Conducting Social Science Research

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- Topics to Cover

Social Science Research

- Researchers:
  - *observe* society and create explanations for what they see [theorizing]
  - frame *hypotheses* about possible relationships in society
  - make *measurements* of social phenomena
  - *test* hypotheses about relationships
  - *exchange ideas* with other researchers and discuss the merits of various explanations

Social Science Research Process

1. Identifying the research problem [Topic]
   - Define the problem
2. Reviewing of literature
3. Setting research:
   - Questions
   - Objectives
   - Hypotheses
4. Choosing the study design
5. Deciding on the sample design
6. Collecting data from the research sample
7. Process and analyze the collected research data
8. Writing research report

Facts and Values in Perspective

- SSR does not deal with questions of value
  - *Should* wealth be more equally distributed in Ghana?
- It deals with empirical questions, questions of fact
  - *Is* wealth equally distributed in Ghana?
  - Or: To what extent is wealth equally distributed in Ghana?

Two Kinds of Opinions

- Some opinions are based on values
  - "I support gun control because all violence is *morally* wrong"
- Other opinions are based on facts ***presumed*** to be correct
  - "I support gun control because it reduces crime: fewer guns, less crime"
- Social Science research cannot affect value-based opinions
  - However, Social science research can inform fact-based opinions

Moral Philosophy vs. Social science Methodology

- Questions of **value or morality** are ***normative*** questions
  - No methodology can prove one value superior to another
- Questions of **fact or causation** are ***empirical*** questions
  - The scientific method can help us determine whether one fact or cause is more correct than another fact or cause

Two Kinds of Scientific Questions

"What?" Questions:

- Defining concepts
  - *What* is community resilience?
  - What is the color of the sky?

"Why?" Questions:

- Explaining concepts
  - *Why* do some local governments have higher levels of community resilience whereas other local government have lower levels of community resilience?
  - Why does the sky have the color we see?
  - Why is the sky blue?

“What?” Questions—Description

- Scientific facts are based on empirical observation and measurement
  - not mysticism, intuition, or ideology
- Scientific facts are reproducible
  - they are described in such a way that anyone else, following the same procedure, would get the same result or make the same observation

“Why?” Questions—Causation

- Scientific knowledge is explanatory
- Science looks for causal *processes*
  - It describes ***how*** one fact causes another fact
- Acceptable explanation: “Because the educational experience exposes individuals to diverse ideas, local governments with ***more educated people*** report higher **community resilience** than those with ***less educated people***”
  - A process connects one set of facts (education) with another set of facts (community resilience)

“Why?” Questions—Testable

- Scientific knowledge is testable
- The researcher describes a set of conditions under which the idea would be *rejected*
- A researcher with a testable idea is saying, “If I am correct, I will find such and such to be true. If I am incorrect, I will not find such and such to be true”

The First Goal of Social Science Research

- is to define and measure concepts
  - clearly define the concept to be measured (Conceptualization)
  - determine how to measure the concept accurately (Operationalization)
  - select variables that measure the concept precisely (Measurement)

Concepts

- An idea or mental construct that represents phenomena in the real world.
- **Examples**
  - globalization
  - community resilience
  - green economy/jobs
  - emergency preparedness
  - sustainability

How to Define a Concept: Clarification

- In clarifying a concept, we need to think of properties that are
  - ***concrete***
  - ***vary***

Example

- The concept of
  - economic liberalism (**label**)
- is defined as the extent to which
  - Individuals (**unit of analysis**)
- exhibit the characteristic of
  - supporting government funded social welfare programs, like health care. (**meaning**)

Operationalization

- An operational definition:
  - completes the bridge between concept and measurement
  - puts "into operation" the measurement of the empirical property described in the conceptual definition
- "Measurement strategy" is perhaps a more descriptive term than operational definition

