APPENDIX C: BIBLIOGRAPHY OF RESOURCES RELATED TO PROTECTING CONFIDENTIALITY IN DATA FILES

ORC Macro staff have identified over 100 articles and documents that relate to protecting confidentiality in data files. These resources generally relate to **restricting access** (e.g., disclosure policies, legal strategies, and computer strategies) or **restricting content** (e.g., cell suppression, masking). The following section provides a two-page overview of the articles and a complete bibliography follows this section.

SUMMARY OF ARTICLES ON PROTECTING CONFIDENTIALITY IN DATA FILES

RESTRICTING ACCESS			
	Alwards 4 (4070) ALMIO (4007) O will (4000) O will (4000)		
Disclosure Policy	Alexander et. al. (1978), ALMIS (1997), Caudill (1990), Cecil (1993), COE (1997), Duncan et. al. (1993), Jabine (1993a), Jabine (1993b), Interagency Confidentiality and Data Access Group (1999), OECD (1980), Petska et. al. (1991)		
Computer strategies	Adam et.al.(1989), Cigrang et. al (1990), COE (1981), Duncan et. al.(1991)		
Legal Strategies	Advisory Committee to Secretary of Health, Education, and Welfare (1973), Bethlehem et. al (1990), Duncan et. al. (1991), Cecil (1993), Gates (1988), ISR (1987), Keller (1982), Ohio State University (n.d), Stevens (1996), U.S. Office of Management and Budget (1975)		
Location Strategies	Gates (1988), McGuckin (1992)		
Query/Output Strategies	Cigrang et.al. (1990), Gates (1988), Jones (1989), Michalewicz (1990)		
Testing for Disclosure Risk	Duncan (1990), Lambert (1993), Mokken et. al. (1992), Sinkner et. al. (1992), Skinner (1992), Willenborg et. al. (1990), Willenborg (1992), Zayatz (1991), Zayatz (1992)		
RESTRICTING CONTENT			
Blanking	Griffin et. al (1989)		
Blurring	Keller et. al (1989), Strudler et. al. (1986)		
Bootstrapping	Bowden et. al. (1992), Jones et. al. (1989)		
Cell Suppression	Cox (1984), Cox (1987a), Greenberg (1986), Griffin et. al. (1989), Kelly (1990), Kelly et. al. (1990a) Kelly et. al (1990b), Kumar et. al. (1995), Lambert (1993), Mugge (1984), Mugge (1983), NASS (1989), Robertson (1993), Rowe (1991), Sullivan (1992a), Sullivan (1992b), Wang et. al (1993)		
Data Swapping/Data Shifting/Data Shifting	Dalenius (1982), Fuller 1991), Griffin et. al. (1989), Navarro et. al. (1988), Winkler (1995)		
Imputation	Fuller (1991), Griffin et. al. (1989), Rubin (1993)		
Linear Programming	Cox (1980), Cox (1981), Kelly et. al. (1988) Kim (1986), Kumar et. al. (1992), Zayatz (1992b)		
Matrix Masking	Cox (1991), Sullivan et. al (1990)		
Measurement Error	Fuller (1991), Sullivan et. al. (1989), Sullivan et. al. (1990)		
Microaggregations	Gates, (1988), Govoni (1985), Paass (1988)		
Network Models	Cox (1982a), Cox et. al (1986), Cox (1987a), DeSilets, (1992)		
Noise (Perturbation)	Bowden et. al. (1992), Cox (1984), Cox et. al. (1986), Cox (1987a), Dalenius (1988), Evans et. al. (1996), Fuller, (1991), Greenberg (1986), Greenberg (1990b), Jones (1989), Kim ((1986), Spruill (1982), Tendrick et. al. (1987), Vemulapalli (1991), Voshell (1990), Willenborg (1992)		
Reduction	Caudill (1990), Dalenius (1988), Greenberg (1990b)		

