

# **SOC40830 Quantitative Data Analytics and Applications**

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**Week 3, Monday September 26th**

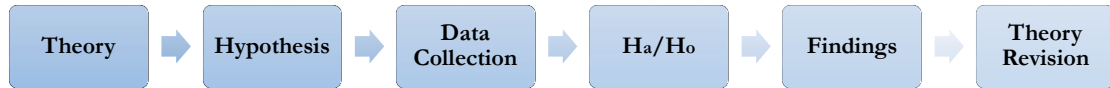
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## **Week 3 Outline**

- 1. Quantitative research strategy**
- 2. Assessing research design**
- 3. Theory and theorizing**
- 4. Introduction to Stata II**

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# 1. Quantitative Research Strategy



	Quantitative	Qualitative
<b>Orientation to Theory</b>	Deductive, testing	Inductive, generalisation
<b>Epistemology</b>	Scientific, positivist	Interpretivist
<b>Ontology</b>	Objectivist	Constructivist
<b>A 'third way' epistemology?</b>	There is an objective, 'knowable' social order that can be measured, but measurement will not yield the structures that generate patterns and events – this is the work of theory.	
<b>Critical Realism</b>	Close relation to emergentism and complexity theory.	

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# 1. Quantitative research strategy

The screenshot displays the SPSS Data Editor interface. The main window shows a dataset with 44 cases (rows) and 20 variables (columns). The 'Variable View' tab is selected on the right, showing the following variables:

Variable	Label	Type	Format	Value Label
name	Title of dataset	String	100	
essround	ESS round	String	10	
edition	Edition	String	10	
proddate	Production date	String	10	
idno	Respondent's iden...	String	10	
cntry	Country	String	10	
tvwatch	TV watching, total...	String	10	
gptst	Most people can...	String	10	
gptst	Most people can...	String	10	
gptst	Most of the time...	String	10	
gptst	How interested in...	String	10	
gptst	Political system all...	String	10	
gptst	Political system all...	String	10	
gptst	Confident in own...	String	10	
gptst	Politicians can...	String	10	
gptst	Easy to take part...	String	10	
gptst	Trust in country's...	String	10	
gptst	Trust in the legal...	String	10	

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## 2. Quantitative research strategy

year	country	ts_gnt	union	ppp	gdp_gdp	emplo	marketcap
1990	Australia	61.233598	39.6	1.5244829	96.265016	52.1	34.656131
1991	Australia	61.351082	39.7	1.3062631	95.895324	51.9	45.156239
1992	Australia	60.105358	38.8	1.2981582	96.710514	51.8	44.074052
1993	Australia	59.292089	36.7	1.2924988	97.171328	51.6	64.922718
1994	Australia	59.119919	34	1.2887499	97.126734	52.5	67.027606
1995	Australia	59.586516	32.1	1.283702	96.375009	53.6	66.080424
1996	Australia	60.269592	30.8	1.2689394	96.328276	53.6	77.287684
1997	Australia	59.710242	29.3	1.2720728	96.575323	53.5	67.581067
1998	Australia	59.634142	27.4	1.2805381	96.941556	53.6	81.987748
1999	Australia	59.153442	24.9	1.2832804	97.041097	53.7	109.60377
2000	Australia	58.86637	24.5	1.3084439	97.25087	54.6	89.415579
2001	Australia	57.867618	24.2	1.3139116	97.356962	55	98.60764
2002	Australia	57.676958	22.9	1.316549	97.409633	55.2	90.1694
2003	Australia	57.043129	22.7	1.3066244	97.240324	55.9	124.97632
2004	Australia	58.051939	21.9	1.3001592	97.244794	55.7	126.18772
2005	Australia	57.780544	21.9	1.289529	96.402385	57	135.52226
2006	Australia	57.965791	19.8	1.2908116	96.238417	57.5	146.24769
2007	Australia	57.985296	18.2	1.2918484	95.795015	58	151.54111
2008	Australia	55.989488	18.2	1.2813776	96.323505	58.4	64.999809
2009	Australia	56.282511	19	1.3359867	97.267022	58.6	136.07233
2010	Australia	56.101987	-	1.3956482	96.720818	-	-
1990	Australia	63.354031	46.9	85.07705	99.270303	-	-
1991	Australia	64.089819	45.5	85.939486	98.747087	43.1	6.9761745
1992	Australia	64.453564	44.3	87.261659	99.06569	43.6	4.4666098
1993	Australia	64.905714	43.2	88.251378	99.095073	44.9	11.289691
1994	Australia	64.403019	41.4	88.823697	98.974139	45.4	15.102875
1995	Australia	63.81201	41.1	88.65836	98.44119	47.9	15.046288
1996	Australia	62.265193	40.1	88.548483	99.357906	48.8	15.642919
1997	Australia	62.275737	38.9	87.608091	98.841764	48.3	14.500967
1998	Australia	62.099819	38.4	87.825146	98.653206	48.3	17.268132
1999	Australia	62.118823	37.4	87.189528	98.228189	48.8	16.076307
2000	Australia	61.201335	36.6	86.808147	98.111887	48.9	15.656663
2001	Australia	61.062527	35.7	86.607691	97.877257	48.9	15.656461
2002	Australia	59.900032	35.2	85.324035	98.761974	48.8	12.890318
2003	Australia	59.901721	34.4	84.74693	99.035232	50.2	15.485655
2004	Australia	58.48509	34.1	83.882157	99.251492	50.2	21.856464
2005	Australia	58.154813	33.3	82.950833	99.029415	50	29.872668
2006	Australia	57.817822	31	82.012774	98.924572	51.2	41.063336
2007	Australia	57.366613	29.9	81.351343	98.794646	52.1	59.34734
2008	Australia	57.924997	29.1	80.945968	99.80119	52.8	81.41238
2009	Australia	60.438149	28.6	80.956879	99.140697	53.4	17.43544
2010	Australia	59.00378	28.1	81.859649	99.470601	53.2	14.059389

