



Public Perception of the Causes of *Air* Pollution in Urban Areas of Pakistan

RESEARCH QUESTIONS

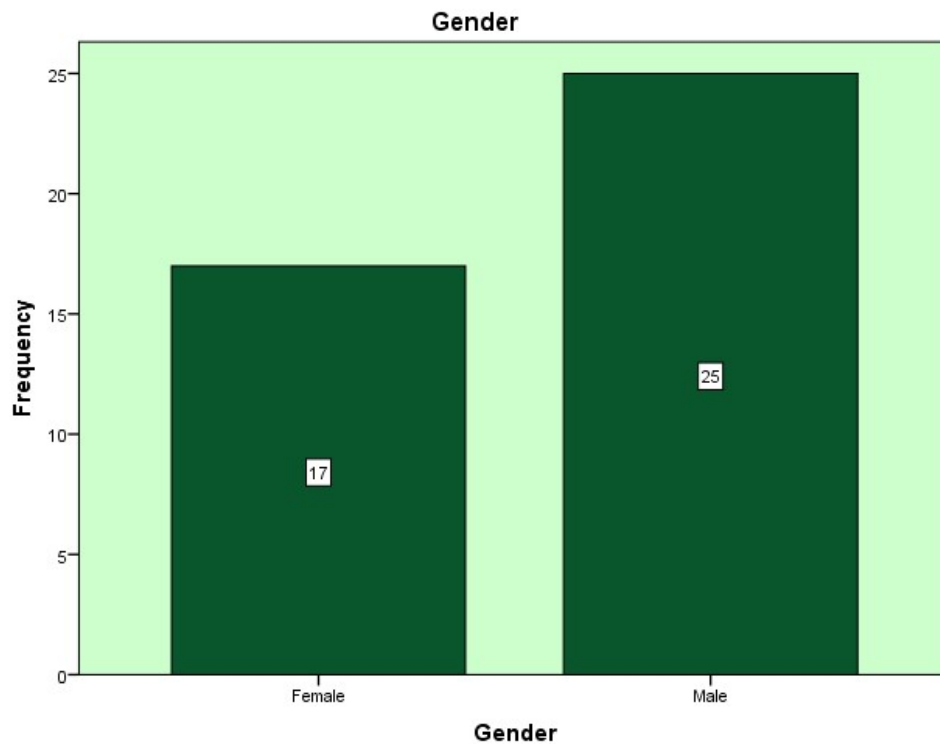
- *What are the public perceptions of the causes of air pollution in urban areas of Pakistan?*
- *How do these perceptions influence their concerns about their impact on health, quality of life, and government efforts?*



1. SOCIODEMOGRAPHIC ATTRIBUTES OF THE STUDY

- **Gender:**

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	17	40.5	40.5	40.5
	Male	25	59.5	59.5	100.0
	Total	42	100.0	100.0	



