Presented at the FIG Working Week 2023,
28 May - 1 June 2023 in Orlando, Florida, USA

FIG WORKING WEEK 2023
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Protecting Our World, Conquering New Frontiers

Professional Education in Ethics?

PhD. Rosario Casanova
Chair Academic Network UN-GGIM: America
casanova@fing.edu.uy

Organized By NSPS FIG INTERNATIONAL FEDERATION OF SURVEYORS
Diamond Sponsors esri THE SCIENCE OF WHERE Trimble

What is data ethics?

The Open Data Institute defines data ethics as:

> *'A branch of ethics that evaluates data practices with the potential to adversely impact on people and society – in data collection, sharing and use'*

Data ethics relates to good practice around how data is collected, used and shared. It is especially relevant when data activities have the potential to impact people and society, directly or indirectly.

For example, an automated data model might make decisions about whether someone is eligible for a mortgage, or what insurance they can be offered. And decisions about what data to collect – and what to exclude – might affect groups in a society.

Data ethics should be addressed at all stages:

- **Stewarding data** – collecting it, maintaining it and sharing it
- **Creating information from that data** – in the form of products and services, analysis and insights, or stories and visualisations
- **Deciding what to do** – informed by information from multiple sources along with experience and understanding

> *Ethics is about how we ought to live together. The creation of and access to [geographical data] means we live together differently today than we did before. That's potentially a very good thing, but for it to be good, we must do the hard work of deciding who we are in relation to our data.*
>
> Michael Rozier, S.J., Ph.D.
> 2019-2020 EthicalGEO Fellow

The Locus Letter proposes that a broader, shared understanding of the risks and remedies related to the uses of location data can improve standards of practice and help protect people and the public interest.

Activities	Document Type
• Locus Charter (Benchmark Initiative & EthicalGEO)	Global Strategic Principles
○ ODI Data Ethics Canvas ○ GEO - Data Working Group Ethics Best Practices Geonovum - Ethical Framework ○ OGC - GeoEthics adhoc	Frameworks / Best Practices
• W3C SDWWG - Responsible Use Guide • Godan - Code of Ethics Toolkit • SDSN TReNDS - Data Collaboration Contracts • Omidyar Network - Ethics Explorer • DevGRG - Ethical Research Guidelines for Development	Guides / Guidelines / Templates
○ URISA / GISCI (EE. UU.) ○ SEIC (Australia and New Zealand) ○ RICS (United Kingdom) ○ ASPRS (US)	Codes of ethics

Denise McKenzie. 2021.

A GIS Code of Ethics

Approved by the URISA Board of Directors

April 9, 2003

This Code of Ethics is intended to provide guidelines for GIS (geographic information system) professionals. It should help professionals make appropriate and ethical choices. It should provide a basis for evaluating their work from an ethical point of view. By heeding this code, GIS professionals will help to preserve and enhance public trust in the discipline.

This code is based on the ethical principle of always treating others with respect and never merely as means to an end; i.e., deontology. It requires us to consider the impact of our actions on other persons them. It emphas our employers, for these guidel

The text of this many codes of professionals, t guidelines that findings widely retention and s to display consi database manip profession.

A positive tone to ethical behav acts to be avoid there is implicit positive actions understanding o

This code is not personal judgm where two right aspect of this co such as these k situations before ethical paradigm

- View persons who exemplify morality as your own guide (Virtue Ethics)
- Attempt to maximize the happiness of everyone affected (Utilitarianism)
- Only follow maxims of conduct that everyone else could adopt (Kantianism)
- Always treat other persons as ends, never merely as means (Deontology)

I. Obligations to Society

The GIS professional recognizes the impact of his or her work on society as a whole, or subgroups of society including geographic or demographic minorities, on future gener and inclusive of social, economic, environmental, or technical fields of endeavor. Oblig society shall be paramount when there is conflict with other obligations. Therefore, the professional will:

1. Do the Best Work Possible

- Be objective, use due care, and make full use of education and skills.
- Practice integrity and not be unduly swayed by the demands of others
- Provide full, clear, and accurate information.
- Be aware of consequences, good and bad.
- Strive to do what is right, not just what is legal.

2. Contribute to the Community to the Extent Possible, Feasible, and Advisab

- Make data and findings widely available.
- Strive for broad citizen involvement in problem definition, data identi analysis, and decision-making.
- Donate services to the community.

3. Speak Out About Issues

- Call attention to emerging public issues and identify appropriate resp based on personal expertise.
- Call attention to the unprofessional work of others. First take concern persons; if satisfaction is not gained and the problems warrant, then people and organizations should be notified.
- Admit when a mistake has been made and make corrections where po

II. Obligations to Employers and Funders

hired to deliver needed products and services. The employer (or funder) expects quality work and professional conduct. Therefore the GIS professional will:

1. Deliver Quality Work

- Be qualified for the tasks accepted.
- Keep current in the field through readings and professional development.
- Identify risks and the potential means to reduce them.
- Define alternative strategies to reach employer/funder goals, if possible, and the implications of each.
- Document work so that others can use it. This includes metadata and program documentation.