Example: Math-Ability

- Conceptual definition: The concept of
- Math-ability (label) is defined as the extent to which students (unit of analysis) can correctly use basic mathematical operations (meaning)
- **Operational definition:**
- Ask students to solve ten-word problems requiring addition, multiplication, division, and subtraction
- Ask students to solve math problems requiring addition, multiplication, division, and subtraction

Two Kinds of Measurement Error

- **Systematic error**=consistent unintended characteristics
  - factors that do not change over time
  - arise from *within* the measurement instrument
  - always affect the measurement in the same way
- **Random error**= inconsistent unintended characteristics
  - temporary or idiosyncratic factors
  - intrude from *outside* the instrument
  - produce inconsistent, chaotic measurements

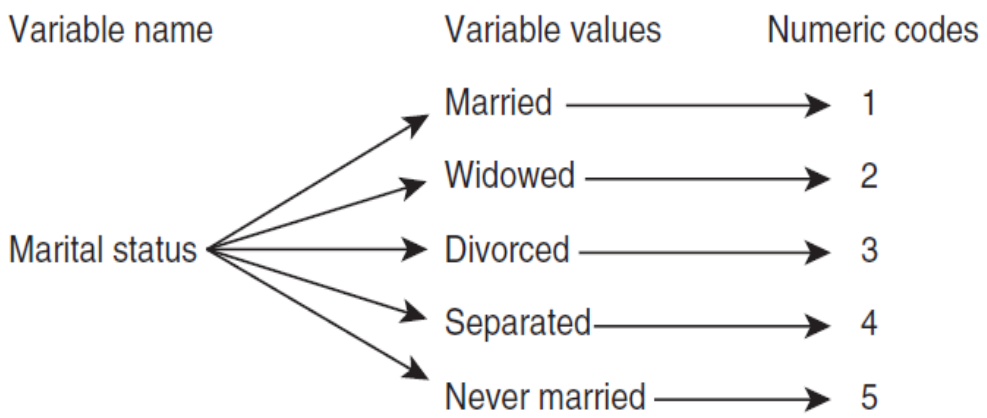
Criteria of Measurement: Reliability and Validity

- A reliable measurement is a consistent measure of a concept.
  - is free of random measurement error
  - gives you the same reading every time
- A valid measurement records the true value of the concept it is measuring.
  - is free of systematic measurement error
  - gives you an accurate reading of the concept

Variables

- A **variable** is an empirical measurement of a characteristic.
- Every variable has one name and at least two possible values.
  - Name: region. Values: South, Northeast, Midwest, West
  - Name: income. Values: $42,000; $42,001; $16,152

Figure 2-1 Anatomy of a Variable



Measurement

- Three levels of measurement or “degrees of precision”
  - 1. Interval level variables have values that are the most precise (e.g., Income in dollars).
  - 2. Ordinal-level variables have values that are somewhat less precise (e.g,. 5-point level of emergency preparedness).
  - 3. Nominal-level variables have the least precise values (e.g., gender: male and female; region of residence) .

The second goal of political research

- is to propose and test explanations for social phenomena to answer “Why?” questions
  - Why do some people report high levels of disaster preparedness, whereas others report low levels of disaster preparedness?
  - Why do some cities have more green jobs, whereas others have fewer green jobs?
  - Why do some cities declare emergencies, while others do not declare emergencies?

Dependent and Independent Variables

- In the context of a causal explanation
  - the **dependent variable** represents the effect
  - the **independent variable** represents the cause

  - Example: If I think that educational attainment causes local governments to report high community resilience, then

    - education is the independent variable (the cause) and
    - community resilience is the dependent variable (the effect)

Stating Hypothesis: Examples

- In a comparison of individuals, males are more likely to report higher levels of emergency preparedness than females

An Acceptable Hypothesis

- Describes a **connection** between the dependent variable and an independent (causal) variable
- Asserts the **direction** or tendency of this connection
- Is **testable:** A good hypothesis needs to be *testable* to find out if it is supported