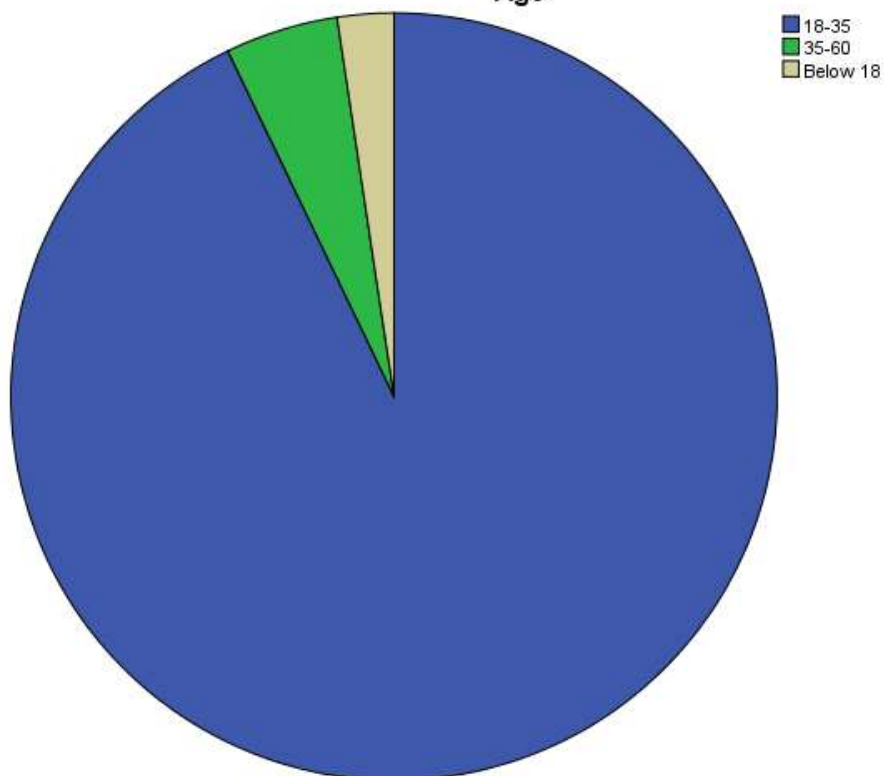
- **Age:**



Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-35	39	92.9	92.9	92.9
	35-60	2	4.8	4.8	97.6
	Below 18	1	2.4	2.4	100.0
	Total	42	100.0	100.0	

Age





2. NORMALITY OF DATA

- **Independent Variable:**

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Vechile Emission	42	1	5	4.29	1.066
Industrial Activities	42	1	5	4.26	1.037
Construction Activites	42	1	5	3.88	.993
Burning of waste	42	2	5	4.36	.879
Deforestation	42	1	5	4.36	.932
Valid N (listwise)	42				

The descriptive analysis reveals that respondents perceive **burning of waste** and **deforestation** as the most significant contributors to air pollution, with the highest mean scores (4.36) and strong consensus (low standard deviations of 0.879 and 0.932, respectively). **Vehicle emissions** and **industrial activities** also rank high, with means of 4.29 and 4.26, though vehicle emissions show the most variability in opinions ($SD = 1.066$). **Construction activities** have the lowest mean score (3.88), indicating it is perceived as a less significant contributor compared to others, though still noteworthy. Overall, the results suggest broad agreement among respondents regarding the primary causes of urban air pollution.

- **Dependent Variable:**



Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
highly concerned about the negative health effects	42	1	5	4.26	1.191
air pollution in urban areas is getting worse over time	42	1	5	4.40	.989
government's efforts to control air pollution in urban areas are insufficient	42	1	5	3.86	1.372
Public awareness is increasing in urban areas of Pakistan	42	1	5	3.76	1.265
air pollution as a major contributor to the overall decline in the quality of life	42	2	5	4.24	.932
Valid N (listwise)	42				

Respondents strongly agree that air pollution in urban areas is worsening (mean = 4.40) and has significant negative effects on health (mean = 4.26) and quality of life (mean = 4.24). However, there is mixed perception regarding government efforts to control air pollution (mean = 3.86, highest variability), and moderate agreement that public awareness is increasing (mean = 3.76). The findings highlight public concern about air pollution but also suggest dissatisfaction with government actions and a need for enhanced awareness campaigns.

3. RELIABILITY OF THE DATA

- **Independent Variable:**



Reliability Statistics

Cronbach's Alpha	N of Items
.882	5

The **Cronbach's Alpha** of **0.882** for the independent variables indicates high reliability and strong internal consistency. This confirms that the items (IV_1 to IV_5) are well-aligned in measuring the causes of air pollution and that respondents provided consistent answers. The scale is reliable and suitable for further analysis without any revisions.

- **Dependent Variable**

Reliability Statistics

Cronbach's Alpha	N of Items
.874	5

The **Cronbach's Alpha** of **0.874** for the dependent variables indicates strong internal consistency and reliability. This confirms that the items (DV_1 to DV_5) effectively measure public perceptions of air pollution impacts and responses. The scale is reliable and suitable for further analysis without any revisions.

