles hosted on the SAGE Journals Online and HighWire Press platforms):
<http://cjb.sagepub.com/cgi/content/refs/35/11/1449>

COMMENTARY ON DUWE, DONNAY, AND TEWKSBURY (2008): “DOES RESIDENTIAL PROXIMITY MATTER? A GEOGRAPHIC ANALYSIS OF SEX OFFENSE RECIDIVISM”

PAUL A. ZANDBERGEN
University of New Mexico

Duwe, Donnay, and Tewksbury (2008) make a significant contribution to the debate on the effectiveness of residency restriction laws for sex offenders. Their work employs geographic analysis methods to determine whether residential proximity is a factor in sex offense recidivism. In their approach, they identified sex offender recidivists in Minnesota and determined the location of the offender's residence at the time of the new offense, the type of location and the address of the location of the new offense, and the type of location and the address of the location where the offender first established contact with the victim.

In their conclusions, the authors claim that “none of the 224 incidents of sex offender recidivism fit the criteria of a known offender making contact with a child victim at a location within any of the distances typically covered by residential restriction laws” (p. 498). The evidence for this lies in the following specific findings: 1) In the majority of cases ($n = 145$) the offender contacted the victim either through a biological relationship or collateral contact (girlfriend, coworker, friend, etc.); and 2) in the remaining 79 direct contact cases, only 28 cases established contact within a mile, and none of these 28 cases was facilitated by close proximity to a school, daycare center, or park.

While I am in general agreement with the authors' findings, I would like to highlight a number of methodological issues which may benefit future research efforts on this topic. My primary concern lies in the methodology employed to geocode the address locations and to determine distances. Address locations were geocoded by entering a pair of addresses in Google Earth, and subsequently the Ruler feature was used to measure the Euclidean distance. In my opinion this does not provide sufficiently reliable results. First, Google Earth (like other online mapping tools and GIS software) employs a technique known as “street geocoding.” The errors in street geocoding can be very substantial and have been well documented in recent years (Bonner et al., 2003; Cayo & Talbot, 2003; Dearwent, Jacobs, & Halbert, 2001; Karimi & Durcik, 2004; Schootman et al., 2007; Strickland, Siffel, Gardner, Berzen, & Correa, 2007; Ward et al., 2005; Whitsel et al., 2006; Zandbergen, 2007; Zhan, Brender, De Lima, Suarez, & Langlois, 2006; Zimmerman, Fang, Mazumdar, & Rushton, 2007). Results in urban areas are

AUTHOR'S NOTE: *Comments may be sent to Paul A. Zandbergen, PhD, Department of Geography, Bandelier West Room 111, MSC01, 1 University of New Mexico, Albuquerque, NM 87131; e-mail: zandberg@unm.edu.*

CRIMINAL JUSTICE AND BEHAVIOR, Vol. 35 No. 11, November 2008 1449-1451
DOI: 10.1177/0093854808325115
© 2008 International Association for Correctional and Forensic Psychology

generally more accurate than in rural areas (Bonner et al., 2003; Cayo & Talbot, 2003; Ward et al., 2005). The occurrence of major positional errors is relatively common. For example, in one of the more thorough studies by Cayo and Talbot (2003), 10% of a sample of urban addresses geocoded with errors larger than 96 meters, and 5% geocoded with errors larger than 152 meters. For rural addresses these distances were 1.5 and 2.9 kilometers, respectively. The occurrence of such large positional errors makes it difficult to justify geographic analyses at very short distances in the order of 1,000 feet. Second, Google Earth does not provide any measure of reliability of the geocoded results, and it is typically unknown whether the address was matched against the correct street segment or by using some other less precise method (like street segment centroid or postal code centroid). No geocoding match rates are reported; implicitly this suggests it was 100% for all 197 cases where addresses were available, which is unheard of in any study that employs street geocoding. Third, the use of the Ruler feature produces unreliable results since the accuracy depends on the display scale, monitor resolution, and the analyst's skill. The projection employed by Google Earth (Simple Cylindrical or Plate Carree) is also not optimal for distance measurements. The errors resulting from the use of the Ruler tool are on top of the errors in both locations used to measure the distance. The final distance measurements are therefore not very reliable or repeatable.

Of the 79 direct contact cases, 31 were not investigated since they were determined as having established contact more than one mile from their victim. Given the limited accuracy of the geographical analysis, this presents a substantial loss of information. As a result, the data presented do not in fact support the claim that "none of the 224 incidents . . . fit the criteria of a known offender making contact with a child victim at a location within any of the distances typically covered by residential restriction laws" (p. 498).

