

# WHAT STOPS LOVE IN HONG KONG



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# INTRODUCTION

In today's Hong Kong society, what factors prevent Hong Kong young people from falling in love, what prevents them from entering the palace of marriage?

**How did I come up with this idea?**

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**HONG KONG'S DECLINING FERTILITY RATE**

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**HONG KONG'S DECLINING MARRIAGE RATE**

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**(01)**

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# WHY IS IT IMPORTANT

important for the society

fresh blood, fresh ideas for the future

ageing society.....

important for individual

I'm single now.....

(02)



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# MAIN FACTORS

## *IMMEASURABLE FACTORS*

PERSONALITY, VALUE, CULTURAL DIFFERENCES.....

## *MEASURABLE FACTORS*

HOUSING PRICE, INCOME, SPACE.....

(03)



# MY ANALYSIS

Dataset I:

Trends in Marriage and Divorce in Hong Kong

Dataset II:

Property Prices Index by Country

Dataset III:

The Quality of Life Index by Country

Dataset IV:

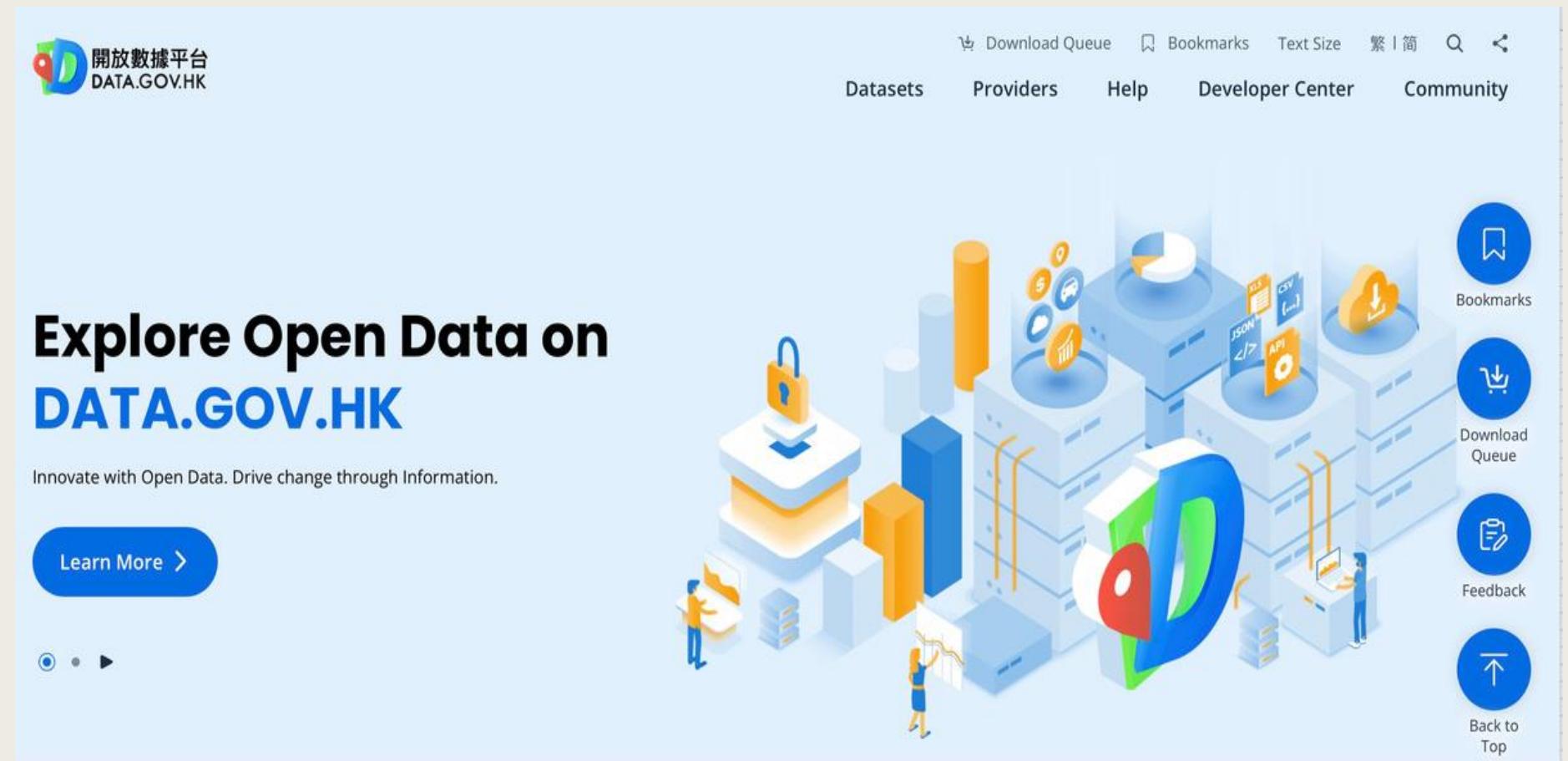
The Purchasing Power Index by Country

Dataset V:

The Costing of Life Index by Country

Tools:

RStudio for data analysis and visualization.



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## DATASET I

# DATA COLLECTION AND CLEANSING

Table 115-01015 : Number of marriages by type

Type of marriage	Number					Total
	First marriage of both parties	First marriage of bridegroom and remarriage of bride	First marriage of bride and remarriage of bridegroom	Remarriage of both parties	Others (1)	
Year						
1970	17 074	105	318	126	2 816	20 439
1971	22 356	109	280	83	4 178	27 006
1972	23 902	126	254	104	2 878	27 264
1973	26 922	132	394	95	2 893	30 436
1974	32 790	58	240	49	4 497	37 634
1975	29 930	207	533	82	5 440	36 192
1976	34 378	314	548	163	4 214	39 617
1977	34 519	358	587	173	4 753	40 390
1978	34 530	471	698	168	4 533	40 400
1979	38 510	537	783	235	5 238	45 303
1980	42 724	752	1 049	272	6 314	51 111
1981	41 190	850	1 041	305	7 370	50 756
1982	41 554	926	1 071	350	7 566	51 467
1983	36 537	1 063	1 196	362	8 620	47 778
1984	43 660	1 070	1 206	368	7 105	53 409
1985	36 346	1 312	1 374	431	5 593	45 056
1986	34 088	1 404	1 377	552	5 859	43 280
1987	39 960	1 491	1 545	564	5 001	48 561
1988	37 380	1 660	1 730	682	3 786	45 238
1989	33 959	1 789	1 739	727	5 733	43 947
1990	37 581	1 893	1 893	830	4 971	47 168
1991	34 522	2 008	1 973	911	3 154	42 568
1992	38 065	2 061	2 250	882	2 444	45 702
1993	34 394	2 096	2 190	918	2 083	41 681
1994	31 348	2 101	2 227	981	1 607	38 264
1995	32 033	2 047	2 199	1 041	1 466	38 786
1996	29 397	2 280	2 409	1 207	1 752	37 045
1997	30 427	2 441	2 523	1 334	868	37 593
1998	25 064	2 241	2 511	1 330	527	31 673
1999	24 520	2 302	2 520	1 408	537	31 287
2000	23 917	2 259	2 688	1 684	331	30 879
2001	25 285	2 490	2 926	1 857	267	32 825

