Socioeconomic Impacts of Coal Seam Gas Development Across Queensland Towns

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Introduction

This study investigates changes in socioeconomic conditions across five Queensland towns from 2008 to 2023, including three towns with varying levels of exposure to coal seam gas (CSG) development (Miles, Chinchilla, and Dalby) and two non-gas comparison towns representing agriculture and mining (Goondiwindi and Moranbah, respectively). By comparing indicators before and after the 2015 CSG development milestone, the study assesses whether resource-sector growth produced measurable shifts in income, housing, education, and unemployment.

A combination of descriptive analysis, hypothesis testing, and panel-data modelling is used to capture these dynamics. The aim is to determine the extent of within-town change during the gas development period and to evaluate whether the resulting patterns contribute to divergence or convergence in socioeconomic outcomes across communities.

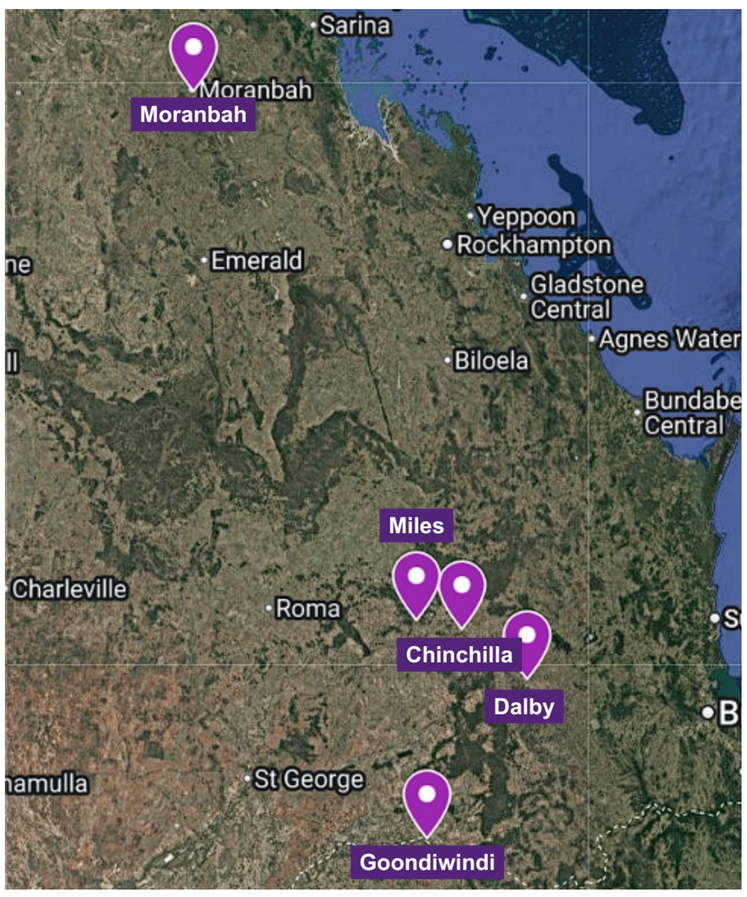


Figure 1: 5 Boomtowns research objects.

Methodology

Construct Annual Datasets Across 5 Boomtowns & a three-phase development indicator (*Pre-2008, 2008–2015, Post-2015*)

The analysis uses annual panel data for all towns and constructs a three-phase development indicator (pre-2008, 2008–2015, and post-2015) to represent stages of major CSG development.

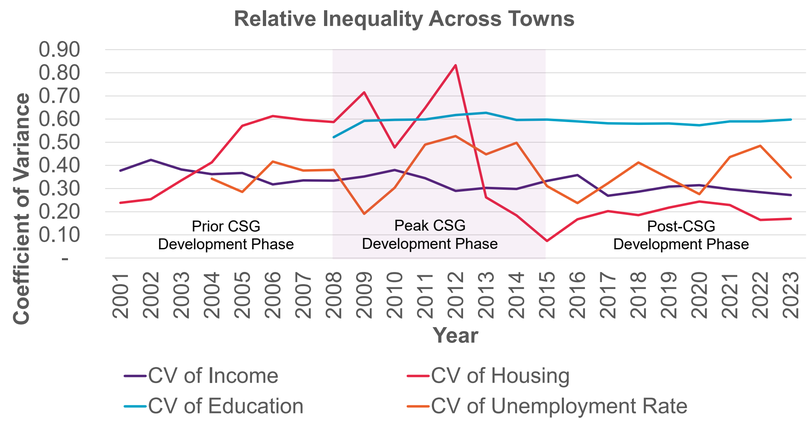
Calculate Summary Statistics And Apply Two-sample T-tests

