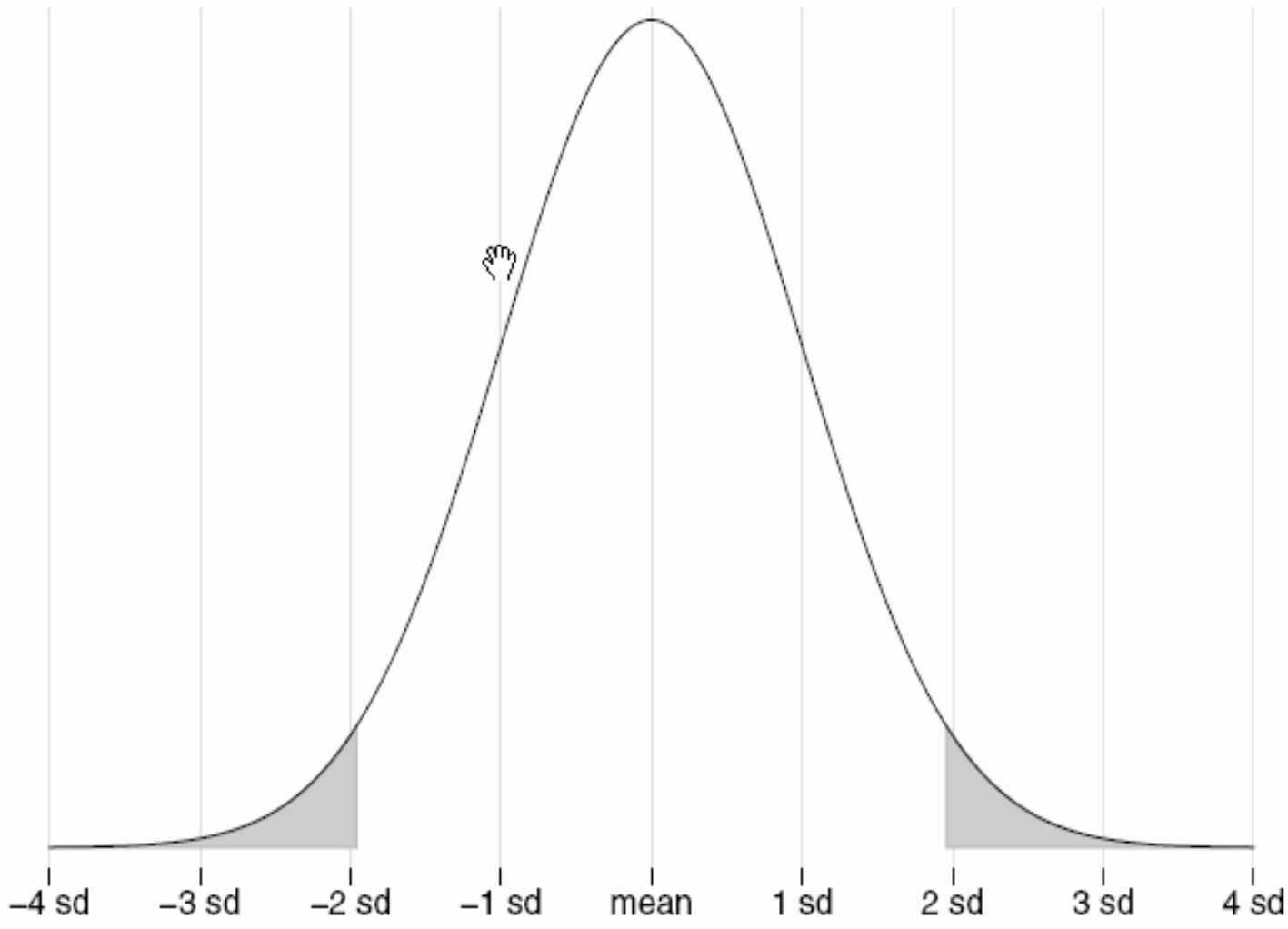


Normal Distribution

Characteristics of Normal Distribution

- What characteristics?
 - 1) Unimodal
 - 2) Bell-shaped and symmetric
 - 3) Mode=median=mean at the center
 - 4) A fixed proportion of the observations falls between the mean and fixed units of standard deviations.



