

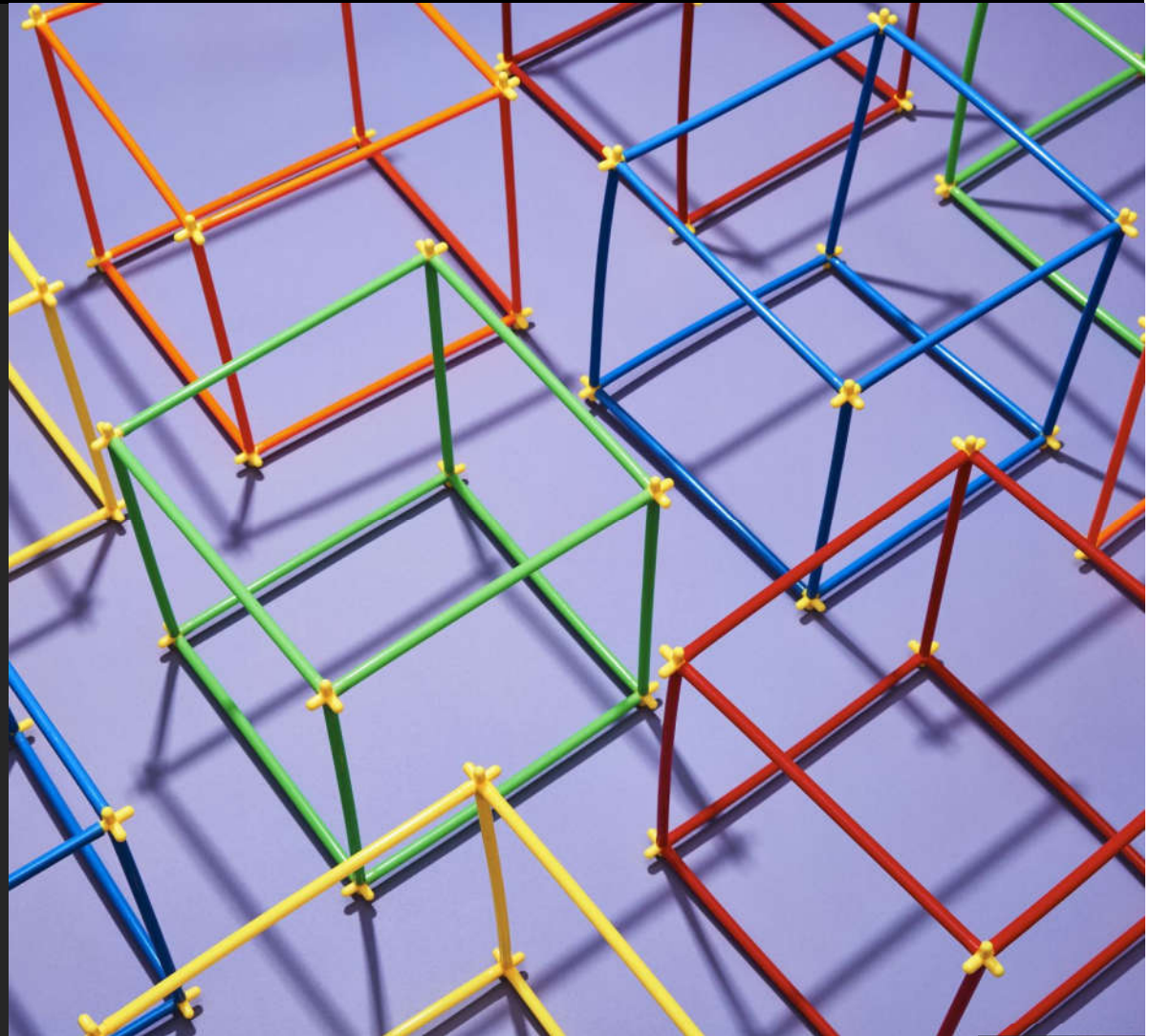
05 STATISTIK INFERENSIAL

KULIAH 04

PENELITIAN KUANTITATIF &
STATISTIK DESKRIPTIF

(ARIES YULIANTO, S.PSI., M.SI)

CHAPTER 15
STATISTICAL EVALUATION OF DATA



psi

Program Studi
Psikologi



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STATISTICS

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1. **Descriptive statistics**

techniques that help describe a set of data.