NOT FULLY CLEANED

(05)

Year	First marriage of both parties	First marriage of bridegroom and remarriage of bride	First marriage of bride and remarriage of bridegroom	Remarriage of both parties	Others	Total	
2012	40 841		4 540	6 912	8 090	76	60 459
2013	35 703		4 399	6 433	8 676	63	55 274
2014	37 217		4 428	6 198	8 571	40	56 454
2015	34 046		4 060	5 531	7 932	40	51 609
2016	32 673		3 969	5 083	8 248	35	50 008
2017	34 263		4 026	5 217	8 277	34	51 817
2018	31 828		4 017	4 854	8 596	36	49 331
2019	28 398		3 567	4 276	7 989	17	44 247
2020	21 324		1 755	2 128	2 640	16	27 863
2021	20 153		1 795	2 082	2 866	3	26 899
2022	21 950		2 065	2 442	3 551	4	30 012
2023	27 568		4 035	4 446	11 673	1	47 723

AFTER CLEANSING  
(COPY AND PASTE)



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# DATASET

NOT AN EXCEL FILE

(06)

Rank	Country	Price To Income Ratio	Gross Rental Yield City Centre	Gross Rental Yield Outside of Centre	Price To Rent Ratio City Centre	Price To Rent Ratio Outside Of City Centre	Mortgage As A Percentage Of Income	Affordability Index
1	Syria	86.7	3.1	3.7	32.2	27.3	1089.3	0.1
2	Ghana	78.6	17.0	0.4	5.9	255.1	1937.5	0.1
3	Hong Kong (China)	44.9	1.7	1.7	58.6	58.8	286.8	0.3
4	Sri Lanka	40.8	3.3	2.1	30.4	46.7	663.5	0.2
5	China	34.6	1.6	1.6	60.9	63.4	275.1	0.4
6	Nepal	32.8	1.7	2.5	59.2	40.7	444.5	0.2
7	Cambodia	32.5	4.8	5.1	20.9	19.6	398.7	0.3
8	Philippines	30.1	3.5	3.7	28.8	26.9	287.7	0.3
9	Nigeria	28.2	29.4	15.7	3.4	6.4	507.8	0.2
10	Ethiopia	26.4	10.9	6.8	9.1	14.8	445.7	0.2
11	South Korea	26.0	0.9	1.0	115.1	98.6	182.2	0.5
12	Iran	24.4	5.9	6.3	16.9	16.0	508.0	0.2
13	Thailand	24.0	3.2	3.1	31.5	32.5	195.2	0.5
14	Vietnam	23.5	3.3	3.8	30.1	26.6	271.0	0.4
15	Argentina	22.7	2.4	2.3	41.1	43.8	1058.3	0.1
16	Taiwan (China)	20.1	1.5	1.7	64.9	57.6	119.4	0.8
17	Peru	19.0	4.8	4.5	20.6	22.2	203.8	0.5
18	Venezuela	18.9	7.9	6.2	12.6	16.2	471.6	0.2
19	Indonesia	18.5	4.1	4.8	24.2	20.8	207.9	0.5
20	Lebanon	18.3	5.6	6.5	17.9	15.5	197.7	0.5
21	Brazil	18.3	3.9	4.1	25.6	24.3	206.3	0.5
22	Mongolia	17.6	5.0	5.7	20.0	17.6	180.8	0.6
23	Colombia	17.5	4.8	4.8	21.0	21.0	222.1	0.5
24	Armenia	17.2	8.5	11.8	11.8	8.4	232.8	0.4

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# DATASET

Select date:		2023	Select display column:		---All columns---	
Select Region:		Africa	America	Asia	Europe	Oceania
Rank	Country	Price To Income Ratio	Gross Rental Yield City Centre	Gross Rental Yield Outside of Centre		
1	Syria	86.7	3.1			3.7
2	Ghana	78.6	17.0			0.4
3	Hong Kong (China)	44.9	1.7			1.7
4	Sri Lanka	40.8	3.3			2.1
5	China	34.6	1.6			1.6
6	Nepal	32.8	1.7			2.5
7	Cambodia	32.5	4.8			5.1
8	Philippines	30.1	3.5			3.7
9	Nigeria	28.2	29.4			15.7
10	Ethiopia	26.4	10.9			6.8
11	South Korea	26.0	0.9			1.0
12	Iran	24.4	5.9			6.3
13	Thailand	24.0	3.2			3.1
14	Vietnam	23.5	3.3			3.8
15	Argentina	22.7	2.4			2.3
16	Taiwan (China)	20.1	1.5			1.7
17	Peru	19.0	4.8			4.5
18	Venezuela	18.9	7.9			6.2
19	Indonesia	18.5	4.1			4.8
20	Lebanon	18.3	5.6			6.5
21	Brazil	18.3	3.9			4.1

The screenshot shows a developer's browser interface with three main panels:

- DOM Tree:** On the left, showing the HTML structure of a page. A specific table element is selected.
- CSS Styles:** In the center, showing the computed styles for the selected table element. A red arrow points from the DOM tree to this panel.
- Console:** On the right, showing R code for scraping data from Numbeo. A red arrow points from the CSS panel to this panel, with the word "NODE" highlighted in red.