2. Have a Professional Relationship

- Hold information confidential unless authorized to release it.
- Avoid all conflicts of interest with clients and employers if possible, but when they are unavoidable, disclose that conflict.
- Avoid soliciting, accepting, or offering any gratuity or inappropriate benefit connected to a potential or existing business or working relationship.
- Accept work reviews as a means to improve performance.
- Honor contracts and assigned responsibilities.
- Accept decisions of employers and clients, unless they are illegal or unethical.
- Help develop security, backup, retention, recovery, and disposal rules.
- Acknowledge and accept rules about the personal use of employer resources. This includes computers, data, telecommunication equipment, and other resources.
- Strive to resolve differences.

3. Be Honest in Representations

- State professional qualifications truthfully.
- Make honest proposals that allow the work to be completed for the resources requested.
- Deliver an hour's work for an hour's pay.
- Describe products and services fully.
- Be forthcoming about any limitations of data, software, assumptions, models, methods, and analysis.

III. Obligations to Colleagues and the Profession

The GIS professional recognizes the value of being part of a community of other professionals. Together, we support each other and add to the stature of the field. Therefore, the GIS professional will:

1. Respect the Work of Others.

- Cite the work of others whenever possible and appropriate.
- Honor the intellectual property rights of others. This includes their rights in software and data.
- Accept and provide fair critical comments on professional work.
- Recognize the limitations of one's own knowledge and skills and recognize and use the skills of other professionals as needed. This includes both those in other disciplines and GIS professionals with deeper skills in critical sub-areas of the field.
- Work respectfully and capably with others in GIS and other disciplines.
- Respect existing working relationships between others, including employer/employee and contractor/client relationships.
- Deal honestly and fairly with prospective employees, contractors, and vendors.

2. Contribute to the Discipline to the Extent Possible

- Publish results so others can learn about them.
- Volu nati
- Sup atte back

IV. Obligations to Individuals in Society

The GIS professional recognizes the impact of his or her work on individual people and will strive to avoid harm to them. Therefore, the GIS professional will:

1. Respect Privacy

- Protect individual privacy, especially about sensitive information.
- Be especially careful with new information discovered about an individual through GIS-based manipulations (such as geocoding) or the combination of two or more databases.

2. Respect Individuals

- Encourage individual autonomy. For example, allow individuals to withhold consent from being added to a database, correct information about themselves in a database, and remove themselves from a database.
- Avoid undue intrusions into the lives of individuals.
- Be truthful when disclosing information about an individual.
- Treat all individuals equally, without regard to race, gender, or other personal characteristic not related to the task at hand.

Will Craig, de la Universidad de Minnesota

https://www.urisa.org/clientuploads/directory/Documents/CodeofEthics.pdf

Surveys: ethical use of geospatial data (2021 – 2022)