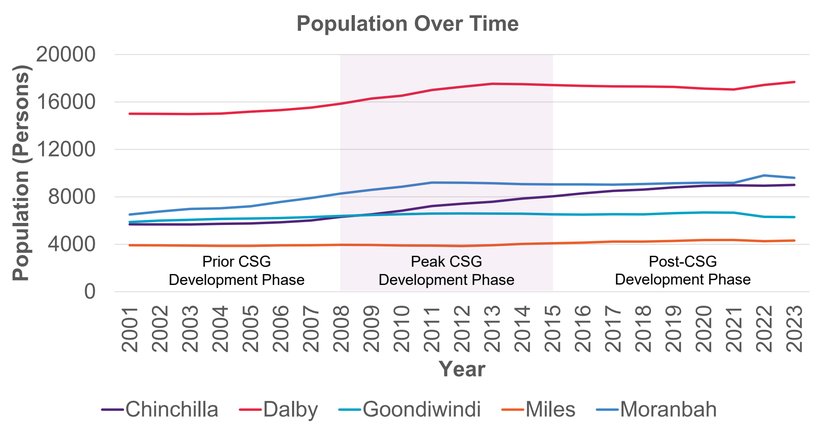
Summary statistics and two-sample t-tests are used to evaluate before–after differences for each indicator, supported by 95% confidence intervals.

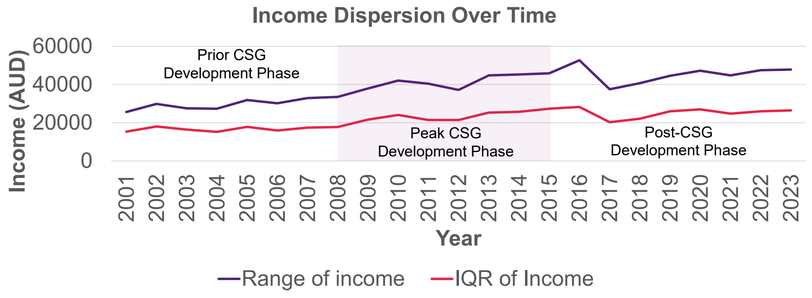
Calculate Effect Sizes To Track The Socioeconomic During Boom Periods

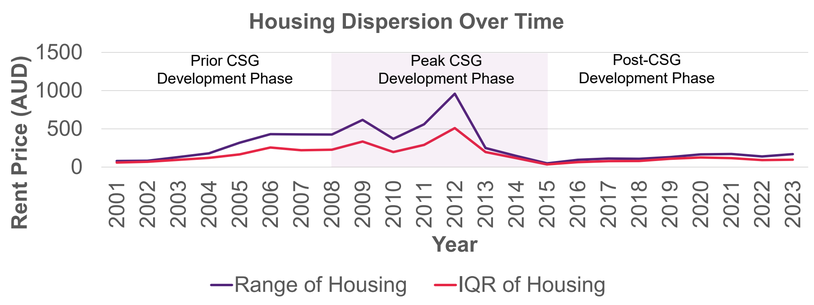
Additional measures, including Hedges' g, and dispersion indicators (range, IQR, CV), are calculated to assess the magnitude of change and track the evolution of socioeconomic gaps across towns throughout the study period.