4. CORRELATION STATISTICS



Correlations

		IV	DV
IV	Pearson Correlation	1	.755**
	Sig. (2-tailed)		.000
	N	42	42
DV	Pearson Correlation	.755**	1
	Sig. (2-tailed)	.000	
	N	42	42

** . Correlation is significant at the 0.01 level (2-tailed).

There is a strong and statistically significant positive correlation ($r = 0.755$, $p < 0.01$) between the combined independent and dependent variables, indicating that public perceptions of air pollution causes are strongly linked to their concerns about its impacts. This finding highlights the interconnected nature of public awareness and concern regarding air pollution.

5. REGRESSION ANALYSIS: CAUSE AND EFFECT RELATIONSHIP

- **Model Summary**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.755 ^a	.570	.560	.62815

a. Predictors: (Constant), IV



The linear regression analysis reveals a strong positive relationship ($R = 0.755$) between independent and dependent variables, with 57% of the variation in dependent variables explained by the independent variables ($R^2 = 0.570$). The model is reliable (Adjusted $R^2 = 0.560$) and provides accurate predictions (Std. Error = 0.62815).

- **ANOVA Table**

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.956	1	20.956	53.113	.000 ^b
	Residual	15.783	40	.395		
	Total	36.739	41			

a. Dependent Variable: DV

b. Predictors: (Constant), IV

The ANOVA table confirms the regression model is statistically significant ($F = 53.113$, $p = 0.000$), indicating that the independent variable reliably predicts the dependent variable. The regression explains a significant portion (57%) of the variation in the dependent variable, consistent with the R^2 value from the Model Summary. This validates the strength and reliability of the relationship between independent and dependent variables.

- **Coefficient**

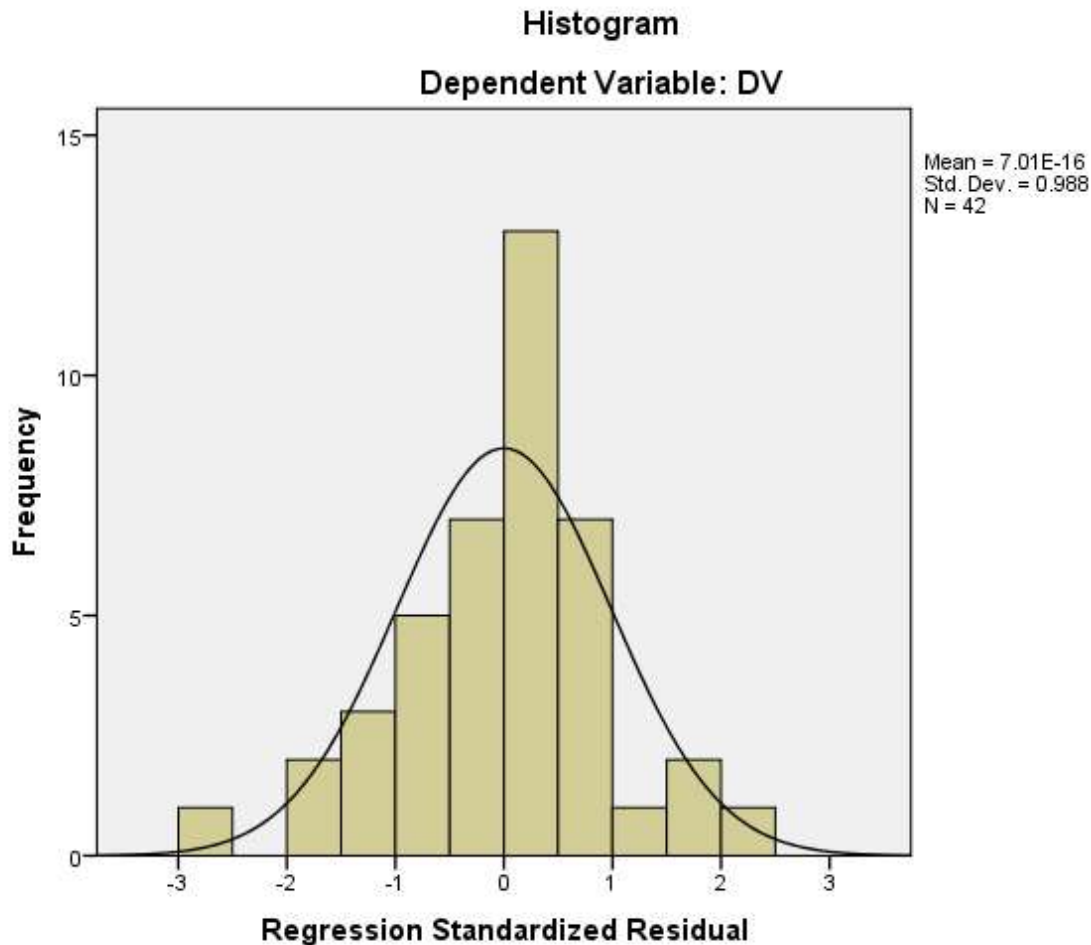
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.374	.521		.718	.477
	IV	.882	.121	.755	7.288	.000