The R code in the console is as follows:

```
library(rvest)
library(dplyr)
library(stringr)
library(purrr)

headers <- httr::add_headers(
  "User-Agent" = "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/91.0.4472.124
Safari/537.36",
  "Accept-Language" = "en-US,en;q=0.9"
)

scrape_numbeo <- function(url) {
  webpage <- httr::GET(url, headers) %>
    read_html()

  table <- webpage %>%
    html_nodes("#t2") %>%
    html_table(fill = TRUE) %>%
    .[[1]]

  colnames(table) <- c("Rank", "Country", "PriceToIncomeRatio",
    "GrossRentalYield", "PriceToRentRatio",
    "MortgageIsPercentage", "AffordabilityIndex")

  return(table)
}

target_url <- "https://www.numbeo.com/property_investment/rankings_by_country.jsp?title=2023"
property_data <- scrape_numbeo(target_url)
```

(07)

# DATASET

A tibble: 10 × 9

Rank	Country	PriceToIncomeRatio	GrossRentalYield	PriceToRentRatio	MortgageAsPercentage			
<lg>	<chr>	<dbl>	<dbl>	<dbl>	<dbl>			
NA	Syria	86.7	3.1	3.7	32.2			
NA	Ghana	78.6	17.0	0.4	5.9			
NA	Hong Kong (China)	44.9	1.7	1.7	58.6			
NA	Sri Lanka	40.8	3.3	2.1	30.4			
NA	China	34.6	1.6	1.6	60.9			
NA	Nepal	32.8	1.7	2.5	59.2			
NA	Cambodia	32.5	4.8	5.1	20.9			
NA	Philippines	30.1	3.5	3.7	28.8			
NA	Nigeria	28.2	29.4	15.7	3.4			
NA	Ethiopia	26.4	10.9	6.8	9.1			

1–10 of 10 rows | 1–6 of 9 columns

Year	HK_PurchasingPowerIndex	HK_CostOfLivingIndex
2013	81.2	77.8
2014	71.4	76.4
2015	74.9	75.2
2016	102.3	81.5
2017	81.5	80
2018	82.9	78.7
2019	69.3	78.1
2020	65.3	77.2
2021	62.4	79.9
2022	65.7	80.7
2023	67.7	75.7

Year	HK_HousingPriceToIncomeRatio
2012	23.5
2013	23.6
2014	27.1
2015	30.1
2016	37.6
2017	36.1
2018	41.1
2019	49.4
2020	47.5
2021	45.2
2022	46.9
2023	44.9

# DATA VISUALIZATION

(11)