Research Design

- An overall set of procedures for evaluating the effect of an independent variable on a dependent variable
- Experimental Designs
  - random assignment
  - laboratory experiment
  - field experiment
- Controlled Comparisons
  - 3 scenarios
    - Spurious Relationships
    - Additive Relationships
    - Interaction Relationships

Testing Hypothesis

Test Group

- Group that receives a treatment (independent variable)
- the researcher thinks affects the dependent variable

Control Group

- The group that does not receive the treatment
- The control group provides a basis of comparison for the treatment group

Rival Explanations

- Other variables, besides the independent variable, might affect the dependent variable.
- To rule out rival explanations, the treatment group and control group must be *identical* in every way, *except* for the independent variable.

Experimental Design

- Ensures that the test group and the control group are the same in every way, except one—the independent variable
- Any differences on the dependent variable can be attributed to the independent variable
- Experimental designs are strong because they control for the possible effects of all rival explanations, even rivals the investigator has not thought of or those he or she does not care about

Two Experimental Designs

- Laboratory experiment
  - The control group and the test group are studied in an environment created wholly by the investigator.
- Field experiment
  - The control and test groups are studied in their normal surroundings, living their lives as they naturally do, probably unaware that an experiment is taking place.

Controlled Comparison Design

- Allows the researcher to observe the effect of the independent variable on the dependent variable while holding constant other plausible causes of the dependent variable.
- In controlled comparisons, the investigator can make sure to control for known or suspected rivals, but unknown factors can affect the dependent variable and contaminate the results.

Random Assignment

- All experiments use random assignment.
- Random assignment occurs when every prospective participant—every individual that the investigator wants to study—has an equal chance of ending up in the control group or the test group

Selection Bias

- Selection bias occurs when nonrandom processes determine the composition of the test and control groups.
- These compositional differences, in turn, affect the dependent variable.
- Random assignment defeats selection bias.
- Random assignment ensures that there are not compositional differences between the test and control groups.

Controlled Comparisons: The "How Else?" Question

- "How else, other than the independent variable, are the groups I am comparing not the same?"
- A controlled comparison is accomplished by examining the relationship between an independent and a dependent variable, while holding constant other variables suggested by rival explanations and hypotheses.

Controlled Relationships

- 3 scenarios
  - Spurious Relationships
  - Additive Relationships
  - Interaction Relationships

Coordination Effectiveness During Public Health Emergencies

- What contributes to coordination effectiveness during PHE?

Concept

- "judgment on the quality of coordination during the Ebola PHE"

Operationalization (measurement strategy)

To what extent do you agree that coordination among local government professionals in the DFW area was high during the Ebola PHE?

- 5-point Likert-type scale measured from
- Strongly disagree (1)
- Disagree (2)
- Neither agree nor disagree (3)
- Agree (4)
- Strongly agree (5)
- **Measurement**
- Ordinal scale (1-5)