Americas: national members and academia

Existence of National regulation

9 questions – 16 responses- national members

Existence of Education

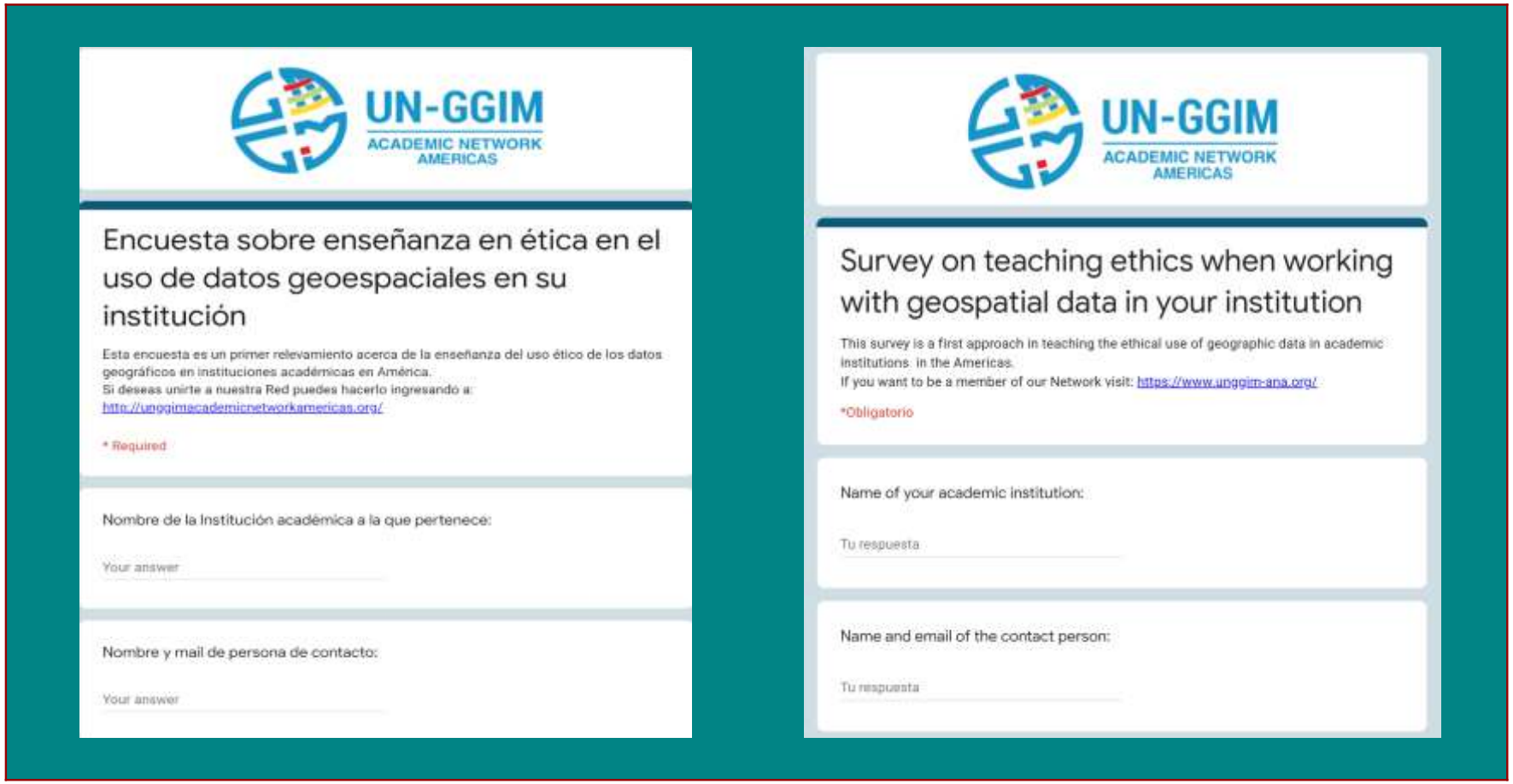
8 questions – 90 responses

Europe: academia

Existence of Education

8 questions – 40 responses

Survey regarding education in the ethical use of geospatial data



UN-GGIM ACADEMIC NETWORK AMERICAS

Encuesta sobre enseñanza en ética en el uso de datos geoespaciales en su institución

Esta encuesta es un primer relevamiento acerca de la enseñanza del uso ético de los datos geográficos en instituciones académicas en América.
Si deseas unirte a nuestra Red puedes hacerlo ingresando a:
http://unggimacademicnetworkamericas.org/

* Required

Nombre de la Institución académica a la que pertenece:

Your answer

Nombre y mail de persona de contacto:

Your answer

UN-GGIM ACADEMIC NETWORK AMERICAS

Survey on teaching ethics when working with geospatial data in your institution

This survey is a first approach in teaching the ethical use of geographic data in academic institutions in the Americas.
If you want to be a member of our Network visit: https://www.unggim-ana.org/

*Obligatorio

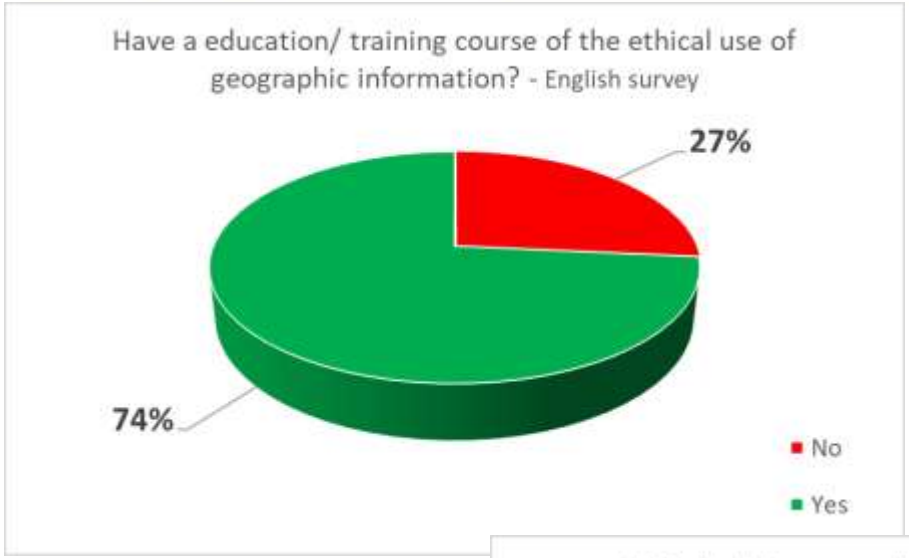
Name of your academic institution:

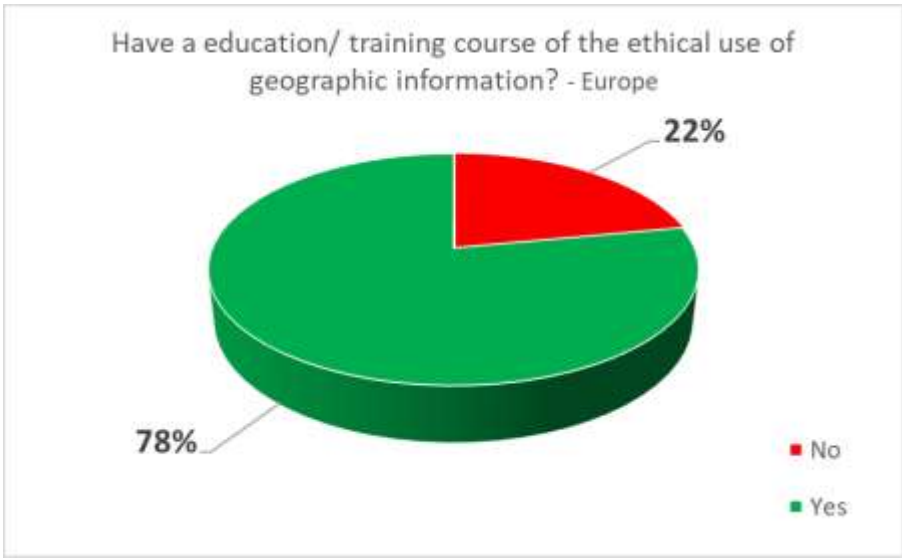
Tu respuesta

Name and email of the contact person:

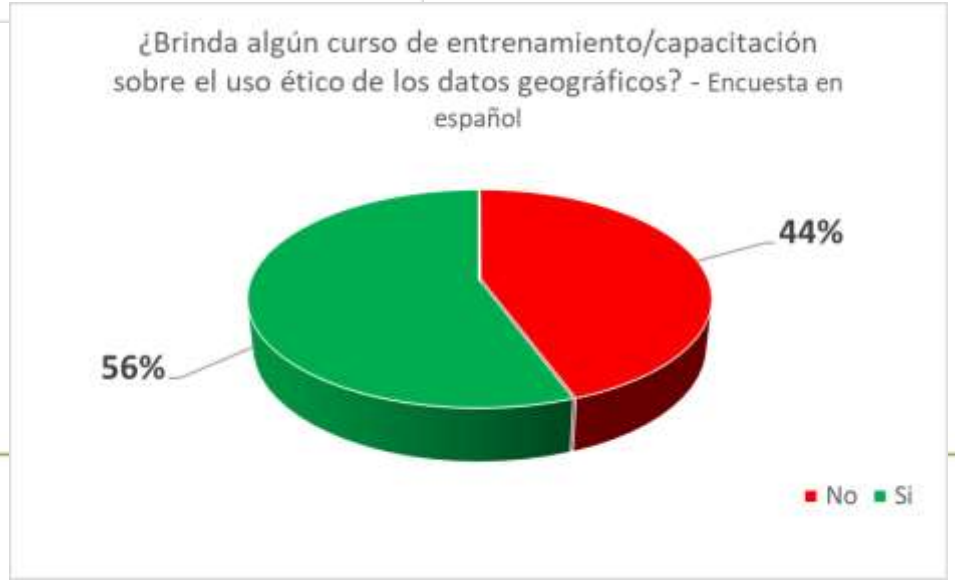
Tu respuesta

Results





América



Europa

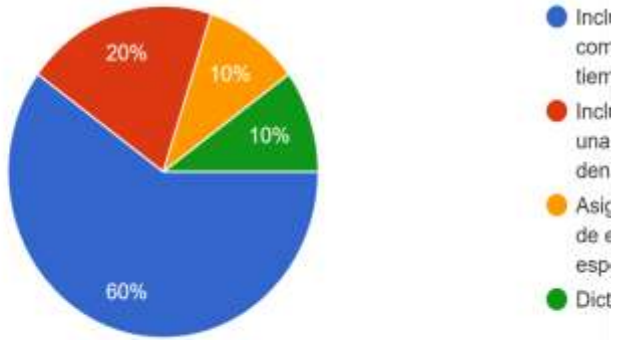
America´s Survey

If the previous question was affirmative, which type of training do you provide?

36 responses

Si la respuesta anterior es afirmativa, qué tipo de formación brinda?