A more reliable alternative would have been the use of address point or parcel geocoding. Interestingly, two recent studies that have characterized the effect of sex offender residency restrictions on housing availability have relied primarily on parcel geocoding. Zandbergen and Hart (2006) relied exclusively on parcel geocoding, and Grubestic, Mack, and Murray (2007) relied mostly on parcel geocoding, supplemented with street geocoding where parcels did not produce a match. Even more specifically, a study by Zandbergen and Hart (in press) has documented substantial misclassifications of sex offenders relative to residency restrictions when using street geocoding, and parcel geocoding appears the only reliable alternative given the relatively small distances in the order of 1,000 feet commonly employed.

Another concern I have with the research design is that the locations of schools, daycare centers, parks, and other locations were not geocoded or used in the analysis in any way. It is therefore unknown whether or not a recidivist lived in close proximity to one or more locations where children congregate. Residential proximity to these locations may have affected a sex offender's behavior, and this potential effect is not captured in the analysis. The authors recognize this as a limitation, but it is worth repeating since future research efforts in this area would do well to address this. A different research design, for example, could attempt to address whether sex offender recidivism is dependent upon proximity to locations where children congregate, independent of where the contact was established or where the offense took place. The title of the article and the sweeping conclusion at the bottom of page 498, quoted above, are therefore somewhat misleading, since not all dimensions of residential proximity have been addressed.

Despite these methodological shortcomings, I do not think a more rigorous quantitative characterization of distances would have altered any of the paper's principal conclusions in a significant way. While the use of low accuracy geographic analyses techniques casts some doubts on the exact counts within certain distance categories, the strongest evidence in this case relies on the nature of the victim-offender relationships and types of locations where contact was established, not the actual distance values between residence and contact. However, future efforts to analyze geographic relationships of sex offenses will benefit from more accurate analysis procedures.

REFERENCES

- Bonner, M. R., Han, D., Nie, J., Rogerson, P., Vena, J. E., & Freudenheim, J. L. (2003). Positional accuracy of geocoded addresses in epidemiologic research. *Epidemiology, 14*, 408-412.
- Cayo, M. R., & Talbot, T. O. (2003). Positional error in automated geocoding of residential addresses. *International Journal of Health Geographics, 2*(10).
- Dearwent, S. M., Jacobs, R. J., & Halbert, J. B. (2001). Locational uncertainty in georeferencing public health datasets. *Journal of Exposure Analysis and Environmental Epidemiology, 11*, 329-334.
- Duwe, G., Donnay, W., & Tewksbury, R. (2008). Does residential proximity matter? A geographic analysis of sex offense recidivism. *Criminal Justice and Behavior, 35*, 484-504.
- Grubestic, T. H., Mack, E., & Murray, A. T. (2007). Geographic exclusion: Spatial analysis for evaluating the implications of Megan's Law. *Social Science Computer Review, 25*, 143-162.
- Karimi, H.A., & Durcik, M. (2004). Evaluation of uncertainties associated with geocoding techniques. *Computer-Aided Civil and Infrastructure Engineering, 19*, 170-185.
- Schootman, M., Sterling, D. A., Struthers, J., Yan, Y., Laboube, T., Emo, B., & Higgs, G. (2007). Positional accuracy and geographic bias of four methods of geocoding in epidemiologic research. *Annals of Epidemiology, 17*, 464-470.
- Strickland, M. J., Siffel, C., Gardner, B. R., Berzen, A. K., & Correa, A. (2007). Quantifying geocode location error using GIS methods. *Environmental Health, 6*(10).
- Ward, M. H., Nuckols, J. R., Giglierano, J., Bonner, M. R., Wolter, C., Airola, M., Mix, W., Colt, J., & Hartge, P. (2005). Positional accuracy of two methods of geocoding. *Epidemiology, 16*, 542-547.
- Whitsel, E. A., Quibrera, P. M., Smith, R. L., Catellier, D. J., Liao, D., Henley, A. C., & Heiss, G. (2006). Accuracy of commercial geocoding: Assessment and implications. *Epidemiological Perspectives and Innovations, 3*(8).
- Zandbergen, P. A. (2007). Influence of geocoding quality on environmental exposure assessment of children living near high traffic roads. *BMC Public Health, 7*(37).
- Zandbergen, P. A., & Hart, T. C. (2006). Reducing housing options for convicted sex offenders: Investigating the impact of residency restriction laws using GIS. *Justice Research and Policy, 8*, 1-24.
- Zandbergen, P. A., & Hart, T. C. (In press). Geocoding accuracy considerations in determining residency restrictions for sex offenders. *Criminal Justice Policy Review*.
- Zhan, F. B., Brender, J. D., De Lima, I., Suarez, L., & Langlois, P. H. (2006). Match rate and positional accuracy of two geocoding methods for epidemiologic research. *Annals of Epidemiology, 16*, 842-849.
- Zimmerman, D. L., Fang, X., Mazumdar, S., & Rushton, G. (2007). Modeling the probability distribution of positional errors incurred by residential address geocoding. *International Journal of Health Geographics, 6*(1).