Standardized Normal Distribution

- What does this mean by “standardization of something”?
 $z = (x - m) / s$
- 1) The transformation from raw scores to z-scores does not affect the distribution shape.
- 2) The mean and deviation of standardized normal distribution is 0, 1 respectively.
- Let's create a z-score for “tvhours”.
 - * Don't forget to making irrelevant values missing before your analysis!
- 1) Save z-scores as a new variable in “descriptive” function

GSS7898s - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help



	Name	Type	Width	Decimals	Label	Values	Missing	Col
34	satfin	Numeric	1	0	SATISFACTION WITH FINANCIAL SITUA	{1, SATISFIED	9	8
35	finrela				OF FAMILY INCOME	{1, FAR BELO	9	8
36	abdefed				S CHANCE OF SERIOUS DEFE	{0, NAP}...	None	8
37	abhlth				S HEALTH SERIOUSLY ENDAN	{1, Yes}...	None	8
38	abpoor				COME--CANT AFFORD MORE C	{1, Yes}...	None	8
39	abrape				ANT AS RESULT OF RAPE	{1, Yes}...	None	8
40	absingl				MARRIED	{1, Yes}...	None	8
41	abany				ON IF WOMAN WANTS FOR AN	{1, Yes}...	None	8
42	porninf				ALS PROVIDE INFO ABOUT SE	{0, NAP}...	None	8
43	pornrap				ALS LEAD TO RAPE	{0, NAP}...	None	8
44	pornout				ALS PROVIDE OUTLET	{0, NAP}...	None	8
45	hit	Numeric	1	0	EVER PUNCHED OR BEATEN BY ANO	{0, NAP}...	None	8
46	hitok	Numeric	1	0	EVER APPROVE OF MAN PUNCHING	{0, NAP}...	None	8
47	polhitok	Numeric	1	0	EVER APPROVE OF POLICE STRIKING	{1, Yes}...	None	8
48	owngun	Numeric	1	0	HAVE GUN IN HOME	{0, NAP}...	None	8
49	tvhours	Numeric	2	0	HOURS PER DAY WATCHING TV	{98, DK}...	None	8
50	zodiac	Numeric	2	0	RESPONDENTS ASTROLOGICAL SIGN	{0, NAP}...	None	8
51								

Missing Values

No missing values
 Discrete missing values
 Range plus one optional discrete missing value

Discrete missing values:

Range plus one optional discrete missing value:
 Low: High:

Discrete value:

OK Cancel Help



1 : year 1978

Descriptives

- # MATERIALS PROV
- # EVER PUNCHED C
- # EVER APPROVE O
- # EVER APPROVE O
- # HAVE GUN IN HOM
- # RESPONDENTS A

Variable(s):

- # HOURS PER DAY WA

OK

Paste

Reset

Cancel

Help

Options...