2. **Inferential statistics,**

methods that use the limited information from samples to answer general questions about populations.

- **Statistics vs Parameter?**

STATISTICS

Inferential Statistics

- hypothesis test

→ H_0

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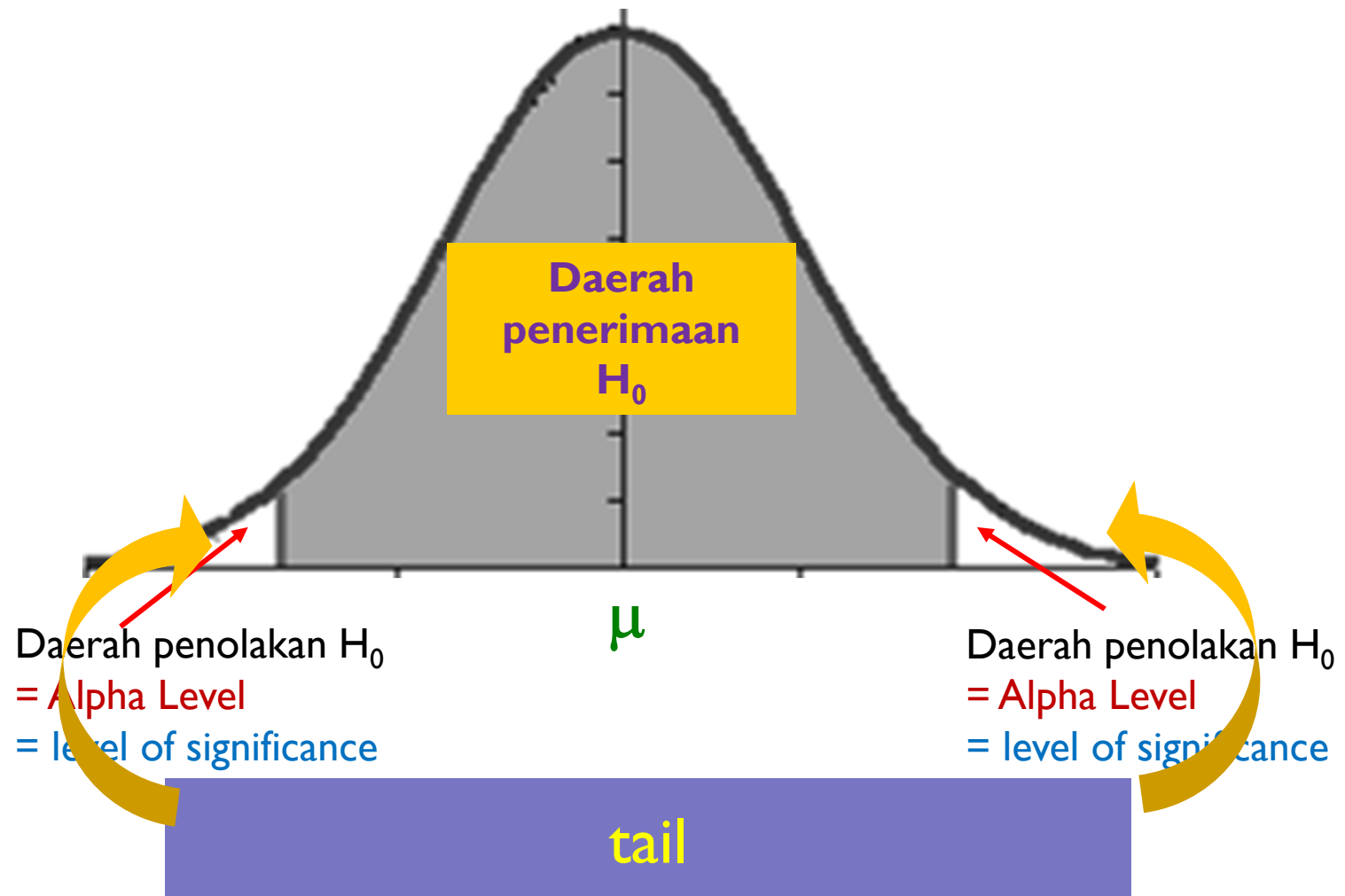
A **hypothesis test** is a statistical procedure that uses sample data to evaluate the credibility of a hypothesis about a population. A hypothesis test attempts to distinguish between two explanations for the sample data: (1) that the patterns in the data represent systematic relationships among variables in the population and (2) that the patterns in the data were produced by random variation from chance or sampling error.