Model

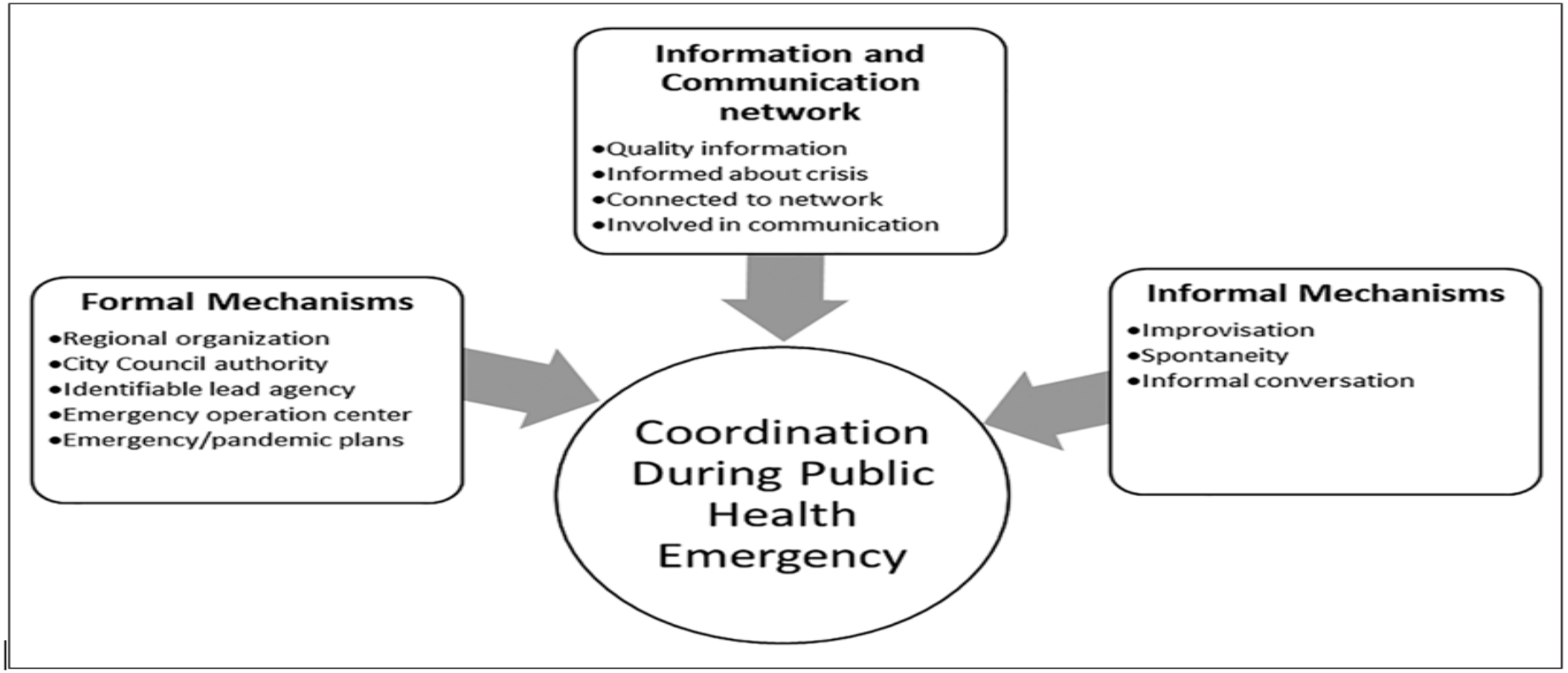


Figure 1. Coordination effectiveness during public health emergencies.

Survey of Government Officials

- The survey questionnaire examined the perception of professionals located in public health and emergency management departments
- Asks about their response to the Ebola incident in the Dallas–Fort Worth region and the strength of the coordination effort.
- 200 questionnaires sent out
  - 105 responded
  - 52.5% response rate.

Table 2. Descriptive Statistics.

Variables	*N*	Minimum	Maximum	*M*	*SD*
Perceived coordination	84	1.00	5.00	3.61	1.19
Formal mechanism					
Emergency plan	90	1.00	5.00	3.82	1.04
Pandemic plan	79	0.00	1.00	0.77	0.42
EOC activated	83	0.00	1.00	0.42	0.50
City council statement	73	0.00	1.00	0.53	0.50
Lead agency	81	1.00	5.00	2.85	1.39
Regional organization	78	1.00	5.00	2.65	1.15
Informal mechanism					
Improvised response	88	1.00	5.00	3.15	1.12
Spontaneous response	81	1.00	5.00	3.49	1.12
Informal conversations	79	1.00	5.00	4.30	0.85
Information & communication					
Feel involved	84	1.00	5.00	3.83	1.38
Feel informed	83	1.00	5.00	3.18	1.25
Feel connected	79	1.00	5.00	3.63	1.18
Quality of information	83	1.00	5.00	2.93	1.26

Table 4. Determinants of Professional's Perceived Coordination Effectiveness During the Ebola Public Health Emergency in DFW, Texas.