Save standardized values as variables

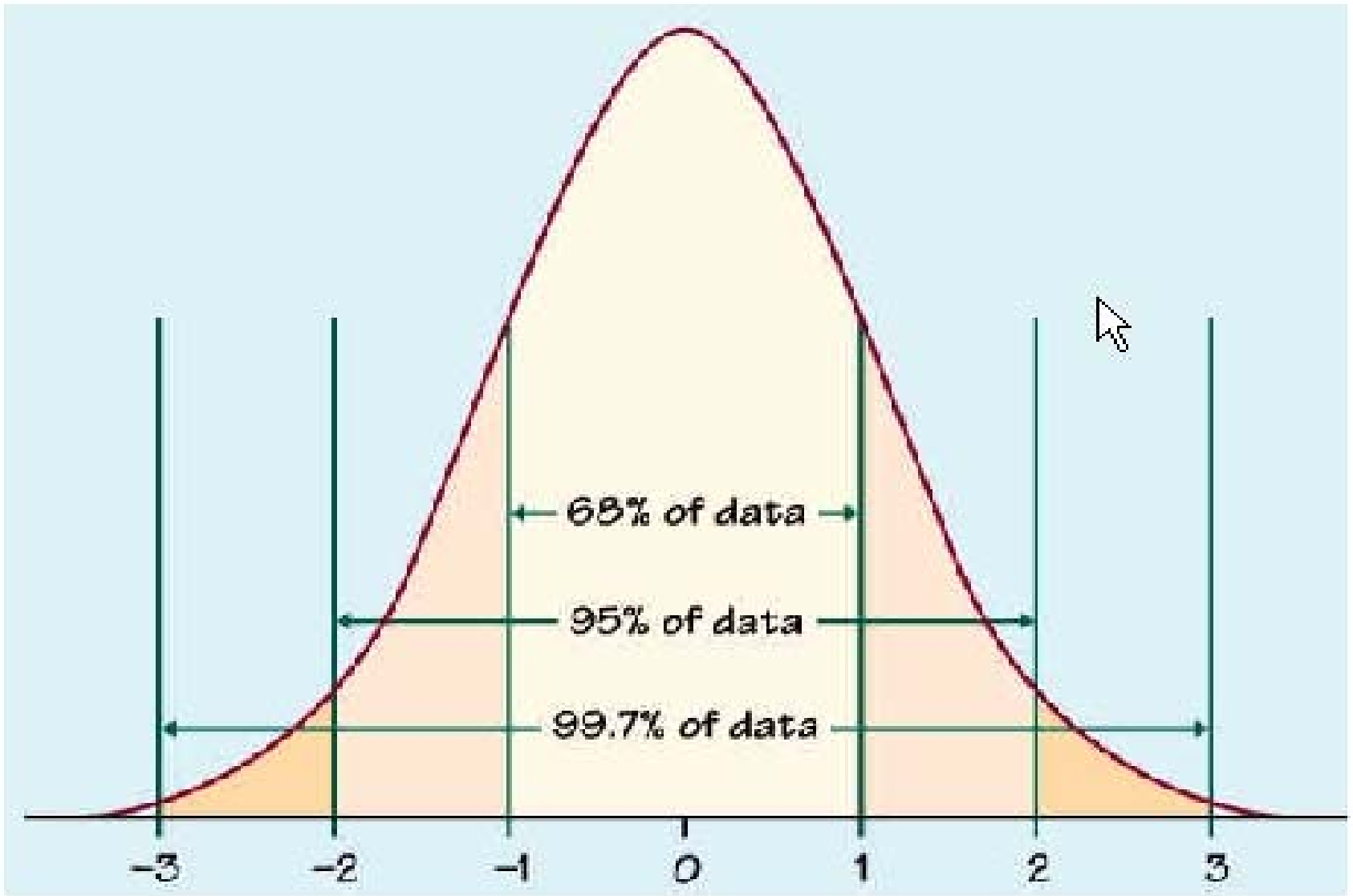
	year	educ	dec
1		26	10
2		68	12
3		54	12
4		36	15
5		61	12
6		42	12
7		59	4
8		40	12
9		33	12
10		25	12
11	1978	482	5
12	1978	1041	1
13	1978	1280	1
14	1978	567	1

Why should we care?