The **alpha level**, or **level of significance**, for a hypothesis test is the maximum probability that the research result was obtained simply by chance. A hypothesis test with an alpha level of .01, for example, means that the test demands that there is less than a 1% (.01) probability that the results are caused only by chance.

A **significant result**, or a **statistically significant result**, means that it is extremely unlikely that the research result was obtained simply by chance. A significant result is always accompanied by an alpha level that defines the maximum probability that the result is caused only by chance.

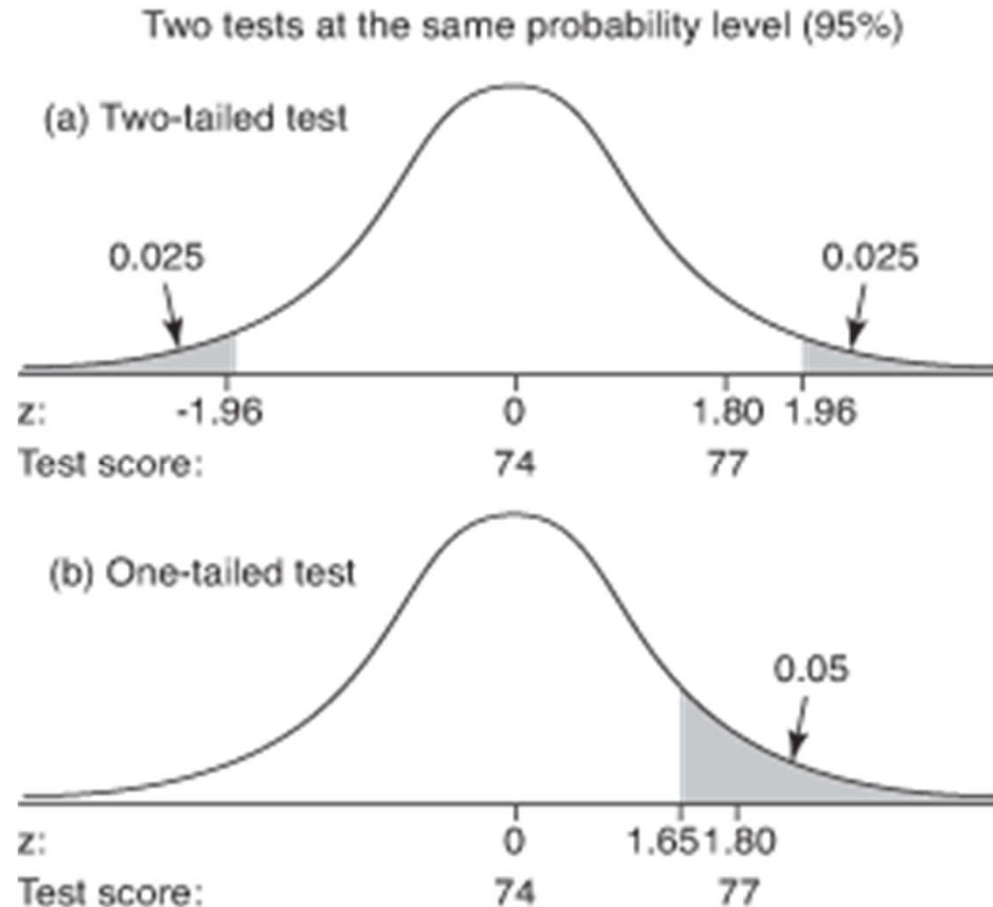
In the context of a hypothesis test, a **test statistic** is a summary value that measures the degree to which the sample data are in accordance with the null hypothesis. Typically, a large value for the test statistic indicates a large discrepancy between the sample statistic and the parameter specified by the null hypothesis, and leads to rejecting the null hypothesis.