SUMMARY OF ARTICLES ON PROTECTING CONFIDENTIALITY IN DATA FILES			
Rounding	Causey et.al. (1985), Cox (1982b), Cox (1984), Cox et. al (1986), Cox (1987a), Cox (1987b), Cox (1989), Dalenius (1981), Dalenius (1988), George (1987), Greenberg (1986), Greenberg (1988), Griffin et. al (1989), Kelly et. al (1988), Kelly et. al. (1990), Spruill (1982), Strudler et. al. (1986)		
Recombinations/ Recoding	Greenberg (1985), Paass (1988), Willenborg (1992)		
Simulations/Surrogate Files	Duncan, (1987), Greenberg (1990), McGuckin et. al. (1990), Navarro et. al. (1988), Rubin (1993), Saalfeld et. al. (1992),		
Slicing	Keller et. al. (1989), Paass (1988)		
Transformations	Duncan (1986), McGuckin et. al.(1990)		
GENERAL	ALMIS (1997), COE (1997), Group on Data Collection, COE (1977), Cox et. al (1993), Dalenius (1988), Dalenius et. al (1982), Duncan (1990), Duncan et. al (1987), Duncan et. al (1993), Duncan et. al (1991), Duncan et. al (1993), Federal Committee on Statistical Methodology (May 1994), Federal Committee on Statistical Methodology (May 1978), Federal Committee on Statistical Methodology (1980), Federal Policy for the Protection of Human Subjects (1991), Govoni et. al. (1985), Greenberg (1985), Greenberg (1986), Interagency Confidentiality and Data Access Group (1999). Journal of Official Statistics (vol. 14, no. 4, 1988), Little (1993), Manual on Disclosure Control Methods (1996), NASS (1990), NCHS (1984), Report on Statistical and Disclosure Avoidance Techniques, Statistical Policy Working Paper #2 (1978), Stevens (1996), U.S. Department of Health, Education, and Welfare, Privacy Protection Commission (1977), U.S. Privacy and Protection Study Commission (1996), Vogel (1992), Vogel (1990), White House, Information Infrastructure Task Force (1995), Wrighte et. al. (1990)		

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- Advisory Committee to Secretary of Health, Education, and Welfare, (1973), "Records, Computers, and the Rights of Citizens."
 - privacy & confidentiality
- Alexander, L.B., and Jabine, T.B, (1978), "Access to Social Security Microdata Files for Research and Statistical Purposes," <u>Social Security Bulletin</u>, Vol. 41, No. 8, pp. 3 17. -access, use, disclosure policy, factors controlling decision
- America's Labor Market Information System (ALMIS), U.S. Department of Labor, (1997), <u>State Unemployment Insurance Records: Access and Use Issues</u>. U.S. Department of Labor, Washington, D.C.

http://ecuvax.cis,ecu/%7elmi/frames/prjects/report/index.html

http:/ecuvax.cis.ecu.edu/%7elmi/frames/projects/report/append.html

- access and use
- Bethlehem, J.G., Keller, W.J. and Pannekoek, J. (1990), "Disclosure Control of Microdata," <u>Journal of the American Statistical Association, Vol. 85</u>, pp. 38-45.

 - restrict access with legal contracts
- Bowden, R. J. and Sim, A.B. (1992), "The Privacy Bootstrap," <u>Journal of Business and Economic Statistics</u>, Vol. 10, No. 3, pp. 337-345.

 -add noise by bootstrapping
- Caudill, C. E. (1990), "A Federal Agency Looks for Answers to Data Sharing Confidentiality Issues," presented at the annual meeting of the American Agricultural Economics Association, Vancouver, British Columbia, August 8, 1990.
 - National Assocaition for Social Statistics (NASS) rules on publication and data, data stripping, reducing categories, access to dataset portions, waivers from respondents
- Causey, B., Cox, L. H. and Ernst, L.R. (1985), "Application of Transportation Theory to Statistical Problems," <u>Journal of the American Statistical Association</u>, 80, 392, pp. 903-909. -rounding
- Cecil, J. S. (1993), "Confidentiality Legislation and the United States Federal Statistical System," <u>Journal of Official Statistics,</u> Vol. 9, No. 2, pp. 519-535.
 - access, summary of federal legislation on confidentiality
- Cigrang, M. and Rainwater, L. (1990), "Balancing Data Access and Data Protection: the Luxembourg Income Study Experience," <u>Proceedings of the Statistical Computing Section</u>, American Statistical Association, Alexandria, VA, pp. 24-26.

