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LAMPIRAN

1. *Output* Program Python (Google Colab) Untuk Analisis Deskriptif

	joinage	height	weight	smokingstatus	bmi	eventstatus	survtime
count	1000.000000	1000.0000	1000.000000	1000.000000	1000.000000	1000.000000	1000.000000
mean	35.652000	160.0300	57.355000	0.050000	22.271600	0.021000	1928.078000
std	10.134575	8.9582	9.272268	0.218054	2.461587	0.143456	2003.078319
min	1.000000	79.0000	10.000000	0.000000	9.700000	0.000000	1.000000
25%	29.000000	155.0000	50.000000	0.000000	20.800000	0.000000	527.000000
50%	36.000000	160.0000	57.000000	0.000000	22.200000	0.000000	1183.000000
75%	43.000000	165.0000	63.000000	0.000000	23.700000	0.000000	2150.000000
max	58.000000	183.0000	90.000000	1.000000	38.800000	1.000000	8207.000000

	gender	eventstatus	count
0	0	False	572
1	0	True	9
2	1	False	407
3	1	True	12

	BMI_group	eventstatus	count
0	<18.5	False	47
1	<18.5	True	0
2	18.5-24.9	False	814
3	18.5-24.9	True	18
4	25-29.9	False	114
5	25-29.9	True	3
6	30+	False	4
7	30+	True	0

	age_group	eventstatus	count
0	<10	False	13
1	<10	True	0
2	10-19	False	49
3	10-19	True	0
4	20-29	False	198
5	20-29	True	0
6	30-39	False	366
7	30-39	True	4
8	40-49	False	286
9	40-49	True	10
10	50-59	False	67
11	50-59	True	7
12	60+	False	0
13	60+	True	0

	smokingstatus	eventstatus	count
0	False	False	932
1	False	True	18
2	True	False	47
3	True	True	3

2. *Output* Program Python (Google Colab) Untuk Model Awal dan Hasil Uji Signifikansi

model	lifelines.CoxPHFitter
duration col	'survtime'
event col	'eventstatus'
baseline estimation	breslow
number of observations	1000
number of events observed	21
partial log-likelihood	-108.08
time fit was run	2023-12-27 16:16:00 UTC

```
covariate
joinage          5.421908
gender           0.767761
bmi             -1.301900
smokingstatus    2.729697
Name: z, dtype: float64
```

```
covariate
joinage          0.000000
gender           0.442629
bmi              0.192951
smokingstatus    0.006339
Name: p, dtype: float64
```

	coef	exp(coef)	se(coef)	coef lower 95%	coef upper 95%	exp(coef) lower 95%	exp(coef) upper 95%	cmp to	z	p	-log2(p)
joinage	0.23	1.26	0.04	0.15	0.32	1.16	1.37	0.00	5.42	<0.005	24.02
gender	0.37	1.45	0.49	-0.58	1.33	0.56	3.77	0.00	0.77	0.44	1.18
bmi	-0.13	0.88	0.10	-0.32	0.06	0.73	1.07	0.00	-1.30	0.19	2.37
smokingstatus	1.70	5.50	0.70	0.33	3.08	1.38	21.85	0.00	2.73	0.01	7.30

Concordance	0.87
Partial AIC	224.15
log-likelihood ratio test	49.79 on 4 df
-log2(p) of ll-ratio test	31.22

```
1 lr
```

null_distribution	chi squared
degrees_freedom	4
test_name	log-likelihood ratio test

	test_statistic	p	-log2(p)
0	49.79	<0.005	31.22

```
[76] 1 lr=cox_model.log_likelihood_ratio_test()
     2 uji_statistik = lr.test_statistic
     3 p_value = lr.p_value
     4 minus_log2_p_value = -np.log2(lr.p_value)
     5
     6 print("Uji Statistik:", uji_statistik)
     7 print("P-Value:", p_value)
     8 print("-Log2(P-Value):", minus_log2_p_value)

Uji Statistik: 49.78711375107437
P-Value: 3.999975447100882e-10
-Log2(P-Value): 31.21928980448725
```

3. *Output* Program Python (Google Colab) Untuk Hasil Uji *Goodness-Of-Fit* (GOF *test*)

```
Hasil Uji Goodness-of-Fit:
bmi                0.609044
gender             0.190427
joinage            0.185863
ranked_failure     0.103826
smokingstatus      0.039141
Name: p, dtype: float64
```

