I. Sources

Line_listing: a list of cases confirmed to be H7N9. Data were aggregated from a CDC publication (not available to the public), WHO case reports, HealthMap, and Flutrackers.org. Data cannot be independently verified, and cannot be guaranteed by the authors to be correct.

Sheet title: Occupation
Full title: Sector composition of urban employment by age and sex
Chinese title: 按年□、性□分的城□就□人□行□构成
Geographic unit: Country (urban)
Year: 2006
Link: http://www.stats.gov.cn/tjsj/ndsj/laodong/2006/html/01-60.htm

Sheet title: Working_hours
Full title: Weekly working hours in urban area
Chinese title: 城□就□人□□□周平均工作□□
Geographic unit: Country (urban)
Year: 2006
Link: http://www.stats.gov.cn/tjsj/ndsj/laodong/2006/html/01-68.htm

Sheet title: Regional_employment_totals
Full title: Sex, industry sub-categories of the employed population
Chinese title: 各地区按性□、行□□□分的就□人口
Geographic unit: Province
Year: 2005
Link: http://www.stats.gov.cn/tjsj/ndsj/renkou/2005/html/0501.htm
Notes: Source data are from a 1% sample of the population. Data were multiplied by 100 for this purpose.

Sheet title: Population
Full title: Population by Sex, age of the population
Chinese title: 各地区分性□、年□的人口
Geographic unit: Province
Year: 2005
Link: http://www.stats.gov.cn/tjsj/ndsj/renkou/2005/html/0104.htm

Notes: Source data are from a 1% sample of the population. Data were multiplied by 100 for this purpose.

Sheet title: Minutes_spent_purchasing_goods
Full title: Table 4-12A. Time spent on the purchase of goods and services (minutes)
Chinese title: 按 5 □□和性□划分的非 SN A 生□活□平均□□
Geographic unit: Country
Year: 2008
Link: http://www.stats.gov.cn/tjsj/qtsj/2008sjlydczlhb/P020091029588656311153.pdf

Sheet title: Participation_rate_purchasing_goods
Full title: Participation rate: the purchase of goods and services (%)
Chinese title: 按 10 □□和性□划分的非 SN A 生□活□参与率(□表)
Geographic unit: Country
Year: 2008
Link: http://www.stats.gov.cn/tjsj/qtsj/2008sjlydczlhb/P020091029588656311153.pdf

II. Variables

Data: Shopper_calculations

population - combined population of Shanghai municipality and Anhui, Zhejiang and Jiangsu provinces. Source data are from a 1% sample of the population. Data were multiplied by 100 for this purpose.

prop_shop - the proportion of time-use survey respondents who participated in the purchase of goods and services on the day the survey was administered. Data for people ages 75+ were not available, so values from the 65-74 age category were used.

population_shop - the estimated number of people in the four provinces who purchase goods and services each day. Derived from multiplying population and prop_shop.

visit_wetmarket - the proportion of people who shop at a wet market, rather than a supermarket.

pop_wetmarket - the estimated number of people in the four provinces who shop at a wet market each day.

shop_min - the number of minutes spent purchasing goods and services according to the time use survey. Data for people ages 75+ were not available, so values from the 65-74 age category were used.

exposure_min - the number of minutes spent exposed to live birds while visiting the market. Derived from halving shop_min.

days - the number of days exposed to the virus. Calculated from March 13, 2013 (the day the outbreak began to take off) and April 11, 2013 (7 days after the wet markets were closed).

group_exposure_hours - the estimated number of hours the demographic group was exposed to H7N9 between the analysis period (March 13 - April 11, 2013). Derived from multiplying pop_wetmarket, exposure_min, and days.

cases - the number of cases between March 13 - April 11, 2013 for each demographic category. Cases without a reported occupational exposure were presumed to be transient exposures, and were categorized as shoppers.

rate_per_exposure_hour - the infection rate per hour of contact between poultry and humans. Estimated by dividing the number of cases for each demographic by the group exposure hours.

undetected_cases - the number of cases that would need exist for the infection rate per exposure hour to be roughly uniform.

detection_percent - the proportion of real cases to undetected cases. Derived from dividing cases by undetected_cases.

uniform_detection_rate - the infection rate per exposure hour using the hypothetical undetected_cases.

Data: Occupational_calculations

proportion_wetmarket - the proportion of workers for each of the occupational exposure categories who have contact with live poultry. This value was derived from a Forbes article reporting 9.33 million poultry farming jobs in China in 2012, which is 15% of the number of agricultural workers reported in the Chinese labor statistics.

population_exposed - the estimated number of workers in the four provinces that are exposed to poultry each day. Calculated from multiplying population and proportion_wetmarket.

daily_exposure_minutes - the number of minutes spent in contact with poultry each day. Calculated from Chinese labor statistics on the number of hours worked each week.

Data: Sensitivity_analysis

LBMvisit_weight - the proportion of people who visit a live bird market, weighted by population to reflect the attack rate. The mean of these values is still 80%, in accordance with two market research studies that estimate the proportion of the population that visits live bird markets rather than supermarkets is ~75-85%.

attack_rate - the number of cases divided by the population.

sensitivity_rate - the infection rate per exposure hour using LBM_visit_weight values.

III. Assumptions/Limitations

1   The agricultural exposure category is derived from the occupational group, "farming, forestry, animal husbandry and fishing." Similarly, the retail exposure category is derived from the occupational group "wholesale and retail trade." The number of workers exposed to poultry is likely a lot smaller, so the real infection rate per exposure hour is probably higher. In order to more closely estimate the number of workers with occupational hazards, the population totals for both occupational groups were multiplied by 15% to match data from an article in Forbes reporting 9.33 million poultry farming jobs in China in 2012.

2   The shoppers exposure category represents trips to the wet market where live poultry are present. The exposure time is likely much shorter than this value represents. After consultation with a native Chinese colleague, in order to more closely estimate the time shoppers are exposed, the shopping time given by the time use survey was halved.

3   Data on the proportion of people who shop for goods and services, and the minutes spent shopping for goods and services were not available for people ages 75+, so values for the 65-74 age category were applied as an estimation.

4   Assuming the exposure period extends from March 13 - April 11, 2013 (30 days), which includes from 7 days before the outbreak began to 'take off' until the markets closed on April 5, 2013. We are assuming an incubation day of 7 days.