year	country	unemp	trade	left	rig	union	finance	welfare
1990	IRE	67.9145	5.7	479546	14	-14.4951	50.4	-
1991	IRE	68.174	5.2	532154	14	-9.55921	52.4	-
1992	IRE	68.7541	5.1	513302	13	-3.52609	53.4	-
1993	IRE	67.6089	5.3	522316	13	-4.55741	53.1	-
1994	IRE	67.8513	5.2	522339	13	-6.42829	53.6	-
1995	IRE	66.9924	5	504245	13	-7.64632	53.6	-
1996	IRE	68.7996	5.1	470957	16	-4.49983	53.7	-
1997	IRE	67.6273	5.5	481156	16	-6.85702	54.2	-
1998	IRE	66.4658	5.8	44918	16	-5.14492	55.1	-
1999	IRE	65.7468	5.5	462045	16	-2.38664	57	-
1970	IRE	67.3567	6.3	448038	13	-1.01437	59.1	5.27333
1971	IRE	67.3438	6	487877	13	2.00835	59.2	5.40444
1972	IRE	64.752	6.7	484975	13	4.28054	59.5	5.18874
1973	IRE	64.6593	6.2	45927	13	4.86066	59.2	5.16083
1974	IRE	69.9305	5.8	41998	13	6.05578	59.9	6.43943
1975	IRE	70.4292	7.9	434413	13	5.32999	61.5	7.88607
1976	IRE	68.0789	9.8	4131	13	3.70599	62.6	7.35685
1977	IRE	64.9633	9.7	469045	12	2.43754	63.3	6.83537
1978	IRE	64.8335	9	527375	12	4.10586	64	6.12319
1979	IRE	67.7993	7.6	557094	12	-2.96384	63.9	6.3468
1980	IRE	70.0993	8	523707	12	-2.92997	63.5	7.10242
1981	IRE	67.6221	10.8	466891	11	-5.97974	62.9	7.71094
1982	IRE	65.5555	12.5	487231	9	-3.15684	62.4	8.92976
1983	IRE	65.1752	13.9	501853	11	-3.13346	63.5	9.41805
1984	IRE	64.2031	15.5	513987	11	-2.97025	63.3	9.33569
1985	IRE	62.873	16.8	528263	11	-9.38425	60.2	9.449302
1986	IRE	62.7392	16.8	579466	11	-6.50021	57.4	9.61137
1987	IRE	62.1824	16.6	601865	10	-10.5743	55.8	9.40312
1988	IRE	61.6985	16.2	609623	10	-12.1481	56.1	8.69455
1989	IRE	58.7401	14.7	629601	12	-7.97066	57.6	8.04796
1990	IRE	59.5089	13.4	646329	14	-2.18184	56.7	7.91847
1991	IRE	59.7507	14.7	630748	14	1.44389	56.9	8.41075
1992	IRE	60.8205	15.4	648274	14	4.60299	57	8.79587
1993	IRE	60.2854	15.6	674371	20	-9.82114	55.6	8.63747
1994	IRE	59.0568	14.3	690505	22	-7.92201	54	8.14629
1995	IRE	56.0481	12.3	744235	22	1.64057	52.3	22.91
1996	IRE	54.7889	11.7	763722	23	4.63368	49.1	23.198
1997	IRE	52.1398	9.9	818612	18	5.06995	49.1	23.8002
1998	IRE	51.7093	7.5	984106	12	4.4765	45	23.9941
1999	IRE	49.8841	5.4	1.07719	12	4.36473	42.3	24.0031
2000	IRE	48.1239	4.2	989494	12	8.81348	40.4	26.5569
2001	IRE	48.4224	3.9	1.06676	12	10.4035	39.4	29.328