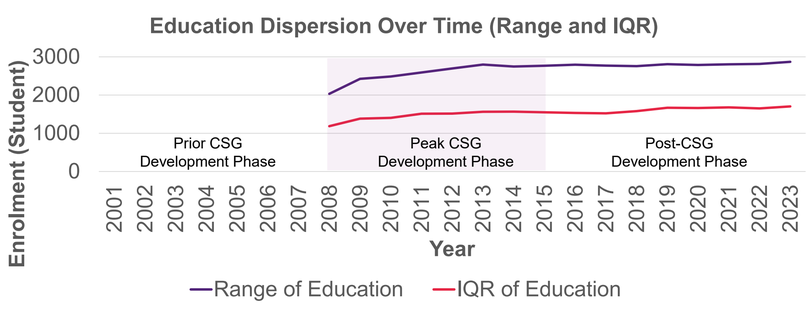
Dispersion Measures

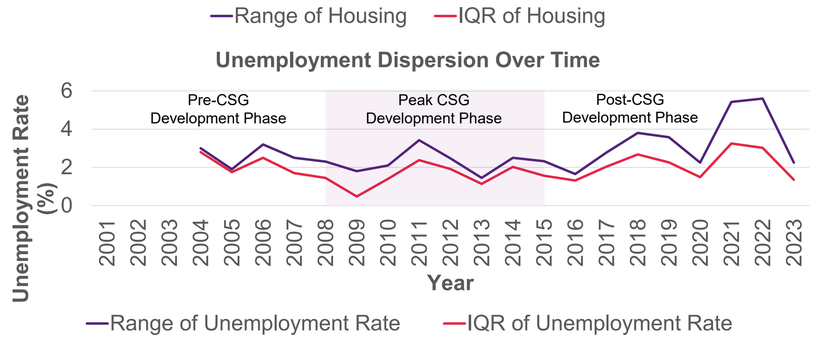












Two Sample T-test Result

Income ($)

Town	Mean Prior Dev.	Mean Peak Dev.	Mean Post Dev.	Δ Mean Post - Pre	Δ Mean Post - Peak	Post - Pre Significance at 5%	Post - Peak Significance at 5%
Miles	24,574	41,040	51,172	26,598	10,132	Yes	Yes
Chinchilla	26,383	46,804	58,277	31,894	11,473	Yes	Yes
Dalby	29,227	44,779	54,488	25,262	10,069	Yes	Yes
Goondiwindi	30,381	40,473	53,667	23,286	13,194	Yes	Yes
Moranbah	53,785	79,362	96,110	42,325	16,748	Yes	Yes

Housing Rent ($)

Town	Mean Prior Dev.	Mean Peak Dev.	Mean Post Dev.	Δ Mean Post - Pre	Δ Mean Post - Peak	Post - Pre Significance at 5%	Post - Peak Significance at 5%
Miles	117.18	316.89	222.67	105.49	-94.23	Yes	No (marginal)
Chinchilla	165.75	310.46	246.14	80.39	-64.33	Yes	No (marginal)
Dalby	167.79	279.75	264.58	96.80	-15.17	Yes	No
Goondiwindi	189.50	263.75	316.89	127.39	53.14	Yes	Yes
Moranbah	347.86	695.18	316.22	-31.64	-378.96	No	Yes

Education (Student)

Town	Mean Prior Dev.	Mean Peak Dev.	Mean Post Dev.	Δ Mean Post - Pre	Δ Mean Post - Peak	Post - Pre Significance at 5%	Post - Peak Significance at 5%
Miles	N/A	372	398	N/A	6	N/A	No
Chinchilla	N/A	1305	1680	N/A	376	N/A	Yes
Dalby	N/A	2912	3175	N/A	263	N/A	Yes
Goondiwindi	N/A	1439	1443	N/A	4	N/A	No
Moranbah	N/A	1657	1878	N/A	221	N/A	Yes

Education (Student)