20 responses



Survey responses

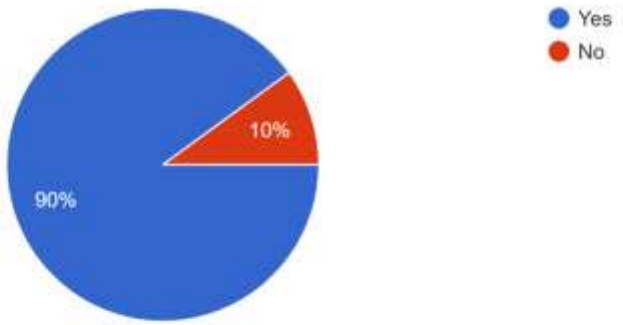
If the previous question was affirmative, which type of training do you provide?

24 responses

Europe´s Survey

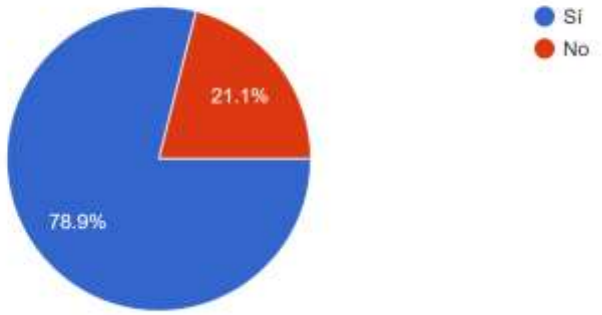
Including in the future…

Are you considering including a discussion of ethics in your course in the future?
50 responses

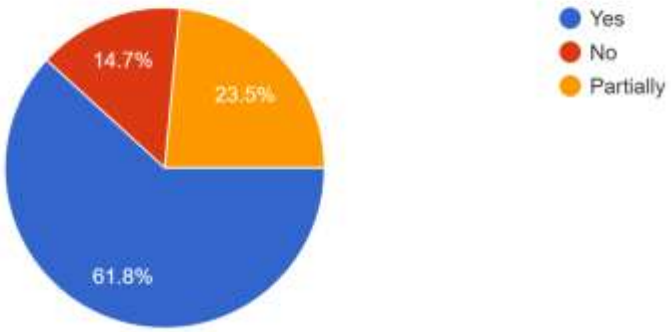


America´s Survey

Está considerando incluir la discusión de la ética en cursos futuros?
38 responses



Are you considering including a discussion of ethics in your course in the future?
34 responses



Europe´s Survey

Some comments made

Actualmente no se toca este tema pero nos interesa mucho aprender mas al respecto

Muchas veces encontramos mapas que cuentan historias distintas a la realidad, a veces hechos de manera no intencionada pero a veces hechas con dolo para modificar la percepción del lector.

There is a gap in geospatial teaching materials and thus an opportunity to create. in this area, across the interdisciplinary geospatial communities.

I consider it would be fundamental to include this topic at all levels of teaching. I would like to include it in already existing activities. I would very much appreciate having the training myself in order to expand my knowledge and filter the topics of importance for my students

Parabéns pela iniciativa, tópico muito importante.

The topic of ethics is very important. I see a clear relationship of geospatial science with SDGs, cooperation and humanitarian aid.

No conocía este aspecto acerca de los datos. Por un lado, es un tema interesante pero las clases están ya saturadas con conceptos

As well as mentioning ethics and data protection on the spatial databases course, we also provide a 2-hour introduction to ethics for all undergraduate and MSc students in our department. This includes general ethics - ensuring that people are aware of what they are consenting to - and some focus on GDPR and in particular how location privacy is important and location is considered personal data, as well as how people can be identified not only directly but indirectly through their answers. We also include (on one of our programming modules) the importance of HTTPS for security of location information.

Need more information regarding standards or common agreed ethical use of geographic data. If it already exists, unfortunately, I do not know where I can access it.