HYPOTHESIS TESTING (UJI HIPOTESIS)

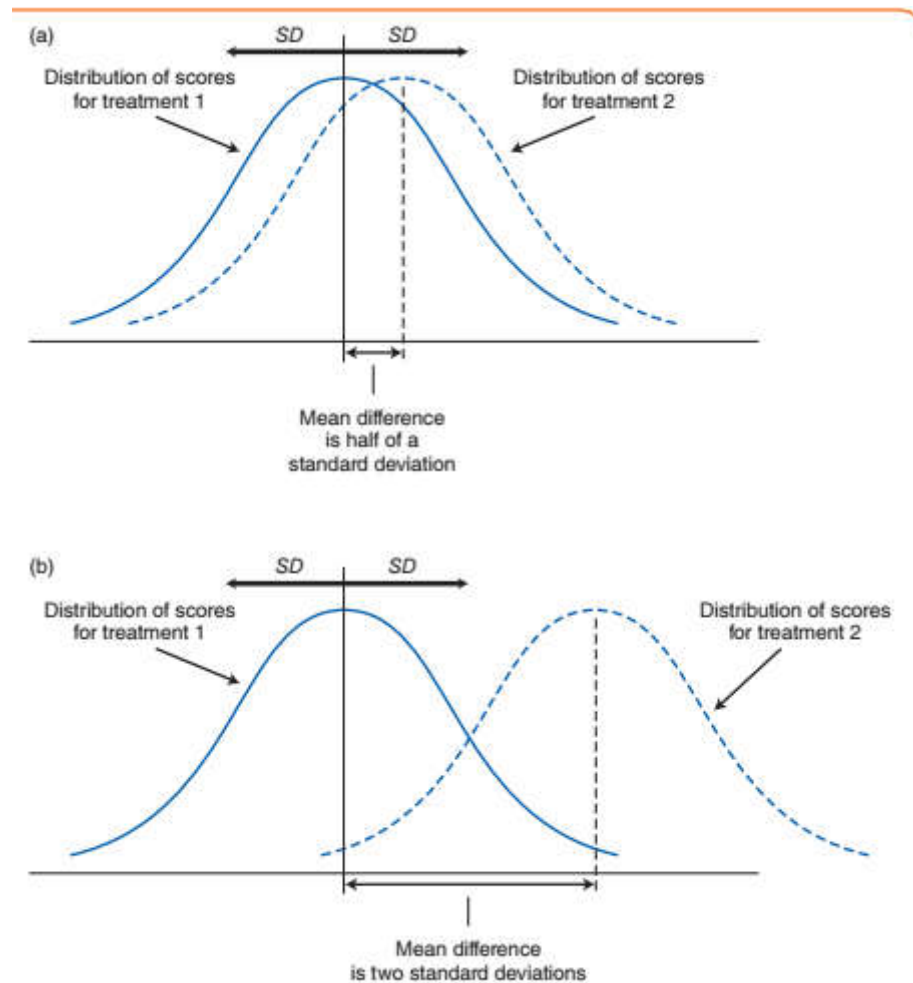


DIRECTIONAL & NON-DIRECTIONAL HYPOTHESES: ONE-TAIL & TWO-TAIL HYPOTHESIS

- Menunjukkan arah dugaan hubungan.