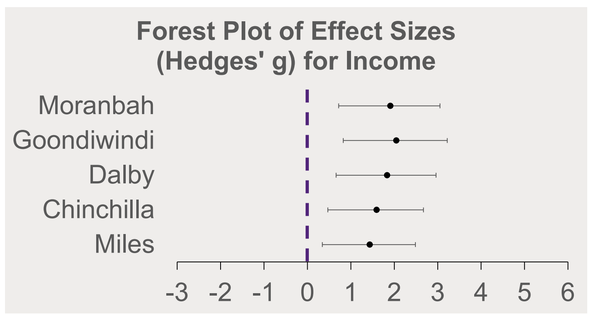
Town	Mean Prior Dev.	Mean Peak Dev.	Mean Post Dev.	Δ Mean Post - Pre	Δ Mean Post - Peak	Post - Pre Significance at 5%	Post - Peak Significance at 5%
Miles	2.63	1.69	3.32	0.69	1.63	No	Yes
Chinchilla	4.03	1.93	4.00	-0.03	2.07	No	Yes
Dalby	4.45	3.09	4.86	0.41	1.77	No	Yes
Goondiwindi	3.40	2.79	3.43	0.03	0.65	No	No
Moranbah	1.83	1.11	1.71	-0.11	0.61	No	Yes

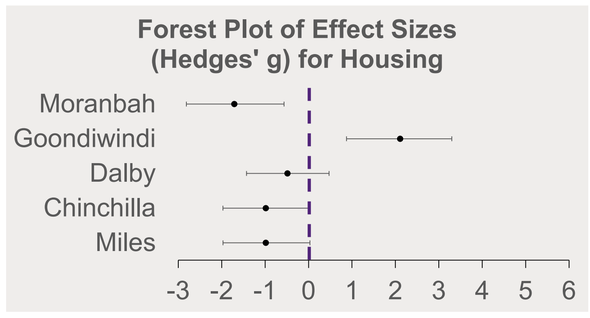
T-test Result

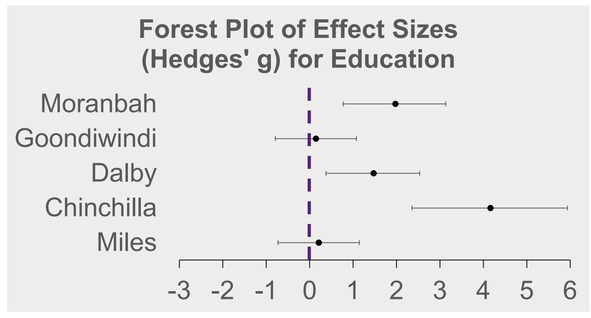
Income increased significantly in all towns from both the pre-development and peak-development phases to the post-2015 period, suggesting persistent income gains beyond the CSG peak. In gas towns (Miles, Chinchilla, Dalby), income growth is accompanied by significant post-peak increases in unemployment, indicating labour market adjustment after peak development. Housing effects are mixed: Goondiwindi and Moranbah show significant structural changes, while some gas towns display weaker or marginal post-peak rent adjustments. Education improvements are strongest in larger resource-driven towns (Chinchilla, Dalby, Moranbah), with limited change in smaller or agriculture-based towns. There is no statistically significant difference in unemployment between the pre-peak development and post-2015 periods.

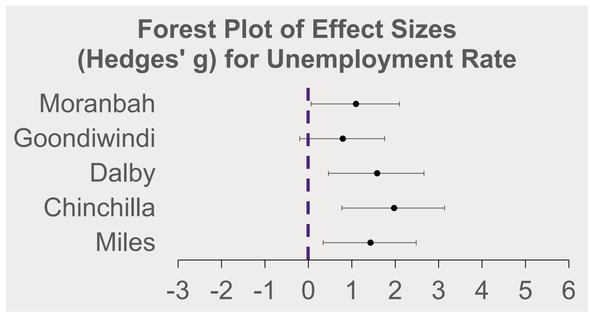
Overall, gas towns show a classic boom-to-adjustment pattern, while agriculture and mining towns exhibit distinct structural dynamics.

Effect Sizes (Hedges'g Result)









Conclusion

Gas towns (Miles, Chinchilla, and Dalby) experienced strong and statistically significant income growth from pre- to post-development phases. Housing inequality spiked during the peak phase but generally stabilised afterward, with mixed town-level outcomes. Education gains were uneven and concentrated in larger or resource-linked towns, while agricultural Goondiwindi showed limited structural change. Unemployment effects were inconsistent, suggesting short-term labour adjustments.

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Acknowledgements

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