WITH cv\_with\_sensor AS (

SELECT cv.datapointid,

cv.journeyid,

cv.capturedtimestamp,

cv.latitude AS cv\_latitude,

cv.longitude AS cv\_longitude,

cv.route\_id,

cv.hour,

wl.device\_id AS sensor\_device\_id,

wl.latitude AS sensor\_latitude,

wl.longitude AS sensor\_longitude,

-- Haversine formula for distance in miles

3959 \* ACOS(

COS(RADIANS(cv.latitude)) \* COS(RADIANS(wl.latitude)) \* COS(RADIANS(wl.longitude) - RADIANS(cv.longitude)) + SIN(RADIANS(cv.latitude)) \* SIN(RADIANS(wl.latitude))

) AS distance

FROM raghu\_cv\_data AS cv

JOIN raghu\_wavetronix\_locations AS wl ON cv.route\_id = wl.route\_id

),

cv\_hourly\_count AS (

SELECT sensor\_device\_id AS device\_id,

hour,

COUNT(DISTINCT journeyid) AS cv\_count

FROM cv\_with\_sensor

WHERE distance < 2

GROUP BY sensor\_device\_id,

hour

),

wavetronix\_hourly\_count AS (

SELECT device\_id,

hour(cst\_time) AS hour,

SUM(lane\_count) AS total\_vehicle\_count

FROM raghu\_wavetronix\_data

GROUP BY device\_id,

hour(cst\_time)

)

SELECT cv.device\_id,

cv.hour,

cv.cv\_count,

wt.total\_vehicle\_count,

-- Calculate proportion of CVs

IF(

wt.total\_vehicle\_count > 0,

CAST(cv.cv\_count AS DOUBLE) / CAST(wt.total\_vehicle\_count AS DOUBLE),

0

) AS cv\_proportion,

-- Calculate CV percentage by multiplying proportion by 100

IF(

wt.total\_vehicle\_count > 0,

CAST(cv.cv\_count AS DOUBLE) / CAST(wt.total\_vehicle\_count AS DOUBLE) \* 100,

0

) AS cv\_percentage

FROM cv\_hourly\_count AS cv

JOIN wavetronix\_hourly\_count AS wt ON cv.device\_id = wt.device\_id

AND cv.hour = wt.hour

ORDER BY cv.device\_id,

cv.hour;