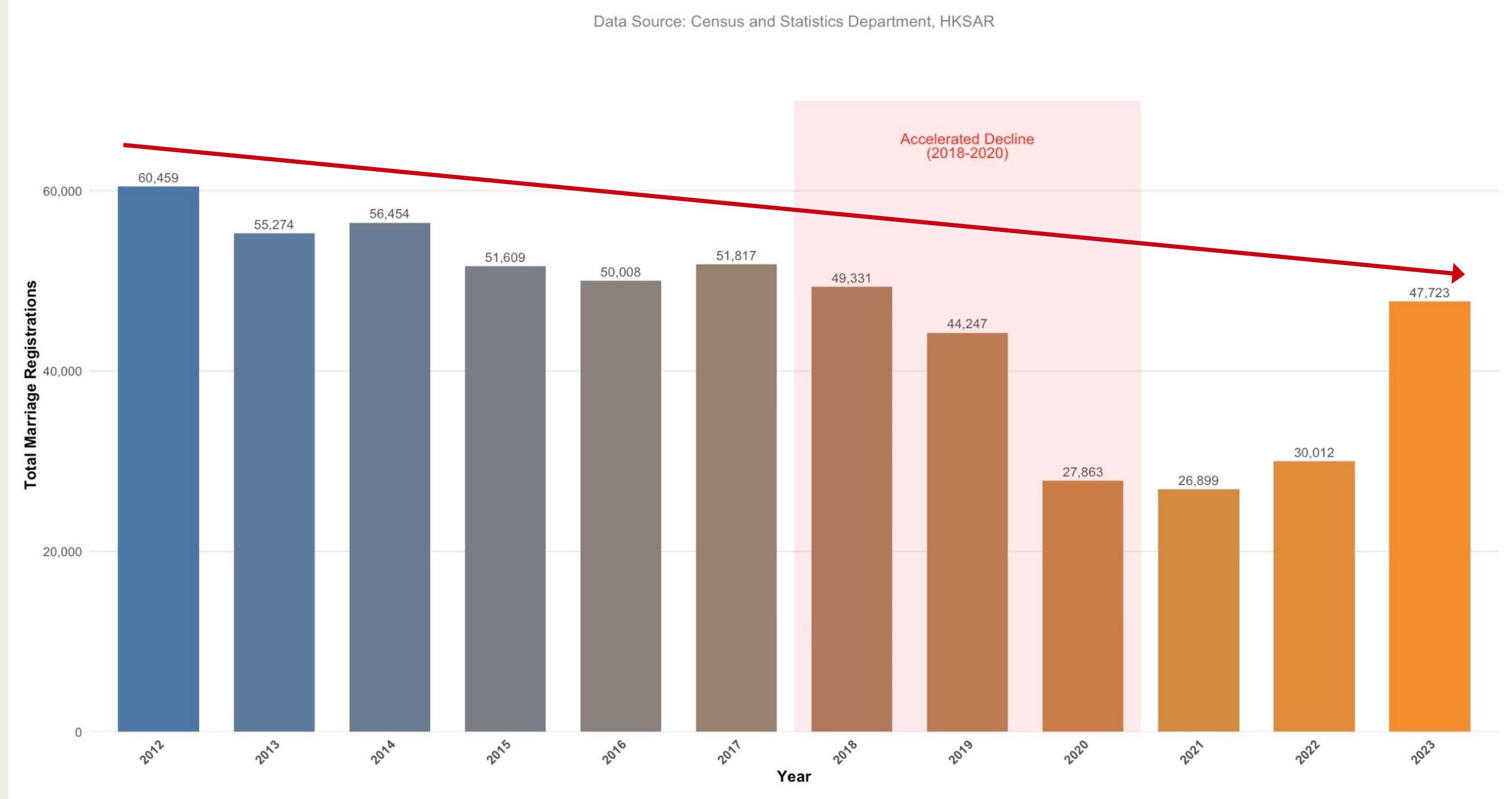
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```
marriage_plot <- ggplot(marriage, aes(x = as.factor(Year), y = FirstMarriage)) +  
  geom_col(aes(fill = color_gradient), width = 0.7, show.legend = FALSE) +  
  geom_text(aes(label = format(Total, big.mark = ",")),  
           vjust = -0.5, color = "grey30", size = 3.5) +
```

RStudio: Notebook Output

Trend Analysis of Marriage Registrations in Hong Kong (2012-2023)

Data Source: Census and Statistics Department, HKSAR



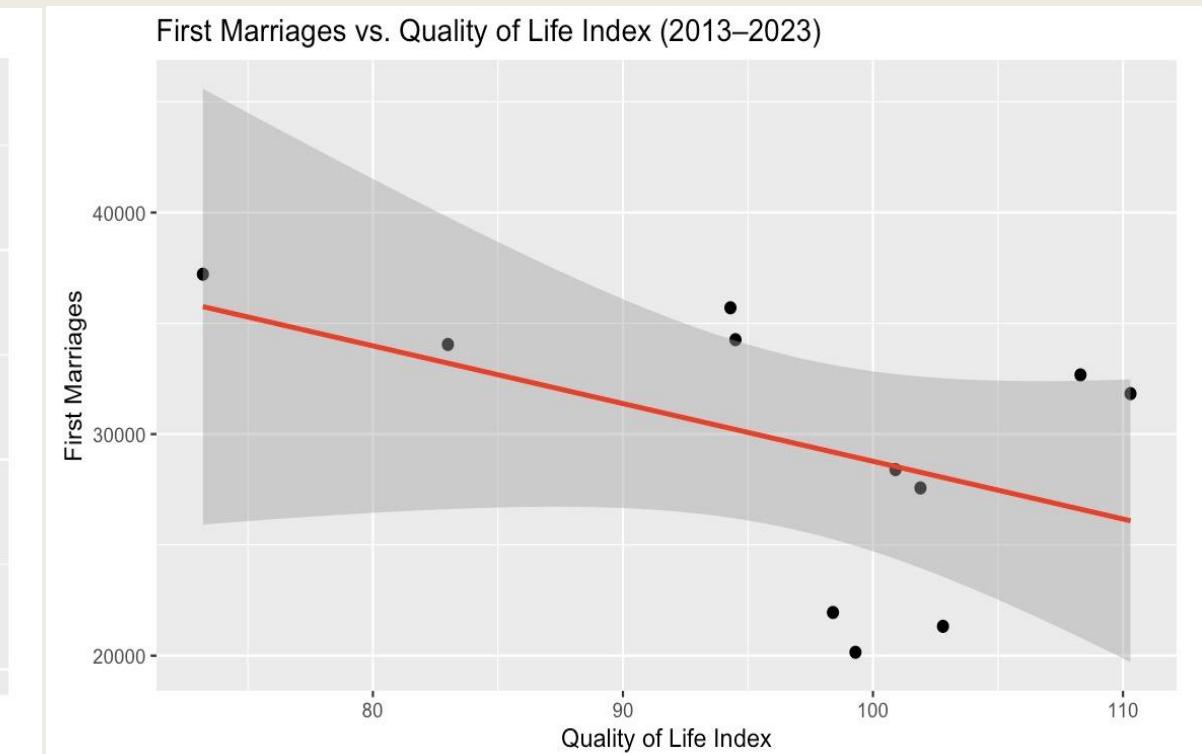
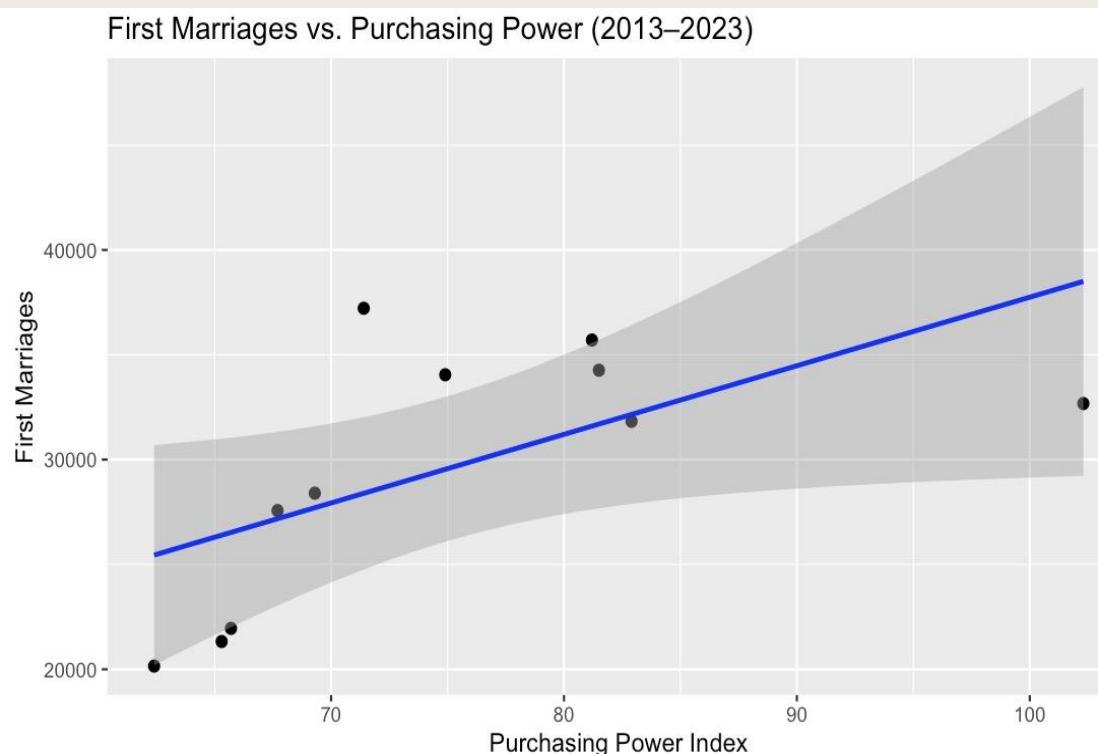
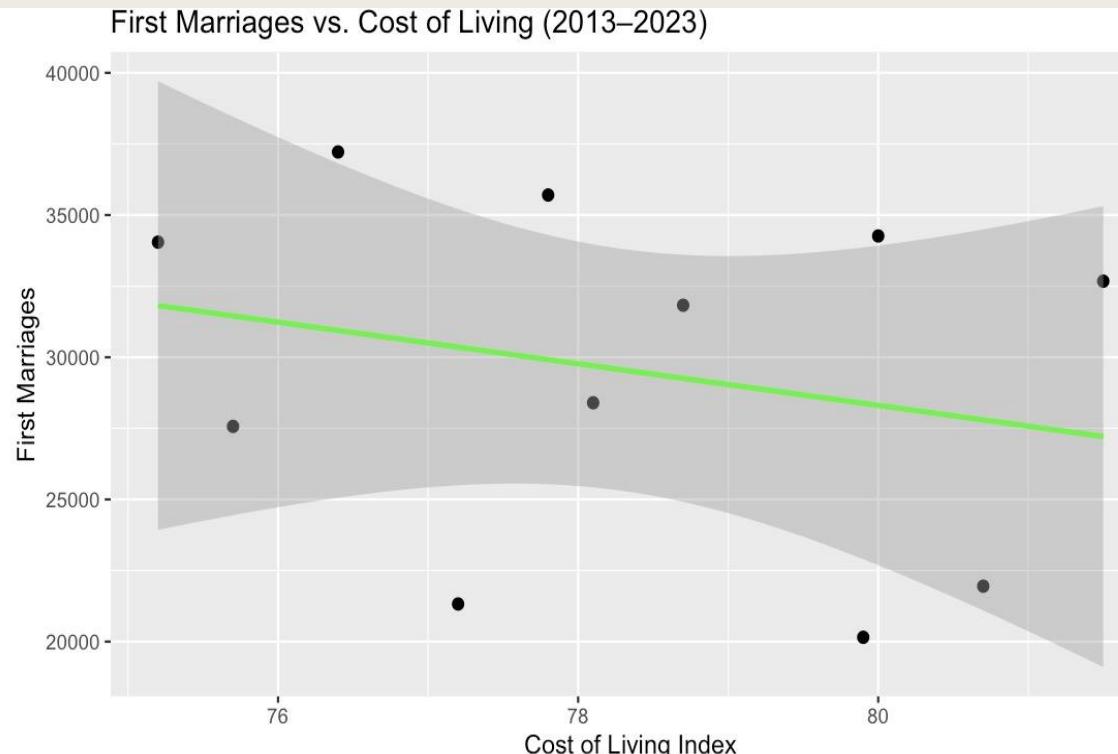
# DATA VISUALIZATION

(09)

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```
sheet3 <- read_excel("/Users/qiuweijie/Desktop/yeyeyeye.xlsx", sheet = 3) |>  
  mutate(Year = as.numeric(Year)) #HK_QualityOfLifeIndex  
sheet4 <- read_excel("/Users/qiuweijie/Desktop/yeyeyeye.xlsx", sheet = 4) |>  
  mutate(Year = as.numeric(Year)) #FirstMarriageOfBothParties  
sheet5 <- read_excel("/Users/qiuweijie/Desktop/yeyeyeye.xlsx", sheet = 5) |>  
  mutate(Year = as.numeric(Year)) #PurchasingPower & CostOfLiving  
df_sheet3_sheet4 <- inner_join(sheet4, sheet3, by = "Year")  
df_sheet4_sheet5 <- inner_join(sheet4, sheet5, by = "Year")
```

```
FirstMarriagesvsCostofLiving<-ggplot(df_sheet4_sheet5, aes(x = HK_CostOfLivingIndex, y = FirstMarriageOfBothParties)) +  
  geom_point(size = 2) +  
  geom_smooth(method = "lm", color = "green") +  
  labs(  
    title = "First Marriages vs. Cost of Living (2013–2023)",  
    x = "Cost of Living Index", y = "First Marriages"  
)
```