 -access, computer passwords, user id, output control, operating system safeguards
- Council of Europe (COE) (1997), <u>Recommendations on the protection of personal data collected</u> and processed for statistical purposes.

 www.coe.fr/dataprotection/rec/r(97)18e.htm
- Cox, L. H. (1980), "Suppression Methodology and Statistical Disclosure Control," <u>Journal of the American Statistical Association</u>, Vol. 75, pp. 377-385.
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- Cox, L. H. (1981), "Linear Sensitivity Measures in Statistical Disclosure Control," <u>Journal of Statistical Planning and Inference</u>, Vol. 5, pp. 153-164.

 -masking, linear programming
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 Reprinted: Some Recent Advances in Theory, Computation and Application of Network Flow Methods, University of Toronto Press, 1983, pp. 139-148.

 -restrict content, controlled rounding
- Cox, L. H. (1984), "Disclosure Control Methods for Frequency Count Data," presented at the Census Advisory Committee Meeting of the American Statistical Association, Bureau of the Census.
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- Cox, L.H. Fagan, J.T., Greenberg, B., and Hemmig, R. (1986), "Research at the Census Bureau into Disclosure Avoidance Techniques for Tabular Data," <u>Proceedings of the Section on Survey Research Methods,</u> American Statistical Association, Alexandria, VA, pp. 388-393. -restrict content, network theory rounding, perturbation, cell suppression
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- Cox, L. H. (1987b), "A Constructive Procedure for Unbiased Controlled Rounding," <u>Journal of the American Statistical Association</u>, Vol. 82, June 1987, pp. 520-524.

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- Cox, L. H. (1991), "Comment" a comment on Duncan G. and Pearson, R., "Enhancing Access to Microdata while Protecting Confidentiality: Prospects for the Future," <u>Statistical Science</u>, No. 6, pp. 232-234.

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- Cox, L. H. and Zayatz, L. (1993), 'Setting an Agenda for Research in the Federal Statistical System: Needs for Statistical Disclosure Limitation Procedures," <u>Proceedings of the Section on Government Statistics</u>, American Statistical Association, Alexandria, VA. -confidentiality problems, variety of techniques

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- Dalenius, T. and Denning, D.E. (1982), "A Hybrid Scheme for Release of Statistics," <u>Statistisk</u> <u>Tidskrift</u>, Vol. 2, pp. 97-102
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 - disclosure methods, way to test sensitivity to disclosure, measure effectiveness of data masking
- Duncan, G.T. and Lambert, D. (1986), "Discloure limited Data Dissemination," (with comment), <u>Journal of the American Statistical Assocation</u>, Vol. 81, pp. 10-28.

 -legal confidentiality, "general disclosure limiting approach that quantifies the extent of statistical disclosure by means of an uncertainty function applied to predictive distribution."
- Duncan, G.T. and Lambert, D. (1987), "The Risk of Disclosure for Microdata," <u>Proceedings of the Bureau of the Census Third Annual Research Conference</u>, Bureau of the Census, Washington, D.C.
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 <u>Confidentiality and Accessibility of Government Statistics.</u> Committee on National Statistics and the Social Science Research Council, National Academy Press. Washington, D.C. -statistical disclosure limitation methodology and administrative procedures restrict data access
- Duncan, G.T. and Pearson, R.W. (1991), "Enhancing Access to Microdata While Protecting Confidentiality: Prospects for the Future," (with comment), <u>Statistical Science</u>, Vol. 6, No. 3, pp. 219-239.
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- Gates, G. W. (1988), "Census Bureau Microdata: Providing Useful Research Data While Protecting the Anonymity of Respondents," <u>Proceedings of the Social Statistics Section</u>, American Statistical Association, Alexandria, VA, pp. 235-240.