Predictors of coordination	*N*	DF	χ^2	Somers' *D*	*p*
Formal mechanism					
Emergency plan	90	16	16.59	−0.01	.51
Pandemic plan	79	4	1.70	0.15	.79
EOC activated	83	4	4.24	−0.04	.37
City council statement	73	4	9.09	0.26	.06
Lead agency	81	16	39.47	0.36	.00
Regional organization	78	16	21.49	0.16	.16
Informal mechanisms					
Improvised response	88	16	23.45	−0.09	.10
Spontaneous response	81	16	13.86	−0.03	.61
Informal conversation	79	16	45.37	0.08	.00
Information & communication					
Feel informed	83	16	43.34	0.31	.00
Feel connected	79	16	77.86	0.45	.00
Feel involved	84	16	29.33	0.14	.02
Quality of information	83	16	51.72	0.41	.00

Disaster Preparedness

- Concept
- Preventive actions taken by individuals/ households before or during emergencies

Description of Data and Methods

- Data: 2008 General Social Survey.
  - The terrorism/emergency/ disaster preparedness module
    - asked questions on various aspects of respondent's level of preparedness for disaster.

  - Dependent variable
  - Level of disaster preparedness

Table 2: Emergency preparedness			
	Respondent has…	Yes	No
1	Emergency plan	1	0
2	Stock-piled supplies	1	0
3	Purchased things that contribute to safety	1	0
4	Duplicated important document	1	0
5	Collected information	1	0
	Neighbor influence Score	5/5 =1	
	Cronbach's alpha	0.72	

Table 3: Importance of Disaster Preparedness Actions

	Degree of importance of…	SD	DIS	NAD	AGR	SA
1	Developed emergency plan	1	2	3	4	5
2	Stock-piled supplies	1	2	3	4	5
3	Purchased things that contribute to safety	1	2	3	4	5
4	Duplicated important document	1	2	3	4	5
5	Collecting information	1	2	3	4	5
	Perception Score	25/25 = 1				
	Cronbach's alpha	0.82				

Note: SA is strongly agreed; AGR is agreed; NAD is neither agreed nor disagreed; DIS is disagreed; SD is strongly disagreed

Table 5: Descriptive Statistics				
Variable	Mean	Std. Dev.	Min	Max
Disaster Preparedness	0.743	1.110	0	5
Perception Index	0.610	0.213	0.2	1
Social Capital Index	0.158	0.248	0	1
Age (years)	46.814	16.997	18	89
Income ($ '000)	20.730	62.032	0	480.145
Size of family	2.535	1.387	1	8
Male	0.475	0.500	0	1
Married	0.500	0.500	0	1
White	0.790	0.408	0	1
Liberal	0.274	0.446	0	1
Conservative	0.336	0.473	0	1
Healthy	0.758	0.428	0	1
Elementary	0.140	0.347	0	1
College	0.310	0.463	0	1
North East	0.160	0.367	0	1
Mid-Wed	0.245	0.431	0	1
West	0.235	0.424	0	1
Planned	0.193	0.395	0	1
Stocked	0.174	0.379	0	1
Purchased	0.114	0.318	0	1
Informed	0.199	0.399	0	1
Duplicated	0.111	0.314	0	1

Table 7: Results of Ordered Logistic Regression of the Determinants of Emergency Preparedness