# CORRELATION?

The correlation coefficient (r), specifically Pearson's r, measures the strength and direction of the linear relationship between two variables.

Pearson's r Formula:

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

```
cor_purchasing_marriage <- cor(df_sheet4_sheet5$HK_PurchasingPowerIndex, df_sheet4_sheet5$FirstMarriageOfBothParties)
cor_cost_marriage <- cor(df_sheet4_sheet5$HK_CostOfLivingIndex, df_sheet4_sheet5$FirstMarriageOfBothParties)
```

Weak correlation:

Correlation (Cost of Living): -0.25

Moderate correlation:

Correlation (life quality): -0.46

Correlation (Purchasing Power): 0.62

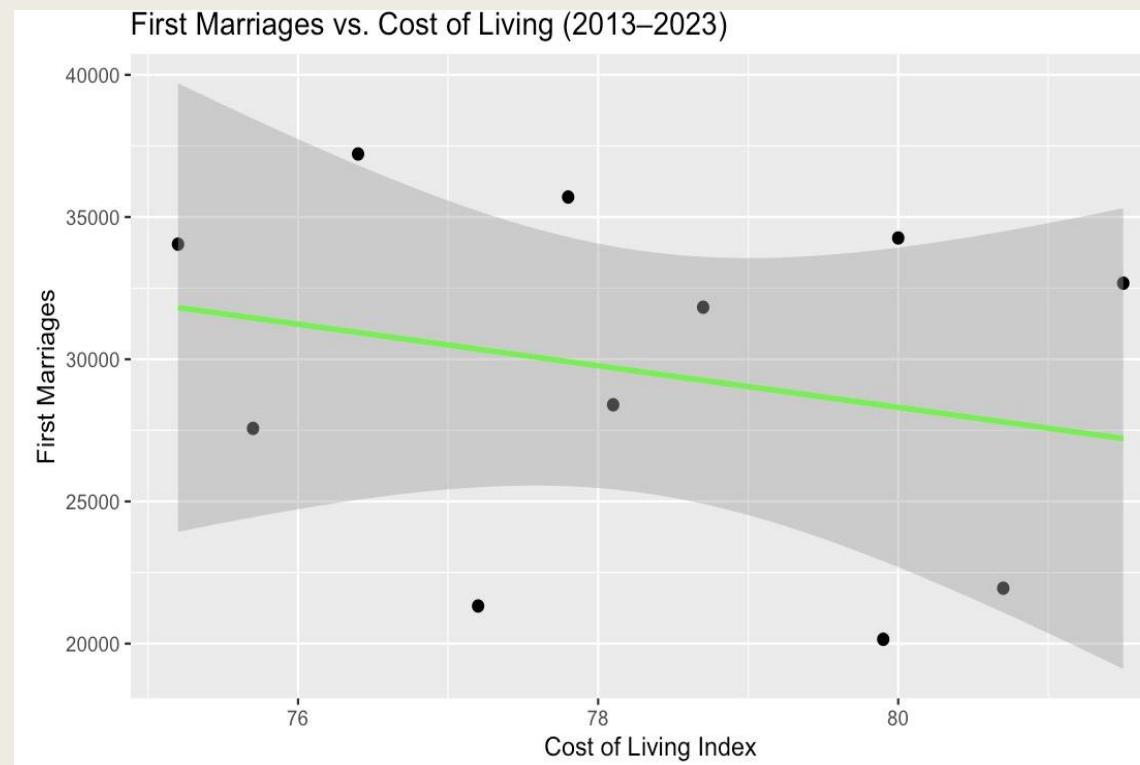
(10)