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- George, J.A. and Penny, R. N. (1987), "Initial Experience in Implementing Controlled Rounding for Confidentiality Control," <u>Proceedings of the Bureau of the Census Third Annual Research Conference</u>, Bureau of the Census, Washington, D.C., pp. 253-262 -controlled rounding and random rounding, NZ Census bureau practice
- Govoni, J.P. and Waite, P.J. (1985), "Development of a Public Use File for Manufacturing,"

 <u>Proceedings of the Section on Business and Economic Statistics</u>, American Statistical

 Association, Alexandria, VA, pp. 300-302.

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- Greenberg, B. (1985), "Notes on Confidentiality Issues when Releasing Survey or Census Data," presented at the Conference on Access to Public Data sponsored by the Social Science Research Council.
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- Greenberg, B. (1990a), 'Disclosure Avoidance Research at the Census Bureau. 'Proceedings of the Bureau of Census Sixth Annual Research Conference, Bureau of the Census, Washington, D.C., pp. 144 166.

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- Institute for Social Research (ISR). (1987), PSID Local Area Information Data Files License Agreements Requirements. Ann Arbor, MI: University of Michigan.

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- Jabine, T.B. (1993b), "Statistical Disclosure Limitation Practices of the United States Statistical Agencies, <u>Journal of Official Statistics</u>, Vol. 9, No. 2, pp. 427-454. -updated version of agency practices

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- Journal of Official Statistics (vol. 14, no. 4, 1988) special issue entitled "Disclosure Limitation Methods for Protecting the confidentiality of Statistical Data." Some but not all methods looked at:

 -remote access, micro aggregation, post randomization, perturbation, automated cell suppression, controlled rounding & linear restraints, synthetic and combined estimators in disclosure control
- Keller, W.J. and Bethlehem, J.G. (1992), "Disclosure Protection of Microdata: Problems and Solutions, Statistica Neerlandica, Vol. 46, No. 1, pp. 5-19.

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- Kelly, J. P. (1990), "Confidentiality Protection in Two and Three Dimensional Tables," Ph.D. Dissertation, University of Maryland College, Park, MD. -complementary suppression
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- Organization for Economic Cooperation and Development (OECD) (1980), <u>Guidelines Governing</u> the Protection of Privacy and Transborder Flows of Personal Data.

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- Rowe R. (1991), "Some Consideration in the Use of Linear Networks to Suppress Tabular Data," <u>Proceedings of the Section on Survey Research Methods,</u> American Statistical Association, Alexandria, VA, pp.357-362.
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- Rubin, D. (1993), "Discussion, Statistical Disclosure Limitation," <u>Journal of Official Statistics</u>, Vol. 9, No. 2, pp. 461-468.
 -synthetic data release only
- Saalfeld, A. Zayatz, L. and Hoel. E. (1992), "Contextual Variables via Geographic Sorting: A Moving Averages Approach," <u>Proceedings of the Section on Survey Research Methods</u>, American Statistical Association, Alexandria, VA, pp. 691-696.

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- Skinner, C. J. (1992), "On Identification Disclosure and Prediction for Microdata," <u>Statistic Neerlandica</u>, Vole. 46, No. 1, pp. 21-32.

 -estimating probability of disclosure
- Sinkner, C.J. and Holmes, D. J. (1992), "Modeling Population Uniqueness," <u>Proceedings of the International Seminar on Statistical Confidentiality,</u> International Statistical Institute, pp. 175-199.

 -estimate uniqueness
- Spruill, N.L. (1982), "Measure Confidentiality," <u>Proceedings of the Section on Survey Research Methods</u>, American Statistical Association, Alexandria, VA, pp. 206-265. -adding random noise, multiplying by random noise, aggregation, random rounding, data swapping
- Stevens, D.W. (1996), <u>Toward an All Purpose Confidentiality Agreement: Issues and Proposed Language</u>. University of Baltimore, The Jacob France Center. -general, legal
- Strudler, M. Oh, H.L and Scheuren, F. (1986), "Protection of Taxpayer Confidentiality with Respect to the Tax Model," <u>Proceedings of the Section on Survey Research Methods</u>, American Statistical Association, Alexandria, VA, pp. 375-381.

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- Sullivan, C.N (1992a), "An Overview of Disclosure Practices," Statistical Research Division Research Report Series, Census/SRD/RR 92/09, Bureau of the Census, Washington, DC. -cell suppression
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