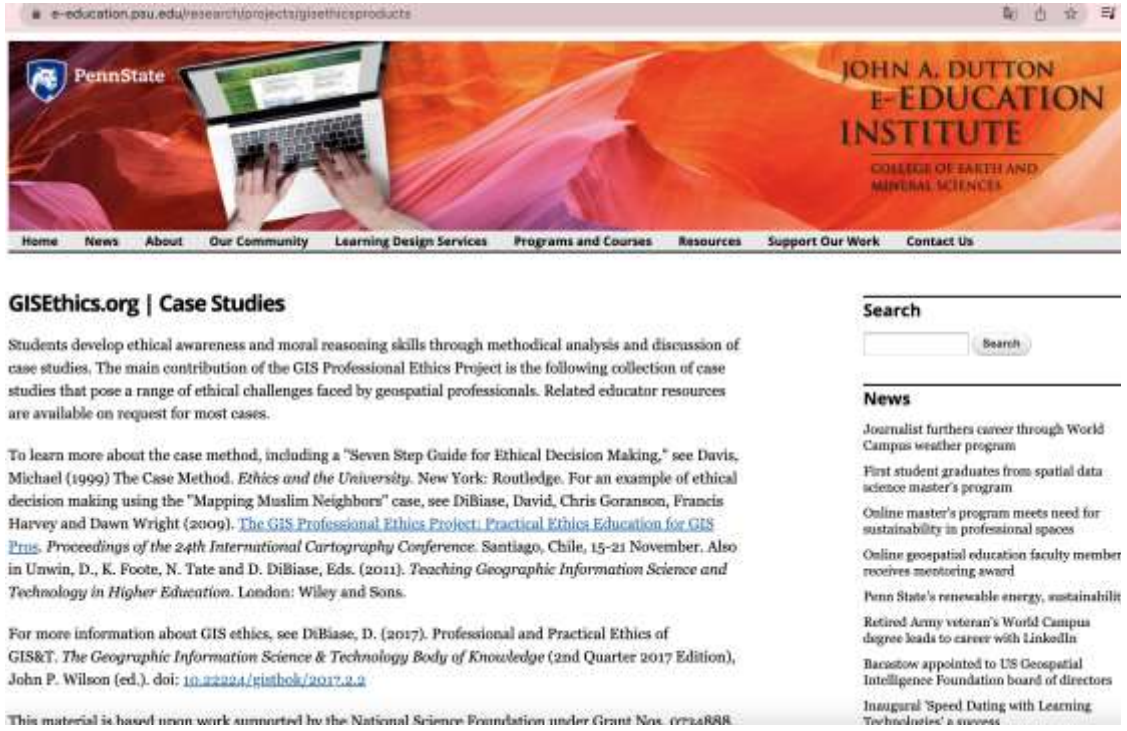
Data ethics will become a larger component in my Geospatial courses

Please define what should be considered as ethical use of geographic data.

I often touch on data aggregation and anonymizing data, but I think I need to be more explicit in discussing issues of ethics with GIS and spatial analysis.

I suggest adding at least 1-2 lessons in every course outline about ethics, integrity, diversity, complexity, the inclusion of data, sharing data, and use of data. This should be given to not only university students but also to primary to high school students. I also suggest arranging short training courses in this regards for practitioners, engineers etc.

Experiences:



The Pennsylvania State University.

Step 1. State problem. For example, "there's something about this decision that makes me uncomfortable" or "do I have a conflict of interest?"

Step 2. Check facts. Many problems disappear upon closer examination of situation, while others change radically.

Step 3: Identify relevant factors. For example, persons involved, laws, professional code, other practical constraints.

Step 4: Develop list of options. Be imaginative, try to avoid "dilemma"; not "yes" or "no" but whom to go to, what to say.

Step 5: Test options. Use such tests as the following: *Harm test:* does this option do less harm than alternatives? *Publicity test:* would I want my choice of this option published in the newspaper? *Defensibility test:* could I defend choice of option before Congressional committee or committee of peers? *Reversibility test:* would I still think choice of this option good if I were adversely affected by it? *Colleague test:* what do my colleagues say when I describe my problem and suggest this option as my solution? *Professional test:* what might my profession's governing body or ethics committee say about this option? *Organization test:* what does the company's ethics officer or legal counsel say about this?

Step 6: Make a choice based on steps 1-5.

Step 7: Review steps 1-6. What could you do to make it less likely that you would have to make such a decision again? Are there any precautions can you take as individual (announce your policy on question, change job, etc.)? Is there any way to have more support next time? Is there any way to change the organization (for example, suggest policy change at next departmental meeting)?

Michael Davis, 1999.

mapping_muslim_neighbors_case.pdf	A police department's plan to map potential terrorist enclaves brings charges of racial profiling.
caribou_routes_case.pdf	A GIS analyst is asked to exclude pertinent data from maps prepared for a public hearing.
mobile_phone_tracking_case.pdf	Researchers track mobile phone users' movements to derive predictive models of human mobility. *Updated 4 December 2019*
software_emergency_case.pdf	Too few software licenses are available in the aftermath of a tsunami.
e911_conflict_case.pdf	A municipal GIS manager troubled by what appears to be a conflict of interest considers filing a formal ethics complaint.
collateral_damage_case.pdf	A geospatial intelligence analyst predicts the civilian casualties in likely to be caused by a pre-emptive missile attack.
satellite_contract_case.pdf	A sales representative is expected to withhold information that could affect availability of a data product.
fire_mapping_case.pdf	A member of the press asks a government employee to leak the results of a GIS analysis about a controversial wild land fire.
llrw_siting_map_case.pdf	Map masks potentially suitable sites for low-level radioactive waste storage facility.
submarine_crash_case.pdf	A nuclear submarine's crash into an uncharted seamount raises ethical issues for Navy training personnel.
data_access_case.pdf	A governmental agency's need to recoup user fees conflicts with a public records law.
alpha_software_case.pdf	Entrepreneurial GIS programmer is tempted to use a friend's code to win a lucrative contract.
bear_baiting_case.pdf	Should locations of controversial hunting stations be mapped?
environmental_justice_case.pdf	GIS programmer ponders a contract for a web map overlays toxic industrial sites and at-risk communities.
tidal_wetland_mapping_case.pdf	A scope of work statement and established mapping procedures prevent a GIS analyst from adding wetlands to a conservation database.
privacy_and_planning_case.pdf	A GIS professional considers filing an ethics complaint about lax protection of the confidentiality of a sensitive database.
ethical_minefield_case.pdf	Should a surveying and mapping crew chief pay a bribe to acquire data needed to conduct field reconnaissannce safely?