More about correlation coefficient:

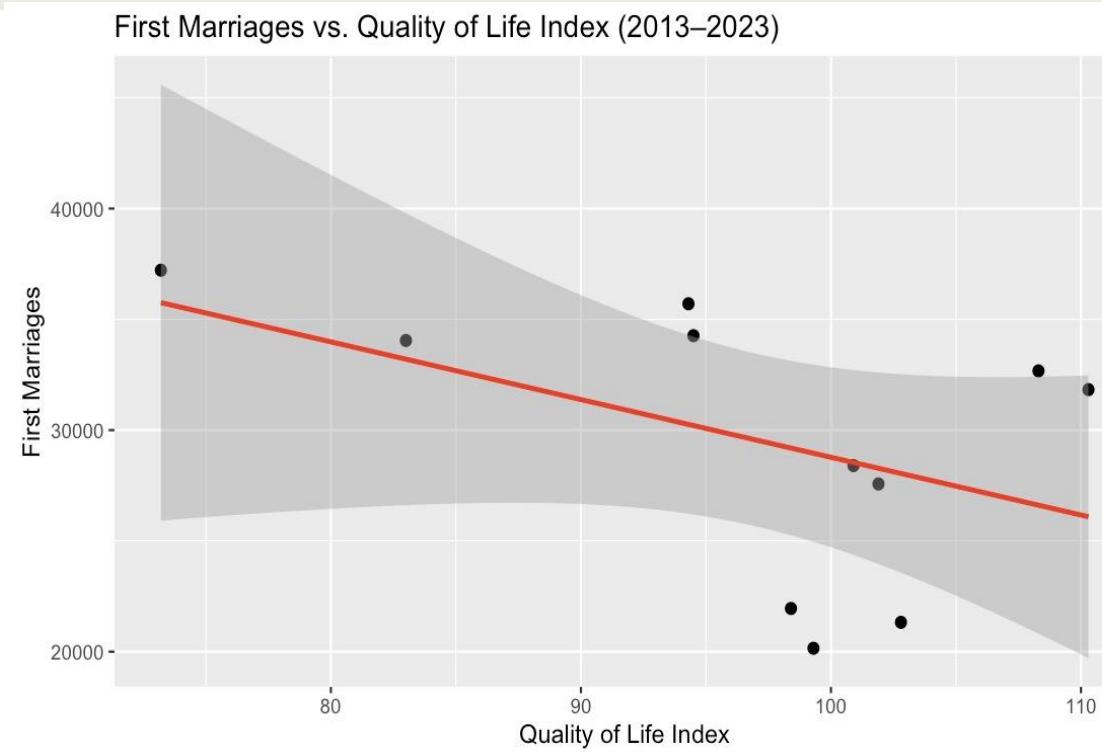
<https://www.investopedia.com/terms/c/correlationcoefficient.asp>

# CORRELATION?

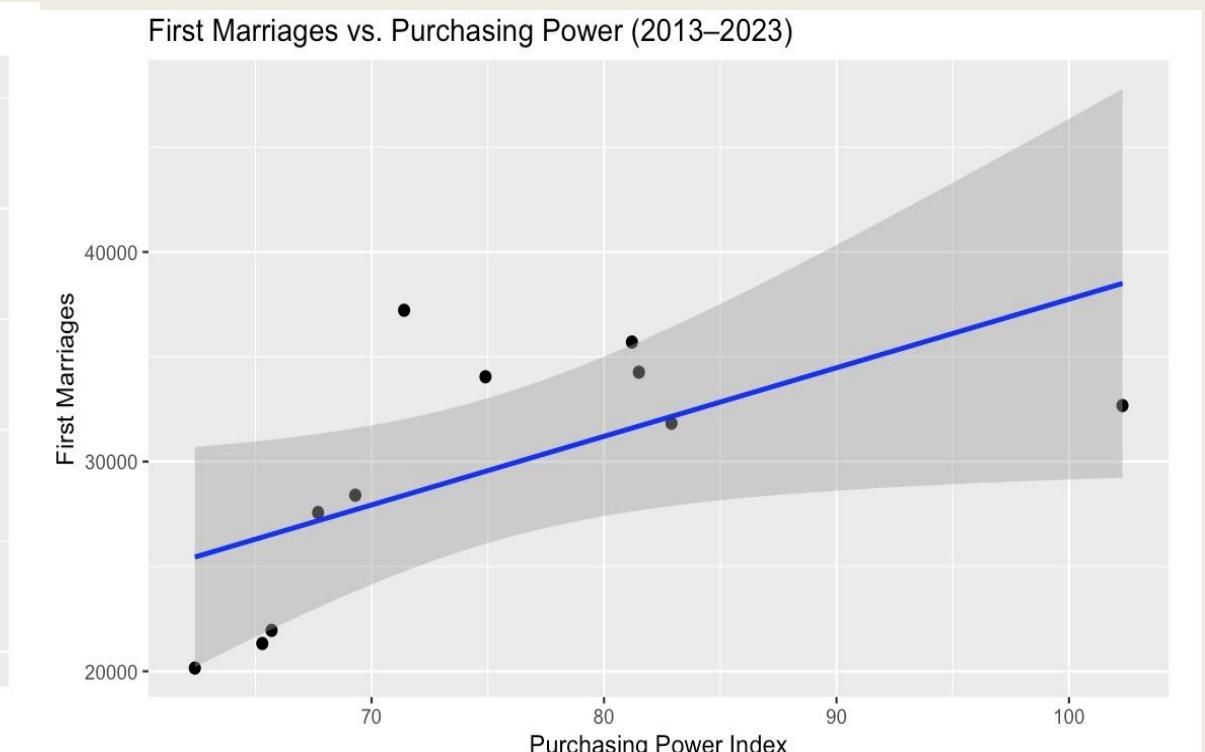
Correlation (Cost of Living): -0.25



Correlation (life quality): -0.46



Correlation (Purchasing Power): 0.62



Insight:

**Purchasing Power** (+0.62): Higher incomes encourage marriage.

**Quality of Life** (-0.46): Paradoxically, better living standards correlate with lower marriage rates. Why?  
Maybe comfort reduces urgency to settle down.

**Cost of Living**(-0.25): As cost of living increases, marriage rates tend to decrease slightly.

However, the effect is not strong. It is speculated that the reason is that people's purchasing power is on the rise.

# DATA VISUALIZATION

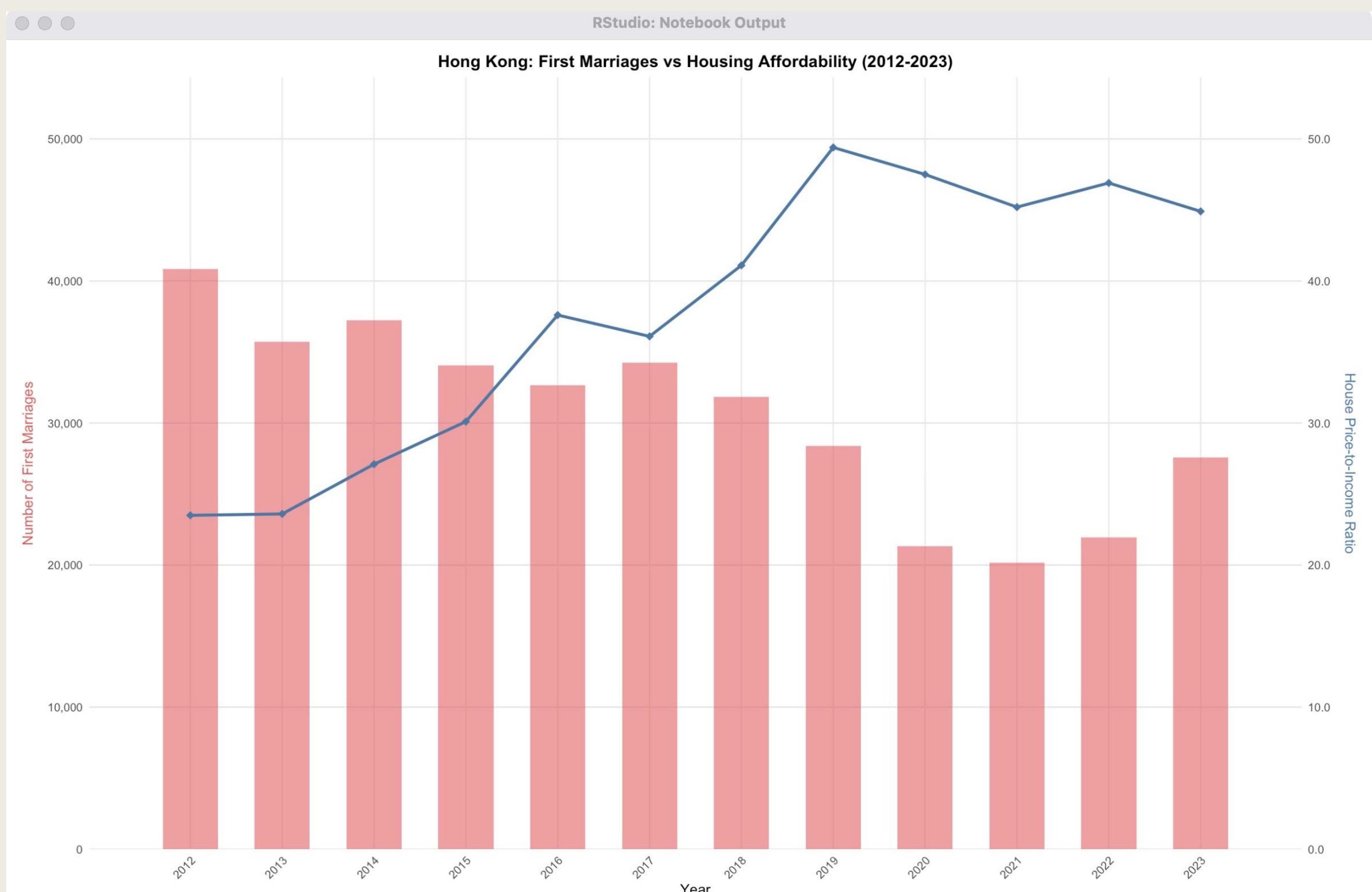
(12)

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## Property Prices Index

```
combined_data <- marriage %>%
  left_join(housing, by = "Year") %>%
  rename(
    FirstMarriage = FirstMarriageOfBothParties,
    HousingRatio = HousingPriceToIncomeRatio
  )
```

```
(dual_plot <- ggplot(combined_data, aes(x = Year)) +
  geom_col(aes(y = FirstMarriage),
    fill = "#E15759", alpha = 0.6, width = 0.6) +
  geom_line(aes(y = HousingRatio * 1000),
    color = "#4E79A7", linewidth = 1.2, linetype = "solid") +
  geom_point(aes(y = HousingRatio * 1000),
    color = "#4E79A7", size = 3, shape = 18) +
```