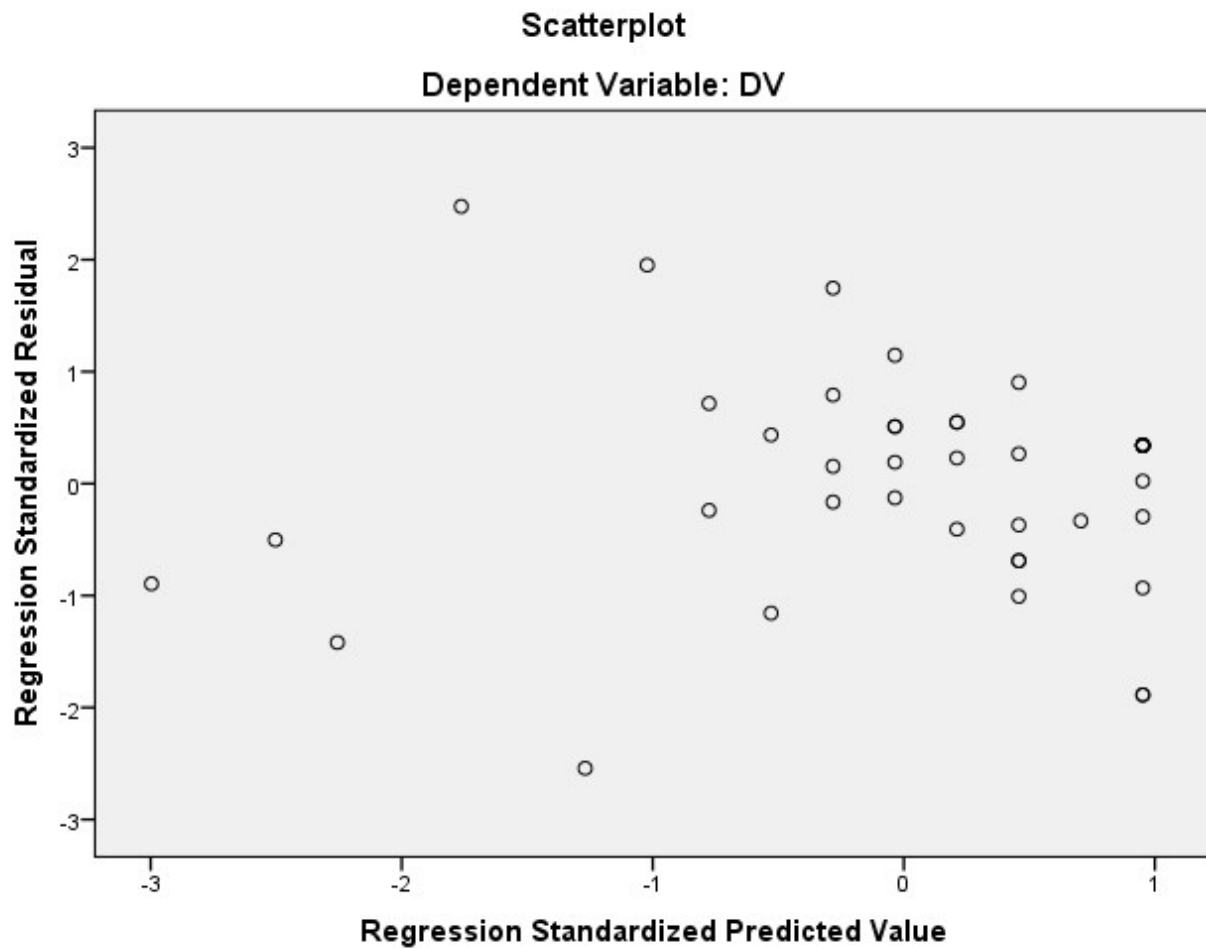
a. Dependent Variable: DV



The Coefficient Table confirms that the independent variable (IV) significantly predicts the dependent variable (DV) with a strong positive relationship ($B = 0.882$, $\text{Beta} = 0.755$, $p = 0.000$). For every 1-unit increase in IV, the DV increases by 0.882 units on average. This aligns with the Model Summary ($R = 0.755$, $R^2 = 0.570$) and ANOVA Table, confirming the regression model is robust and statistically significant.



The histogram of standardized residuals indicates that the residuals are approximately normally distributed, centered around a mean of 0, with no extreme outliers. This suggests that the regression model fits the data well and satisfies the normality assumption, validating the use of linear regression for the analysis.



The scatterplot shows a random distribution of residuals around the horizontal line ($y = 0$), indicating that the assumptions of **linearity** and **homoscedasticity** are met. There are no clear patterns or extreme outliers, confirming the validity of the regression model.

FINDINGS

The findings of this study provide insights into public perceptions of the causes of air pollution in urban areas of Pakistan and how these perceptions influence concerns about its impacts on health, quality of life, and government efforts.



Public Perceptions of Air Pollution Causes

Respondents perceive **burning of waste** and **deforestation** as the most significant contributors to urban air pollution, both with the highest mean score (4.36) and low variability (standard deviations = 0.879 and 0.932, respectively). **Vehicle emissions** (mean = 4.29) and **industrial activities** (mean = 4.26) also rank high, though vehicle emissions show the greatest variability (SD = 1.066). **Construction activities** are perceived as the least significant contributor among the independent variables, with a mean score of 3.88.