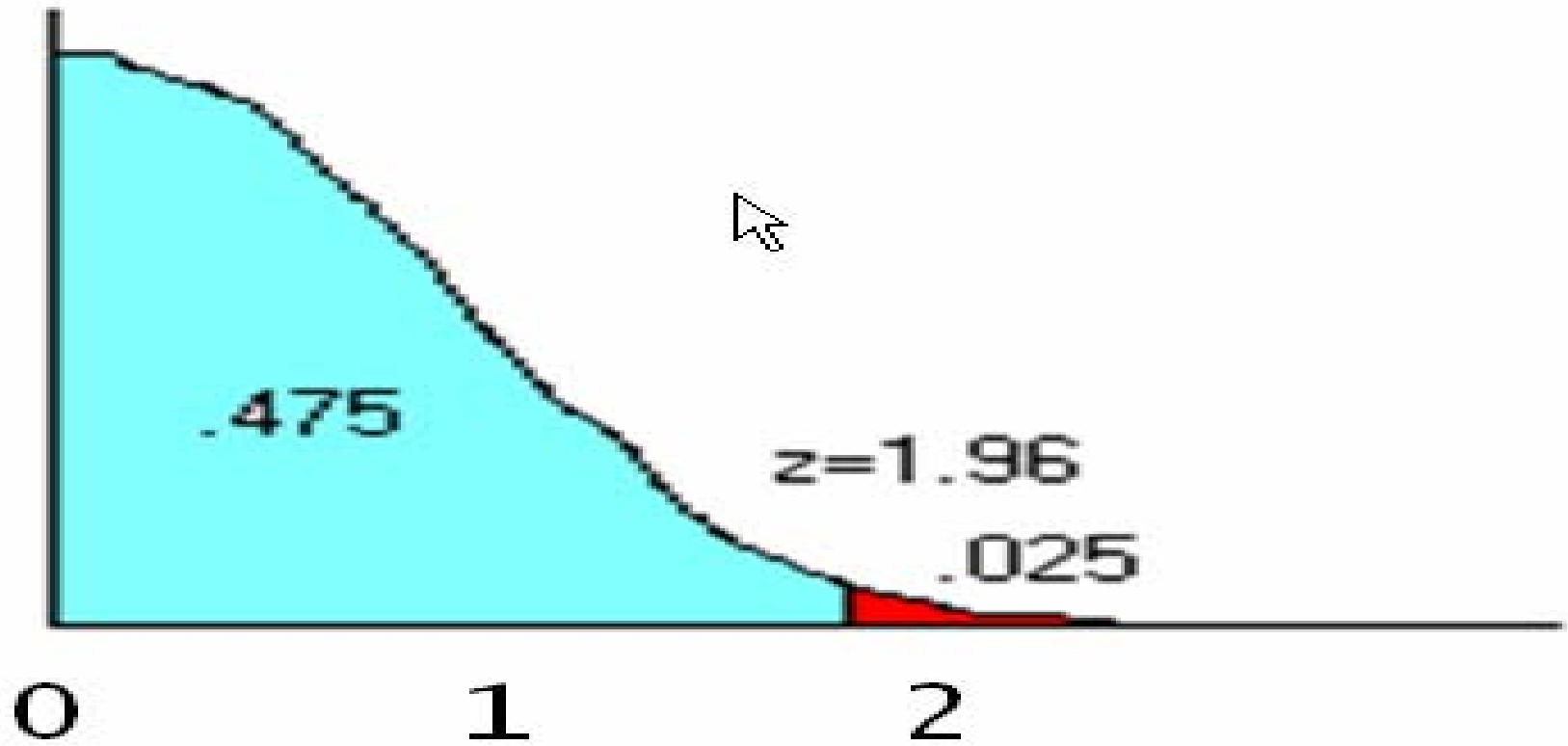
- Implications of standardized normal distribution for inferential statistics
- We can know the position of any score or the percentage of cases between different two z-scores (or above one z-score, or below one z-score) based on the accumulated z-score table.
- Even if you have two scores from different variables with different unit, say eye sight and IQ, you can compare them after normalization.

Q) What is the percentage of scores between $-0.5z$ and $0.5z$?
What is the percentage of scores above $z=1.21$?

Q) Your tvhours is 4. What is your position in our data? How about 9? If your tvhours falls within 5% at the upper level, at least how many hours do you have to watch TV?



- Normal distribution is symmetric, so z-score table provides only the information about half of the curve.



Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990