Variables	Model 1		Model 2		Model 3		Model 4	
	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.
Perception Index			6.5141	2.1441***	6.4920	2.1495***	7.0176	2.3170***
Social Capital Index			103.7231	29.9552***				
Age (years)	1.0331	0.0197*	1.0318	0.0223	1.0415	0.0227*	1.0429	0.0227*
Age Squared	0.9996	0.0002**	0.9997	0.0002	0.9996	0.0002*	0.9996	0.0002*
Income ($)	1.0000	0.0001	1.0000	0.0000	1.0000	0.0001*	1.0000	0.0001
Size of Household	0.9651	0.0471	0.9280	0.0506	0.9393	0.0513	0.9465	0.0514
Male =1 (a)	0.9229	0.1064	1.0007	0.1269	0.9656	0.1243	0.9574	0.1231
Married=1 (b)	0.9662	0.1297	1.1367	0.1703	1.1283	0.1699	1.1211	0.1686
White= 1(c)	1.1511	0.1678	1.1737	0.1903	1.1544	0.1872	1.1438	0.1855
Liberal= 1(d)	1.1018	0.1583	1.1471	0.1821	1.1257	0.1795	1.1087	0.1765
Conservative= 1(d)	1.1655	0.1584	1.1125	0.1657	1.1385	0.1701	1.1273	0.1681
Healthy= 1(e)	0.9137	0.1259	0.8569	0.1289	0.8895	0.1349	0.9039	0.1372
Elementary= 1(f)	0.4680	0.0891***	0.5361	0.1156***	0.5699	0.1228***	0.5490	0.1183***
College =1 (f)	1.5447	0.2000***	1.5032	0.2134***	1.4506	0.2083***	1.4272	0.2048***
North East =1 (g)	0.8663	0.1457	0.9196	0.1743	0.9198	0.1746	0.9130	0.1732
Mid-West=1 (g)	0.8017	0.1226	0.8640	0.1438	0.8512	0.1427	0.8476	0.1420
West=1 (g)	1.2244	0.1850	1.1583	0.1924	1.2325	0.2054	1.2729	0.2117
Planned=1 (h)					2.6306	0.4410***	2.8656	0.4730***
Stocked=1 (i)					1.7576	0.3252***		
Purchased=1 (j)					1.3893	0.3032	1.7233	0.3550**
Informed =1 (k)					3.3933	0.5354***	3.4091	0.5376***
Duplicated=1 (l)					5.9102	1.1984***	6.4574	1.2957***
No. of Observations	1,137		1,137		1,137		1,137	
LR Chi^2	65.81***		428.13***		459.95***		450.81***	
-Log Likelihood	1398.99		1126.72		1110.82		1115.38	
Pseudo R^2	0.0230		0.1597		0.1715		0.1681	

Note: *p<.10; **p< .05; *** p < 0.01. The reference groups are (a) female; (b) not married; (c) not white; (d) moderate; (e) Not healthy; (f) High

Read limitations of the study and recommended future studies

- Case studies have obvious limitations with generalizability. Scholars agree that no two emergencies are the same (Quarantelli, 1988). However, the response to every emergency provides lessons that improve future response experience (Kapucu et al., 2013). The number of American local governments declaring financial emergencies is increasing. Since 2000, there have been at **least twelve financial emergencies in Michigan alone.** The American Bankruptcy Institute reports that between 2000 and 2016, there have been **more than 130 municipal bankruptcies nationwide**, with more than 50 percent occurring within the last 6 years, raising the possibility of local financial distress progressing into other crises. To the extent that the present study corroborates existing studies that crisis management leadership, effective communication, subsidiarity principles as in multi-level response, and accountability are necessary for effective response efforts, the present study is generalizable to other local emergencies. Local governments can learn from the Flint experience in mitigating the impact of their crises.
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Read limitations of the study and recommended future studies

Despite the significant findings, this research has some limitations. First, the research relies on the Bureau of Labor Statistics for the definition of green jobs. The definition is quite broad and does not provide a specific description for green jobs. For this reason, several major industry jobs are classified as green, and include construction, retail, research, and finance. Some might argue that these industry jobs are not necessarily green because equipment and goods used in construction are generated by industries that may harm the environment.

Second, the study investigates local governments in South Florida using cross sectional data and might have generalizability issues. Future studies might consider replicating the study in other regions and using panel data to examine the longitudinal dimension of green job creation.

Lastly, future studies may consider linking intergovernmental collaboration to outcomes beyond the creation of green jobs such as improvements in social and economic performance for the communities.