## 2. Assessing Research Design

### Probability Sampling

Randomisation an assumption of many statistical procedures

Probability of selection for each subject known

Typically employs sampling frame (electoral register, phone records, employee lists)

Large-n samples, generalisability a goal

- Simple random sample
- Systematic random sample
- Stratified sample
- Multistage cluster sample

## 2. Assessing Research Design

### Non-Probability Sampling

Probability of selection for each subject unknown

Sampling frame typically not available

Random selection not employed

Medium/small-n samples, generalisability comparatively limited

- Availability/convenience sample
- Purposive sample
- Quota sample
- Snowball sample

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## 2. Assessing Research Design

**Measurement Validity:** is my measure actually measuring the concept?

**Face:** does it reflect the content of the concept (make sense?)

**Concurrent:** can the measure be assessed against another related question?

**Predictive:** future condition used to test validity of current measure

**Construct:** does the measure fit with theory underpinning the concept?

**Convergent:** time diaries, blood testing, crime surveys

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## 2. Assessing Research Design

**Measurement Reliability: is my measure consistent?**

**Stability (test-retest):** reliability indicated by high correlation t1-t2

**Internal:** consistency of items on a scale (high inter-item correlation)

**Inter-observer:** consistency between observers in assignment of values/answers

**Remember:** it is unusual to find all of these steps adhered to in a study

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## 3. Theory and Theorizing

**Sub-Types of Social Theory**

**‘Grand’ Theory**

Abstract, general accounts of large-scale aspects of the social world, or social life.

*Parsonian Systems Theory* – functional prerequisites and divisions of labour.

*Giddens’ Structuration Theory* – duality of structure and agency.

**Middle-Range Theory**

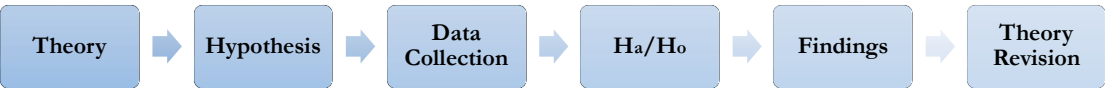
“...intermediate to general theories of social systems which are too remote from particular classes of social behaviour, organization, and change to account for what is observed” (Merton, 1967)

*Wilkinson and Pickett* – inequality and status anxiety.

*Wilson and Kelling* – broken windows theory.

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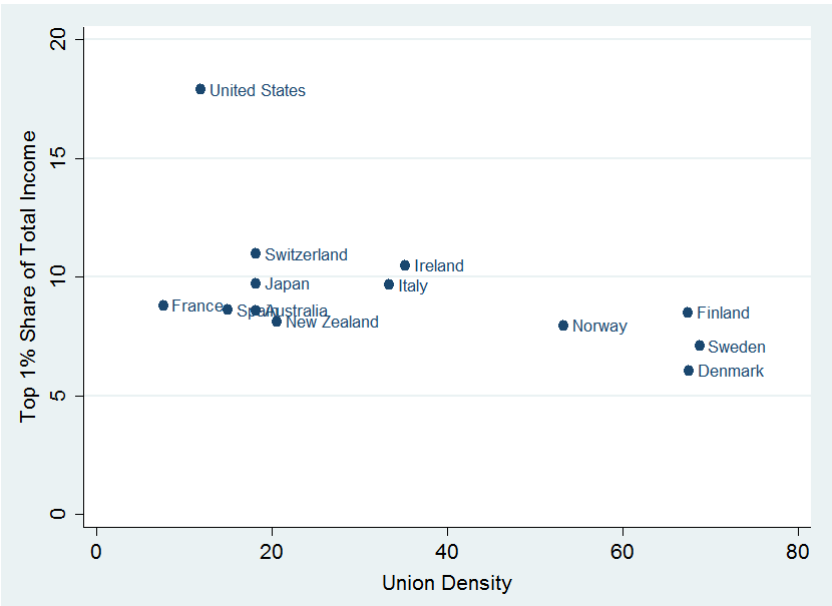
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### 3. Theory and Theorizing



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