GISProfessional Ethics Project gisprofessionalethics.org

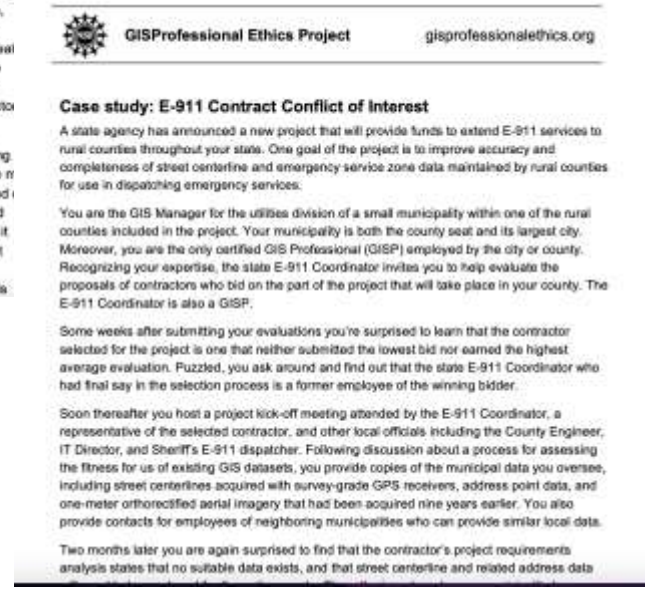
Case study: Environmental Justice Web Map

Jackson owns and operates a small software development firm that specializes in web mapping. He is a certified GIS Professional. A non-profit organization called "environmentaljustice.org" has approached Jackson's firm with a request for bid for a custom web mapping application to be hosted at its web site. The web map is to show the spatial association of (a) industrial sites known to have discharged of toxic substances into the environment with (b) the locations of what the organization calls "communities at risk." Environmentaljustice.org defines the latter as areas characterized by high rates of families below poverty, low-income families, non-high school graduates, people of color, working class people, renters, and children in poverty.

The web map will be freely available to anyone who has access to the Internet through a properly configured web browser. All of the data layers the map will combine are public records that hav not been combined before at a national scale and in such an interactive format. For example, data compiled by the Environmental Protection Agency pinpoint Superfund sites and other industrial sites known to have discharged toxic substances. Population data needed to delineat communities at risk are available from the U.S. Census Bureau. The organization's goal is to promote public awareness and concern about what it considers to be the unjust exposure of underprivileged people to the risks associated with industrial pollution. Because of a benefacto very large donation, the organization is able to offer Jackson a very lucrative contract.

Meanwhile, a large firm that produces glass fiber has learned about the planned web mapping project, and is already considering legal action to block it. The firm is concerned that the web m is likely to be misinterpreted by novice viewers, and that the firm will be among those accused exploiting communities at risk. Lawyers are prepared to argue that thematic maps of this kind reveal spatial relationships, but cannot prove causation or intention. The firm and others like it feel that it is libelous to promote the notion that they locate factories near neighborhoods that have the least political influence. Furthermore, they are concerned with the accuracy and completeness of the data that will be mapped. For example, some toxic release information is

CASE STUDIES



GISProfessional Ethics Project gisprofessionalethics.org

Case study: E-911 Contract Conflict of Interest

A state agency has announced a new project that will provide funds to extend E-911 services to rural counties throughout your state. One goal of the project is to improve accuracy and completeness of street centerline and emergency service zone data maintained by rural counties for use in dispatching emergency services.

You are the GIS Manager for the utilities division of a small municipality within one of the rural counties included in the project. Your municipality is both the county seat and its largest city. Moreover, you are the only certified GIS Professional (GISP) employed by the city or county. Recognizing your expertise, the state E-911 Coordinator invites you to help evaluate the proposals of contractors who bid on the part of the project that will take place in your county. The E-911 Coordinator is also a GISP.