HYPOTHESIS TESTING: COMPARING 2 GROUPS



TABEL TEST STATISTICS UNTUK HYPOTHESIS TESTING

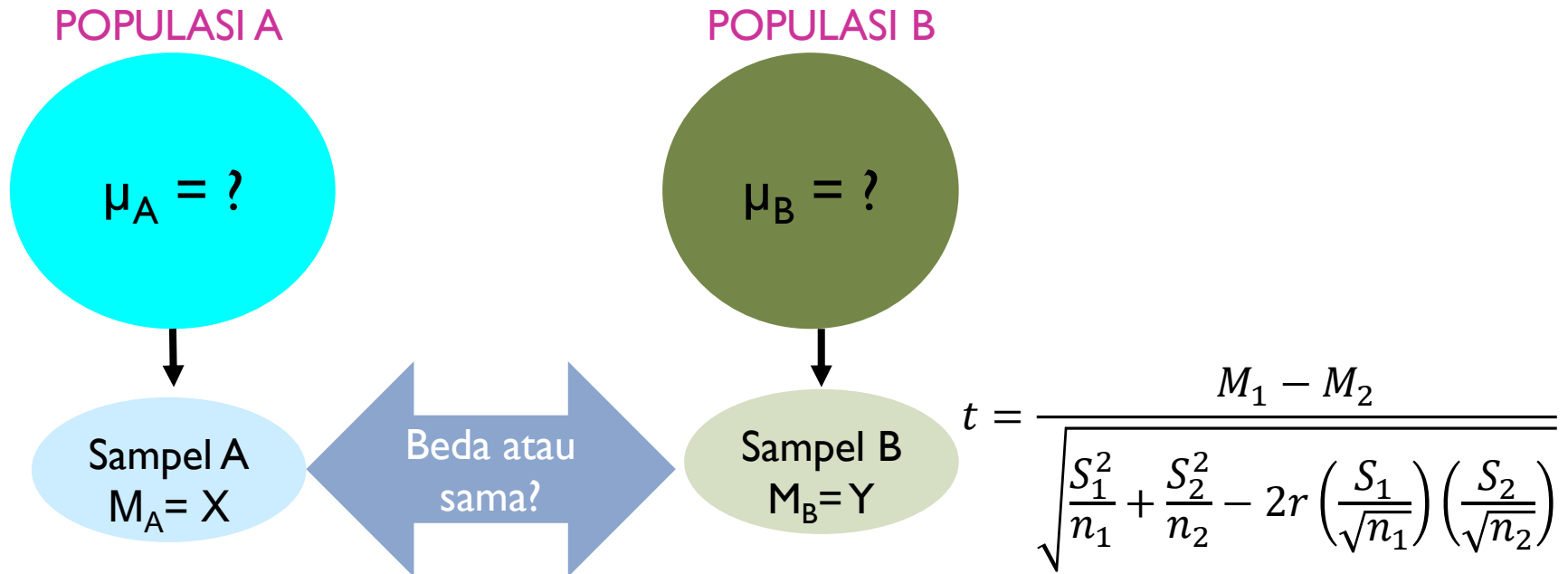
JENIS DATA	Hipotesis	
	Perbedaan 2 kondisi/ klp	
	Unrelated	Related
Nominal	(χ^2) chi-square for independence	-
Ordinal	Mann-Whitney U test	Wilcoxon test
Interval, Rasio	independent sample t-test	paired sample t-test

Merah → statistik non-parametrik

Related → dari klp sampel yg sama.

Unrelated → dari klp sampel yg berbeda.

I. T-TEST INDEPENDENT SAMPLE



Langkah-langkah:

1. buat hipotesis (tentukan *one-tail* atau *two-tail*)
 $H_0 : \mu_A = \mu_B$ (two-tail), $H_0 : \mu_A \geq \mu_B$ (one-tail)
2. tentukan tingkat kesalahan (1%, 5%, atau 10%)
3. hitung t
4. bandingkan t hitung dgn t tabel (tabel B.1, appendix B)
 $df = N - 2$
5. Kesimpulan:
 - t hitung $>$ t tabel , atau $p < \alpha \rightarrow$ signifikan. (H_0 ditolak)
 - t hitung $<$ t tabel , atau $p > \alpha \rightarrow$ tidak signifikan. (H_0 diterima)

I. T-TEST INDEPENDENT SAMPLE

Syarat/asumsi:

1. Variabel interval/rasio yg diperbandingkan harus memenuhi syarat normalitas.

Test of normality (Shapiro-Wilk) → tdk signifikan

2. Homogenitas varians

→ Varians kedua klp yg dibandingkan harus homogen/sama.

Equality of variance (Levene's Test) → tidak signifikan

Latihan: data hlm. 246

I. T-TEST INDEPENDENT SAMPLE

- Contoh:
- H_0 : (2-tails)
tidak ada perbedaan yg signifikan dalam skor motivasi antara laki-laki dan perempuan.
- LOS: 5%

Test of Normality (Shapiro-Wilk)

		W	p
motivasi	laki-laki	0.990	0.993
	perempuan	0.884	0.247

Test of Equality of Variances (Levene's)

		F	df	p
motivasi		0.011	1	0.919

- Asumsi normalitas dan homogenitas terpenuhi. Independent sample t-test dapat dipakai

Independent Samples T-Test

		t	df	p
motivasi		4.161	12.000	0.001

Group Descriptives

		N	Mean	SD	SE
motivasi	laki-laki	7	23.286	3.352	1.267
	perempuan	7	16.286	2.928	1.107

- Ada perbedaan yg signifikan dalam skor motivasi antara laki-laki ($M = 23,286$; $SD = 3,352$) dengan perempuan ($M = 16,286$; $SD = 2,928$), $t(12) = 4,161$, $p < 0,05$.