# CORRELATION?

$$R \approx -0.83$$



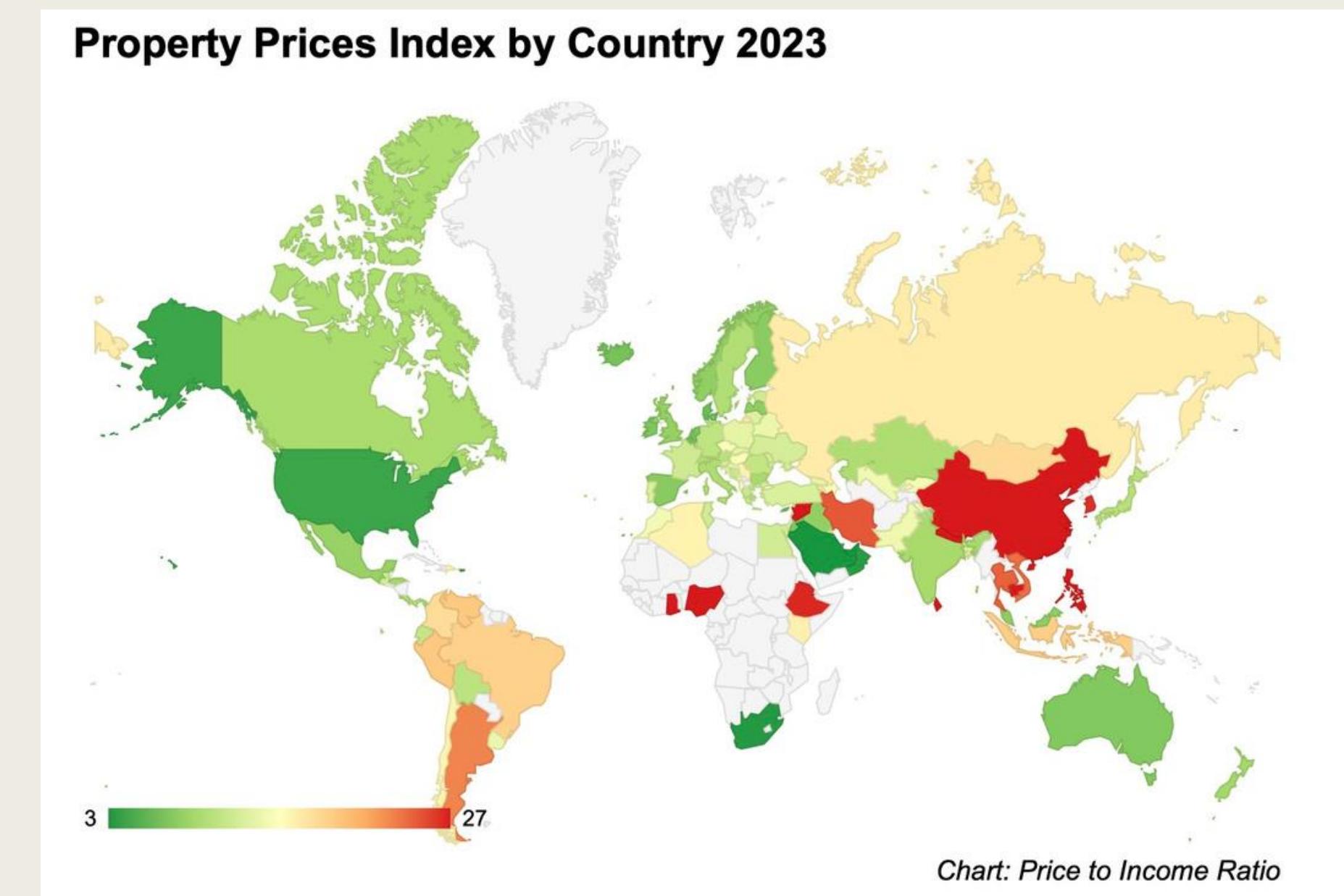
As the Housing Price to Income Ratio increases, Total Marriages decrease.

The correlation is strong ( $|r| > 0.8$ ), indicating a significant relationship.

High housing costs relative to income may deter marriage due to financial stress.

In market research in 94 different regions, Hong Kong is the least affordable market globally (median multiple: 16.7), followed by Sydney (13.8) and Vancouver (12.3)(Cox, 2024).

Rank	Nation	Metropolitan Market	Median Multiple
83	N.Z.	Auckland	8.2
84	Canada	Toronto, ON	9.3
85	U.S.	San Diego, CA	9.5
86	Australia	Adelaide, SA	9.7
86	U.S.	San Francisco, CA	9.7
88	Australia	Melbourne, VIC	9.8
89	U.S.	Honolulu, HI	10.5
90	U.S.	Los Angeles, CA	10.9
91	U.S.	San Jose, CA	11.9
92	Canada	Vancouver, BC	12.3
93	Australia	Sydney, NSW	13.8
94	China	Hong Kong	16.7



# LIMITATION

## LOVE

Love is a subjective idea that cannot be measured by statistics.

We can only focus on the data of marriage and fertility, but still there are some of the people who do not want to get marriage even they fall in love.

## OTHER FACTORS

Immeasurable factors like personality, value and cultural differences.

We can only analyze it at the physical level.

Covid 19 pandemic.

(15)

# CONCLUSION

High housing costs and stagnant incomes create financial stress, deterring young people from marrying or starting families.

While data reveals the economic hurdles to love in Hong Kong, the heart's choices remain a complex interplay of numbers and emotions.

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# REFERENCE LIST

Census and Statistics Department Marriage and Divorce Trends in Hong Kong. <https://data.gov.hk/sc-data/dataset/hk-censtatd-tablechart-fa100055>

Cox, W. (2024). Demographia international housing affordability: 2024 edition. Center for Demographics and Policy, Chapman University.

Property Prices Index by Country. [https://www.numbeo.com/property-investment/rankings\\_by\\_country.jsp?title=2023](https://www.numbeo.com/property-investment/rankings_by_country.jsp?title=2023)

Quality of Life Index by Country. [https://www.numbeo.com/quality-of-life/rankings\\_by\\_country.jsp](https://www.numbeo.com/quality-of-life/rankings_by_country.jsp)

Cost of Living Index by Country. [https://www.numbeo.com/cost-of-living/rankings\\_by\\_country.jsp](https://www.numbeo.com/cost-of-living/rankings_by_country.jsp)

Purchasing Power Index by Country. [https://www.numbeo.com/cost-of-living/rankings\\_by\\_country.jsp?title=2025&displayColumn=0](https://www.numbeo.com/cost-of-living/rankings_by_country.jsp?title=2025&displayColumn=0)

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**THANK YOU!**