Some weeks after submitting your evaluations you're surprised to learn that the contractor selected for the project is one that neither submitted the lowest bid nor earned the highest average evaluation. Puzzled, you ask around and find out that the state E-911 Coordinator who had final say in the selection process is a former employee of the winning bidder.

Soon thereafter you host a project kick-off meeting attended by the E-911 Coordinator, a representative of the selected contractor, and other local officials including the County Engineer, IT Director, and Sheriff's E-911 dispatcher. Following discussion about a process for assessing the fitness for us of existing GIS datasets, you provide copies of the municipal data you oversee, including street centerlines acquired with survey-grade GPS receivers, address point data, and one-meter orthorectified aerial imagery that had been acquired nine years earlier. You also provide contacts for employees of neighboring municipalities who can provide similar local data.

Two months later you are again surprised to find that the contractor's project requirements analysis states that no suitable data exists, and that street centerline and related address data

CODE OF ETHICS

CODE OF ETHICS

The GIS Certification Institute

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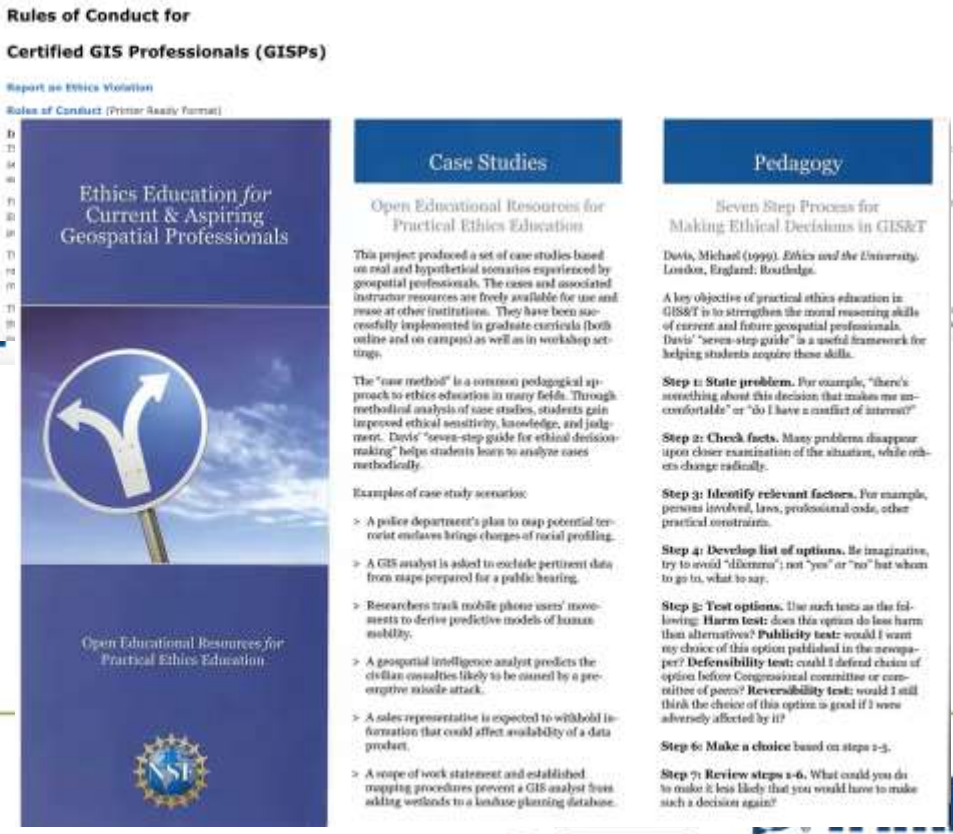
This code is based on the ethical principle of always treating others with respect and never merely as means to an end: i.e., ***deontology***. It requires us to consider the impact of our actions on other persons and to modify our actions to reflect the respect and concern we have for them. It emphasizes our obligations to other persons, to our colleagues and the profession, to our employers, and to society as a whole. Those obligations provide the organizing structure for these guidelines.

The text of this code draws on the work of many professional societies. It is not surprising that many codes of ethics have a similar structure and provide similar guidelines to their professionals, because they are based upon a similar concept of morality. A few of the guidelines that are unique to the GIS profession include the encouragement to make data and findings widely available, to document data and products, to be actively involved in data retention and security, to show

https://www.gisci.org/Portals/0/Ethics/CodeOfEthics_PR.pdf



Preliminary conclusions Ethics in GI

- Strong need for ethics as a topic in geospatial education (including principles, procedures, consequences, standardization)
- General awareness for the topic in academic curricula
- Already an important topic
- Becoming even more important

THE ROLE OF ACADEMIA IS THE GATEWAY OF GEO-ETHICS

Questions?

PhD. Rosario Casanova
casanova@fing.edu.uy