Concerns About Air Pollution Impacts

Respondents strongly agree that **air pollution is worsening** (mean = 4.40) and is significantly affecting both **health** (mean = 4.26) and **quality of life** (mean = 4.24). However, perceptions of government efforts to control air pollution are mixed, with moderate agreement (mean = 3.86) and the highest variability among dependent variables. Additionally, public awareness about air pollution is perceived to be increasing, though moderately (mean = 3.76).

Quantitative Analysis of Relationships

A strong positive correlation ($r = 0.755$, $p < 0.01$) exists between public perceptions of air pollution causes and their concerns about its impacts. The regression analysis confirms a significant and reliable relationship, explaining 57% of the variation in concerns ($R^2 = 0.570$). For every unit increase in perceived causes of air pollution, public concern increases by 0.882 units on average ($B = 0.882$, $\text{Beta} = 0.755$, $p = 0.000$). Residual analysis validates the assumptions of normality, linearity, and homoscedasticity, confirming the robustness of the regression model.

Key Implications

The findings highlight the interconnected nature of public perceptions and concerns. While respondents demonstrate strong awareness of major causes like burning waste and deforestation, their dissatisfaction with government efforts suggests a need for enhanced policy measures and public awareness campaigns to address air pollution effectively.

Note: This report has been prepared with the assistance of AI