4. *Output* Program Python (Google Colab) Untuk Model Akhir *Cox Regression*

	coef	exp(coef)	se(coef)	coef lower 95%	coef upper 95%	exp(coef) lower 95%	exp(coef) upper 95%	cmp to	z	p	-log2(p)
joinage	0.23	1.25	0.04	0.14	0.31	1.15	1.36	0.00	5.35	<0.005	23.41
smokingstatus	1.76	5.80	0.64	0.50	3.02	1.64	20.50	0.00	2.73	0.01	7.30

```
covariate
joinage          0.225218
smokingstatus    1.758131
Name: coef, dtype: float64
```

5. *Output* Program Python (Google Colab) Untuk Perhitungan Mortality Rate (q_x) Untuk Usia Mulai 10 Sampai 60 Tahun dengan $n = 5$

Usia Masuk (x)	Status Merokok	
	Bukan Perokok	Perokok
10	0,000012	0,000069
11	0,000015	0,000087
12	0,000019	0,000109
13	0,000023	0,000136
14	0,000029	0,000171
15	0,000037	0,000214
16	0,000046	0,000268
17	0,000058	0,000335
18	0,000072	0,000420
19	0,000091	0,000526
20	0,000114	0,000659
21	0,000142	0,000825
22	0,000178	0,001033
23	0,000223	0,001294
24	0,000280	0,001621
25	0,000350	0,002030
26	0,000439	0,002542
27	0,000549	0,003183

28	0,000688	0,003985
29	0,000862	0,004990
30	0,001079	0,006246
31	0,001352	0,007818
32	0,001693	0,009783
33	0,002120	0,012238
34	0,002655	0,015306
35	0,003325	0,019135
36	0,004163	0,023910
37	0,005211	0,029859
38	0,006524	0,037259
39	0,008165	0,046449
40	0,010216	0,057836
41	0,012780	0,071908
42	0,015983	0,089239
43	0,019979	0,110491
44	0,024963	0,136413
45	0,031169	0,167821
46	0,038887	0,205554
47	0,048468	0,250415
48	0,060335	0,303051
49	0,074990	0,363799
50	0,093026	0,432477
51	0,115121	0,508141
52	0,142041	0,588849
53	0,174607	0,671527
54	0,213661	0,752046
55	0,259984	0,825662
56	0,314177	0,887857
57	0,376495	0,935472

58	0,446628	0,967708
59	0,523454	0,986433
60	0,604819	0,995421

6. *Output* Program Microsoft Excel 365 Untuk Perhitungan Premi Asuransi Jiwa Untuk Usia 30 dan 40 Tahun

a. Usia 30 Tahun

x	Perokok					
	q_x	p_x				
30	0,006246	0,993754	v	Ax:n	ax:n	P
31	0,007818	0,992182	v1	0,042054275	4,164337308	1009867,162
32	0,009783	0,990217	v2	0,04172544	4,136160546	1008796,422
33	0,012238	0,987762	v3	0,04140039	4,108285812	1007729,048
34	0,015306	0,984694				
35	0,019135	0,980865				
x	Bukan Perokok					
	q_x	p_x				
30	0,001079	0,998921	v	Ax:n	ax:n	P
31	0,001352	0,998648	v1	0,007397453	4,251757543	173985,768
32	0,001693	0,998307	v2	0,00733932	4,222805238	173801,99
33	0,00212	0,99788	v3	0,007281857	4,19416436	173618,779
34	0,002655	0,997345				
35	0,003325	0,996675				

b. Usia 40 Tahun

x	Perokok					
	q_x	p_x				
40	0,057836	0,942164	v	Ax:n	ax:n	P
41	0,071908	0,928092	v1	0,327110477	3,396777039	9630024,957
42	0,089239	0,910761	v2	0,324684092	3,375262163	9619522,167
43	0,110491	0,889509	v3	0,322284891	3,353969503	9609058,494
44	0,136413	0,863587				
45	0,167821	0,832179				
x	Bukan Perokok					
	q_x	p_x				
40	0,010216	0,989784	v	Ax:n	ax:n	P
41	0,01278	0,98722	v1	0,067853305	4,098572958	1655534,87
42	0,015983	0,984017	v2	0,06732478	4,070977582	1653774,272
43	0,019979	0,980021	v3	0,066802327	4,043677202	1652019,289
44	0,024963	0,975037				
45	0,031169	0,968831				