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*The Lancet* DOI:10.1016/S0140-6736(07)60037-3**Articles****Effect of exposure to traffic on lung development from 10 to 18 years of age: a cohort study**Dr [W James Gauderman](#) PhD  , [Hita Vora](#) MS  , Prof [Rob McConnell](#)MD , [Kiros Berhane](#) PhD , Prof [Frank Gilliland](#) MD , Prof[Duncan Thomas](#) PhD , [Fred Lurmann](#) MS , [Edward Avol](#) MS ,[Nino Kunzli](#) MD  , [Michael Jerrett](#) PhD   and Prof [John Peters](#) MD  

Mr. Fairstein

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Whether local exposure to major roadways adversely affects lung-function growth during the period of rapid lung development that takes place between 10 and 18 years of age is unknown. This study investigated the association between residential exposure to traffic and 8-year lung-function growth.

**Methods**

In this prospective study, 3677 children (mean age 10 years [SD 0.44]) participated from 12 southern California communities that represent a wide range in regional air quality. Children were followed up for 8 years, with yearly lung-function measurements recorded. For each child, we identified several indicators of residential exposure to traffic from large roads. Regression analysis was used to establish whether 8-year growth in lung function was associated with local traffic exposure, and whether local traffic effects were independent of regional air quality.

**Findings**

Children who lived within 500 m of a freeway (motorway) had substantial deficits in 8-year growth of forced expiratory volume in 1 s ( $FEV_{1t}$ ,  $-81$  mL,  $p=0.01$  [95% CI  $-143$  to  $-18$ ]) and maximum midexpiratory flow rate (MMEF,  $-127$  mL/s,  $p=0.03$  [ $-243$  to  $-11$ ]), compared with children who lived at least 1500 m from a freeway. Joint models showed that both local exposure to freeways and regional air pollution had detrimental, and independent, effects on lung-function growth. Pronounced deficits in attained lung function at age 18 years were recorded for those living within 500 m of a freeway, with mean percent-predicted 97.0% for  $FEV_1$  ( $p=0.013$ , relative to  $>1500$  m [95% CI 94.6–99.4]) and 93.4% for MMEF ( $p=0.006$  [95% CI 89.1–97.7]).

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## Interpretation

Local exposure to traffic on a freeway has adverse effects on children's lung development, which are independent of regional air quality, and which could result in important deficits in attained lung function in later life.

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